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# MCQs in Pharmacology



**G. Vidya Sagar**



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**MCQs  
in  
Pharmacology**

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# **MCQs in Pharmacology**

**G. Vidya Sagar**

Director and Principal  
Veerayatan Institute of Pharmacy  
Mandvi, Kutch (Gujarat)  
Dean, Faculty of Pharmaceutical Sciences  
KSKV Kachchh University  
Bhuj (Gujarat)



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*This book is dedicated to*

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*My Parents, Late Shri G. C. Naidu and*

*Smt. G. Lalitha*

For their untiring efforts and hardwork in bringing me up to what all I  
am today.

**Prof. Dr. G. Vidya Sagar**

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# SNIPPETS

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Very useful book for students preparing for GATE & USMLE. Recommended reading.

**Dr. Sanjay Pai**

Al-Ameen college of Pharmacy  
Bangalore.



I found the book absorbing, questions are well framed.

**Dr. Gabhe**

C.U Shah College of Pharmacy,  
Mumbai.



Good Reference for PG medical entrance. Recommended reading.

**Dr. Kaushik Shah**

M.S.(Gen. Surgery)  
Rana Hospital, Mandvi



This book will be of good use for students appearing for Competitive exams.  
Presentation of the matter is good.

**Prof. Y. Madhusudhan Rao**

Univ. College of Pharmaceutical Sciences  
Kakatiya University, Warangal.



# FOREWORD

---

Medical & Pharmacy are fast growing professions with a wide range of opportunities open to the students after a basic degree. These professions play a vital role in health care management.

This book will be of immense value for students to develop themselves as the meritorious & motivated candidates for admission to post graduate courses like M.D., M.S. & M.Pharm.

I compliment the author for his pains-taking efforts in mobilizing a very large number of good MCQs from a vast subject like Pharmacology. Adequate coverage of all topics is done.

I feel that this book will be a very useful companion for professional PG entrance examinations. I strongly recommend this book to college library collection

**PROF. DR. KANTIBHAI GOR**

*Vice Chancellor*

*K. S. K. V. Kachchh University*

*Bhuj - Kutch.*

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Finally, I would like to place on record the generous help rendered by **New age International (P) Limited, Publishers** in bringing out this book.

**Prof. Dr. G.Vidya Sagar.**

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# PREFACE

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Pharmacy graduates aspiring for higher education & medicos planning to take post graduation ought to appear in PG entrance examination. These entrance examinations are usually patterned in objective type.

Pharmacology forms an integral part of curriculum of medical & paramedical courses. It is an important subject & deals with the biological response elicited by a drug in the human body. Quite a large number of MCQs appear in competitive examinations in this subject.

Hence, there is a need for providing a well structured course material & upto date information on the subject. The quick solution guides presently available in the market for PG Medical & Paramedical entrance examinations doesn't cover the subject in an integrated way.

Hence, I brought out a separate objective question bank in Pharmacology after undertaking an extensive study of the pattern of PG examinations. This book provides the reader complete information so that students have clarity of thought & ready hand information to face the competitive examination with improved confidence.

Acquiring knowledge becomes simpler if all the required information is made available at one place in a platform. This book will serve the above said purpose.

I sincerely hope that this publication would be of much help in meeting the aspirations of those who plan to take PG Entrance examinations.

I look forward for suggestions & constructive criticism.

**Prof. Dr. G. Vidya Sagar**  
*Kutch, Gujarat*

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# CHAPTER 1

## GENERAL PHARMACOLOGY

---

**1. All of the following are general mechanisms of drug permeation Except**

- (a) Aqueous diffusion
- (b) Aqueous hydrolysis
- (c) Lipid diffusion
- (d) Pinocytosis or endocytosis
- (e) Special carrier transport

**2. If the plasma concentration of a drug declines with “first-order kinetics”, this means that**

- (a) There is only one metabolic path for drug disposition
- (b) The half-life is the same regardless of the plasma concentration
- (c) The drug is largely metabolized in the liver after oral administration and has low bioavailability elimination
- (d) The rate of elimination is proportionate to the rate of administration at all times
- (e) The drug is not distributed outside the vascular system

**3. Regarding termination of drug action**

- (a) Drug must be exerted from the body to terminate their action
- (b) Metabolism of drugs always increases their water solubility
- (c) Metabolism of drugs always abolishes their pharmacologic activity
- (d) Hepatic metabolism and renal excretion are the two most important mechanisms involved

- (e) Distribution of a drug out of the bloodstream terminates the drug's effect

**4. Distribution of drugs to specific tissues**

- (a) Is independent of blood flow to the organ
- (b) Is independent of the solubility of the drug in that tissue
- (c) Depends on the unbound drug concentration gradient between blood and tissue
- (d) Is increased for drugs that are strongly bound to plasma proteins
- (e) Has no effect on the half-life of the drug

**5. A physical process by which a weak acid becomes less water-soluble and more lipid-soluble at low pH is**

- (a) Distribution
- (b) Elimination
- (c) First-pass effect
- (d) Permeation
- (e) Protonation

**6. Dose-response curves are used for drug evaluation in the animal laboratory and in the clinic, Quantal dose-response curves are often**

- (a) Used for determining the therapeutic index of a drug
- (b) Used for determining the maximal efficacy of a drug
- (c) Invalid in the presence of inhibitors of the drug being studied
- (d) Obtained from the study of intact subject but not from isolated tissue preparations



- (e) Used to determine the statistical variation (standard deviation) of the maximal response to the drug.
- 7. The following are excreted faster in basic urine**
- (a) Weak acids      (b) Strong acids  
(c) Weak Bases      (d) None of the above
- 8. Which of the following statements about spare receptors is most correct ?**
- (a) Spare receptors, in the absence of drug, are sequestered in the cytoplasm  
(b) Spare receptors will be detected if the intracellular effect of drug-receptor interaction lasts longer than the drug-receptor interaction itself  
(c) Spare receptors influence the maximal efficacy of the drug-receptor system  
(d) Spare receptors activate the effector machinery of the cell without the need for a drug  
(e) Spare receptors may be detected by the finding that the  $EC_{50}$  is greater than the  $K_d$  for the agonist
- 9. Which of the following terms best describes an antagonist that interacts directly with the agonist and not at all or only incidentally, with the receptor ?**
- (a) Pharmacological antagonist  
(b) Partial agonist  
(c) Physiological antagonist  
(d) Chemical antagonist  
(e) Noncompetitive antagonist
- 10. Which of the following terms best describes a drug that blocks the action of epinephrine at its receptors by occupying those receptors without activating them ?**
- (a) Pharmacological antagonist  
(b) Partial agonist  
(c) Physiological antagonist  
(d) Chemical antagonist  
(e) Noncompetitive antagonist
- 11. Which of the following provides information about the variation in sensitivity of the drug within the population studied ?**
- (a) Maximal efficacy  
(b) Therapeutic index  
(c) Drug potency  
(d) Grade dose-response curve  
(e) Quantal dose-response curve
- 12. Which of the following most accurately describes the transmembrane signaling process involved in steroid hormone action ?**
- (a) Action on a membrane spanning tyrosine kinase  
(b) Activation of a G protein which activates or inhibits adenylyl cyclase  
(c) Diffusion into the cytoplasm and binding to an intracellular receptor  
(d) Diffusion of "STAT" molecules across the membrane  
(e) Opening of transmembrane ion channels
- 13. Which of the following is a phase II drug-metabolizing reaction ?**
- (a) Acetylation      (b) Deamination  
(c) Hydrolysis      (d) Oxidation  
(e) Reduction
- 14. Which of the following drugs may inhibit the hepatic microsomal P450 responsible for warfarin metabolism**
- (a) Cimetidine      (b) Ethanol  
(c) Phenobarbital      (d) Procainamide  
(e) Rifampin
- 15. With regard to clinical trials of new drugs, which of the following is most correct ?**
- (a) Phase I involves the study of a small number of normal volunteers by highly trained clinical pharmacologists  
(b) Phase II involves the use of the new drug in a large number of patients (100-5000) who have the disease to be treated  
(c) Phase III involves the determination of the drug's therapeutic index by the cautious induction of toxicity  
(d) Chemical antagonist  
(e) Phase II requires the use of a positive control (a known effective drug) and a placebo
- 16. Animal testing of potential new therapeutic agents**

- (a) Extends over a time period of at least 3 years in order to discover late toxicities
- (b) Requires the use of at least two primate species, eg. Monkey and baboon
- (c) Requires the submission of histopathologic slides and specimens to the FDA for government evaluation
- (d) Has good predictability for drug allergy-type reactions
- (e) May be abbreviated in the case of some very toxic agents used in cancer
- 17. The "dominant lethal" test involves the treatment of a male adult animal with a chemical before mating; the pregnant female is later examined for fetal death and abnormalities. The dominant lethal test therefore is a test of**
- (a) Teratogenicity
- (b) Mutagenicity
- (c) Carcinogenicity
- (d) All of the above
- (e) None of the above
- 18. The Ames test is a method for detecting**
- (a) Carcinogenesis in rodents
- (b) Carcinogenesis in primates
- (c) Teratogenesis in any mammalian species
- (d) Teratogenesis in primates
- (e) Mutagenesis in bacteria
- 19. "Nicotinic" sites include all of the following except**
- (a) Bronchial smooth muscle
- (b) Adrenal medullary cells
- (c) Parasympathetic ganglia
- (d) Skeletal muscle
- (e) Sympathetic ganglia
- 20. A good example of chemical antagonism**
- (a) Heparin & Protamine
- (b) Protamine & Zinc
- (c) Heparin & Prothrombin
- (d) All the above
- 21. Which of the following agents is a pro-drug that is much less toxic in mammals than in insects ?**
- (a) Acetylcholine      (b) Bethanechol
- (c) Physostigmine      (d) Pilocarpine
- (e) Neostigmine
- 22. Phenylephrine causes**
- (a) Constriction of vessels in the nasal mucosa
- (b) Increased gastric secretion and motility
- (c) Increased skin temperature
- (d) Miosis
- (e) All of the above
- 23. Pretreatment with propranolol will block which one of the following ?**
- (a) Methacholine-induced tachycardia
- (b) Nicotine-induced hypertension
- (c) Norepinephrine-induced bradycardia
- (d) Phenylephrine-induced mydriasis
- 24. Most drug receptors are**
- (a) Small molecules with a molecular weight between 100 and 1000
- (b) Lipids arranged in a bilayer configuration
- (c) Proteins located on cell membranes or in the cytosol
- (d) DNA molecules
- (e) RNA molecules
- 25. With regard to distribution of a drug from the blood into tissues**
- (a) Blood flow to the tissue is an important determinant
- (b) Solubility of the drug in the tissue is an important determinant
- (c) Concentration of the drug in the blood is an important determinant
- (d) Size (volume) of the tissue is an important determinant
- (e) All of the above are important determinants
- 26. The pH value is calculated mathematically as the**
- (a) Log of the hydroxyl ion ( $\text{OH}^-$ ) concentration
- (b) Negative log of the  $\text{OH}^-$  concentration
- (c) Log of the hydrogen ion ( $\text{H}^+$ ) concentration
- (d) Negative log of the  $\text{H}^+$  concentration
- (e) Ratio of  $\text{H}^+/\text{OH}^-$  concentration
- 27. Which property is classified as colligative?**
- (a) Solubility of a solute
- (b) Osmotic pressure

- (c) Hydrogen ion ( $H^+$ ) concentration  
(d) Dissociation of a solute  
(e) Miscibility of the liquids
- 28. The colligative properties of a solution are related to the**
- (a) pH of the solution  
(b) Number of ions in the solution  
(c) Total number of solute particles in the solution  
(d) Number of unionized molecules in the solution  
(e) pKa of the solution
- 29. The pH of a buffer system can be calculated with the**
- (a) Noyes – Whitney equation  
(b) Henderson – Hasselbalch equation  
(c) Michaelis – Menten equation  
(d) Yong equation  
(e) Stokes equation
- 30. Which mechanism is most often responsible for chemical degradation?**
- (a) Racemization      (b) Photolysis  
(c) Hydrolysis      (d) Decarboxylation  
(e) Oxidation
- 31. Which equation is used to predict the stability of a drug product at room temperature from experiments at accelerated temperature?**
- (a) The stokes equation  
(b) The Yong equation  
(c) The Arrhenius equation  
(d) The Michaelis – Menten equation  
(e) The Hixson – Crowell equation
- 32. Based on the relation between the degree of ionization and the solubility of a weak acid, the drug aspirin (pKa 3.49) will be most soluble at**
- (a) pH 1.0      (b) pH 2.0  
(c) pH 3.0      (d) pH 4.0  
(e) pH 6.0
- 33. The particle size of the dispersed solid in a suspension is usually greater than**
- (a)  $0.5 \mu m$       (b)  $0.4 \mu m$   
(c)  $0.3 \mu m$       (d)  $0.2 \mu m$   
(e)  $0.1 \mu m$
- 34. In the extemporaneous preparation of a suspension, levigation is used to**
- (a) Reduce the zeta potential  
(b) Avoid bacterial growth  
(c) Reduce particle size  
(d) Enhance viscosity  
(e) Reduce viscosity
- 35. Active transport differs from facilitated transport in following ways, except**
- (a) Carrier is involved  
(b) It is against concentration gradient  
(c) Energy is required  
(d) All of the above
- 36. Vanishing cream is an ointment that may be classified as**
- (a) A water –soluble base  
(b) An oleaginous base  
(c) An absorption base  
(d) An emulsion base  
(e) An oleic base
- 37. Rectal suppositories intended for adult use usually weigh approximately**
- (a) 1g      (b) 2g  
(c) 3g      (d) 4g  
(e) 5g
- 38. In the fusion method of making cocoa butter suppositories, which substance is most likely to be used to lubricate the mold?**
- (a) Mineral oil      (b) Propylene glycol  
(c) Cetyl alcohol      (d) Stearic acid  
(e) Magnesium silicate
- 39. A very fine powdered chemical is defined as one that**
- (a) Completely passes through a # 80 sieve  
(b) Completely passes through a # 120 sieve  
(c) Completely passes through a # 20 sieve  
(d) Passes through a # 60 sieve and not more than 40% through a # 100 sieve  
(e) Passes through a # 40 sieve and not more than 60% through a # 60 sieve

- 40. Which technique is typically used to mill camphor?**
- (a) Trituration
  - (b) Levigation
  - (c) Pulverization and intervention
  - (d) Geometric dilution
  - (e) Attrition
- 41. Which type of paper best protects a divided hygroscopic powder?**
- (a) Waxed paper
  - (b) Glassine
  - (c) White bond
  - (d) Blue bond
  - (e) Vegetable parchment
- 42. Which capsule size has the smallest capacity?**
- (a) 5
  - (b) 4
  - (c) 1
  - (d) 0
  - (e) 000
- 43. The shells of soft gelatin capsules may be made elastic or plastic-like by the addition of**
- (a) Sorbitol
  - (b) Povidone
  - (c) Polyethylene glycol
  - (d) Lactose
  - (e) pKa of the solution
- 44. Nonionic surface-active agents used as synthetic emulsifiers include**
- (a) Tragacanth
  - (b) Sodium lauryl sulphate
  - (c) Sorbitan esters(spans)
- 45. A ceramic mortar may be preferable to a glass mortar when**
- (a) A volatile oil is added to a powder mixture
  - (b) Colored substances (dyes) are mixed into a powder
  - (c) Comminution is desired in addition to mixing
- 46. Divided powders may be dispensed in**
- (a) Individual-dose packets
  - (b) A bulk container
  - (c) A perforated, sifter-type container
- 47. Agents that may be used to coat enteric coated tablets include**
- (a) Hydroxypropyl methyl cellulose
  - (b) Carboxymethyl cellulose
  - (c) Cellulose acetate phthalate
- 48. For each tablet processing problem listed below, select the most likely reason for the condition**
- (a) Excessive moisture in the granulation
  - (b) Entrapment of air
  - (c) Tablet friability
  - (d) Degraded drug
  - (e) Tablet hardness
- (1) Picking
  - (2) Mottling
  - (3) Capping
  - (4) Sticking
- 49. For each description of a comminution procedure below, select the process that it best describes**
- (a) Trituration
  - (b) Spatulation
  - (c) Levigation
  - (d) Pulverization by intervention
  - (e) Tumbling
- (1) Rubbing or grinding a substance in a mortar that has a rough inner surface
  - (2) Reducing and subdividing a substance by adding an easily removable solvent
  - (3) adding a suitable agent to form a paste and then rubbing or grinding the paste in mortar
- 50. Match the drug product below with the type of controlled-release dosage form that it represents**
- (a) Matrix device
  - (b) Ion-exchange resin complex
  - (c) Hydrocolloid system
  - (d) Osmotic system
  - (e) Coated granules
- (1) Biphenamine Capsules
  - (2) Thorazine Spansule Capsules
  - (3) Valrelease system
  - (4) Slow - K
- 51. The route of drug administration that gives the most rapid onset of the pharmacological effect is**
- (a) Intramuscular injection
  - (b) Intravenous injection
  - (c) Intradermal injection

- (d) Peroral administration  
(e) Subcutaneous injection
- 52. Acidic drugs mainly bind to plasma**
- (a) Albumin  
(b)  $\alpha_1$  – acid glycoprotein  
(c) Both (a) and (b)  
(d) None of the above
- 53. After peroral administration, drugs generally are absorbed best from the**
- (a) Buccal cavity      (b) Stomach  
(c) Duodenum          (d) Ileum  
(e) Rectum
- 54. The passage of drug molecules from a region of high drug concentration to a region of low drug concentration is known as**
- (a) Active transport    (b) Bioavailability  
(c) Biopharmaceutics   (d) Simple diffusion  
(e) Pinocytosis
- 55. What equation describes the rate of drug dissolution from a tablet?**
- (a) Fick's law  
(b) Henderson – Hasselbach equation  
(c) Law of mass action  
(d) Michaelis – Menten equation  
(e) Noyes Whitney equation
- 56. Dose dumping is a problem in the formulation of**
- (a) Compressed tablets  
(b) Modified- release drug products  
(c) Hard gelatin capsules  
(d) Soft gelatin capsules  
(e) Suppositories
- 57. The rate of drug bioavailability is most rapid when the drug is formulated as a**
- (a) Controlled – release product  
(b) Hard gelatin capsule  
(c) Compressed tablet   (d) Solution  
(e) Suspension
- 58. Creatinine clearance is used as a measurement of**
- (a) Renal excretion rate  
(b) Glomerular filtration rate (GFR)  
(c) Active renal secretion  
(d) Passive renal absorption  
(e) Drug metabolism rate
- 59. The earliest evidence that a drug is stored in tissue is**
- (a) An increase in plasma protein binding  
(b) A large apparent volume of distribution ( $V_d$ )  
(c) A decrease in the rate of formation of metabolites by the liver  
(d) An increase in the number of side effects produced by the drug  
(e) A decrease in the amount of free drug excreted in the urine
- 60. The intensity of the pharmacologic action of a drug is most dependent on the**
- (a) Concentration of the drug at the receptor site  
(b) Elimination half-life ( $t_{1/2}$ ) of the drug  
(c) Onset time of the drug after oral administration  
(d) Minimum toxic concentration (MTC) of the drug in plasma  
(e) Minimum effective concentration (MEC) of the drug in the body
- 61. Drug that show nonlinear pharmacokinetics have which property?**
- (a) A constant ratio of drug metabolites is formed as the administered dose increases  
(b) The elimination half-life ( $t_{1/2}$ ) increases as the administered dose increases  
(c) The area under the plasma drug concentration versus time curve (AUC) increases in direct proportion to an increase in the administered dose  
(d) Both low and high doses follow first-order elimination kinetics  
(e) The steady-state drug concentration increases in direct proportion to the dosing rate
- 62. The loading dose ( $D_L$ ) of a drug is usually based on the**
- (a) Total body clearance ( $Cl_T$ ) of the drug  
(b) Percentage of drug bound to plasma proteins

- (c) Fraction of drug excreted unchanged in the urine
- (d) Apparent volume of distribution ( $V_D$ ) and desired drug concentration in plasma
- (e) Area under the plasma drug concentration versus time curve (AUC)

**63. The renal clearance of insulin is used as a measurement of**

- (a) Effective renal blood flow
- (b) Rate of renal drug excretion
- (c) Intrinsic enzyme activity
- (d) Active renal secretion
- (e) Glomerular filtration rate (GFR)

**64. All of the following statements about plasma protein binding of a drug are true except**

- (a) Displacement of a drug from plasma protein binding sites results in a transient increased volume of distribution ( $V_D$ )
- (b) Displacement of a drug from plasma protein binding sites makes more free drug available for glomerular filtration
- (c) Displacement of a potent drug that is normally more than 95% bound may cause toxicity
- (d) Albumin is the major protein involved in protein binding of drugs
- (e) Drugs that are highly bound to plasma proteins generally have a greater  $V_D$  compared with drugs that are highly bound to tissue proteins

**65. \_\_\_\_\_ is expressed in both the intestinal epithelium and the kidney.**

- (a) CYP2D6                      (b) CYP1A1/2
- (c) CYP3A4                      (d) CYP2E1

**66. The initial distribution of a drug into tissue is determined chiefly by the**

- (a) Rate of blood flow to tissue
- (b) Glomerular filtration rate (GFR)
- (c) Stomach emptying time
- (d) Affinity of the drug for tissue
- (e) Plasma protein binding of the drug

**67. Which tissue has the greatest capacity to bio-transform drugs?**

- (a) Brain                          (b) Kidney
- (c) Liver                          (d) Lung
- (e) Skin

**68. The principle of superposition in designing multiple-dose regimens assumes that**

- (a) Each dose affects the next subsequent dose causing nonlinear elimination
- (b) Each dose of drug is eliminated by zero-order elimination
- (c) Steady-state plasma drug concentration are reached at approximately 10 half-lives
- (d) Early doses of drug do not affect subsequent doses
- (e) The fraction of drug absorbed is equal to the fraction of drug eliminated

**69. Which equation is true for a zero-order reaction rate of drug ?**

- (a)  $dA/dt = -k$                       (b)  $t_{1/2} = 0.693/k$
- (c)  $A = A_0 e^{-kt}$

**70. Which of the following functional groups is most susceptible to hydrolysis ?**

- (a)  $R - CO - R$                       (b)  $R - COOR$
- (c)  $R - O - R$                       (d)  $R - NH - CH_3$
- (e)  $R - COOH$

**71. Monomer units of proteins are known as**

- (a) Monosaccharides      (b) Prosthetic groups
- (c) Amino acids              (d) Purines
- (e) Nucleosides

**72. Glucose is a carbohydrate that cannot be hydrolyzed into a simpler substance. It is best described as**

- (a) A sugar                      (b) A monosaccharide
- (c) A disaccharide              (d) A polysaccharide
- (e) An oligosaccharide

**73. All of the following carbohydrates are considered to be polysaccharides except**

- (a) Heparin                      (b) Starch
- (c) Glycogen                      (d) Maltose
- (e) Cellulose

**74. Which of the following compounds are considered the building blocks of nucleic acids ?**

- (a) Nucleotides                      (b) Nucleosides
- (c) Monosaccharides              (d) Purines
- (e) Amino acids



- 75. Which of the following terms best describes a co-factor that is firmly bound to an apoenzyme?**
- (a) Holoenzyme (b) Prosthetic group  
(c) Coenzyme (d) Transferase  
(e) Heteropolysaccharide
- 76. Enzymes that uncouple peptide linkages are best classified as**
- (a) Hydrolases (b) Ligases  
(c) Oxidoreductases (d) Transferases  
(e) Isomerase
- 77. The sugar that is inherent in the nucleic acids RNA and DNA is**
- (a) Glucose (b) Sucrose  
(c) Ribose (d) Digitoxose  
(e) Maltose
- 78. N-oxidation will be involved with the metabolism of following drugs, except**
- (a) Dapsone (b) Meperidine  
(c) Phenytoin (d) Chlorpheniramine
- 79. Which of the following statements describes plasmids? They**
- (a) Are single – stranded DNA molecules  
(b) Carry optional gene(s)  
(c) Carry genes essential for growth  
(d) Are always found in linear form
- 80. Bacteria that grow at temperatures as high as 55°C are known as**
- (a) Psychrophiles (b) Thermophiles  
(c) Mesophiles (d) Auxotrophs
- 81. Which of the following organisms can use only molecular oxygen as the final acceptor?**
- (a) Obligate anaerobes  
(b) Facultative anaerobes  
(c) Obligate aerobes  
(d) Strict anaerobes
- 82. A declining growth rate occurs during which of the following phases of bacterial cell growth?**
- (a) Lag phase (b) Exponential phase  
(c) Stationary phase (d) Death phase
- 83. Which class of antibody has the longest serum half-life and opsonizes antigens for phagocytosis through two different pathways?**
- (a) Immunoglobulin G (IgG)  
(b) Immunoglobulin M (IgM)  
(c) Immunoglobulin A (IgA)  
(d) Immunoglobulin E (IgE)
- 84. Urticaria that appears rapidly after the ingestion of food usually indicates which type of hypersensitivity reaction?**
- (a) Type I (b) Type II  
(c) Type III (d) Type IV
- 85. A patient receives long-term, high-dose therapy with a sulfonamide. After approximately 3 weeks of therapy, the patient has a low-grade fever, rash, and muscle and joint pain. Which type of hypersensitivity accounts for these symptoms?**
- (a) Type I (b) Type II  
(c) Type III (d) Type IV
- 86. CD4<sup>+</sup>T cells specifically recognize antigens in which form?**
- (a) Bound to major histocompatibility (MHC) class I molecules on the surface of any body cell  
(b) In free, soluble form in extracellular fluids  
(c) Bound to MHC class II molecules on the surface of special antigen-presenting cells (APCs)
- 87. Which of the following statements concerning a drug receptor is true?**
- (a) It mediates the nonspecific action of volatile anesthetics  
(b) Its expression is induced only by exogenously added drugs  
(c) It can bind endogenous ligand to produce physiological activity  
(d) It mediates the cathartic activity of magnesium citrate  
(e) Down-regulation of receptor level can lead to sensitization of the target cell to the receptor agonist.

- 88. Which of the following acids has the highest degree of ionization in an aqueous solution?**
- (a) Aspirin  $pK_a = 3.5$
  - (b) Indomethacin  $pK_a = 4.5$
  - (c) Warfarin  $pK_a = 5.1$
  - (d) Ibuprofen  $pK_a = 5.2$
  - (e) Phenobarbital  $pK_a = 7.4$
- 89. Which of the following salts forms an aqueous solution that is alkaline to litmus?**
- (a) Sodium chloride
  - (b) Benzalkonium chloride
  - (c) Meperidine hydrochloride
  - (d) Cefazolin sodium
  - (e) Chlordiazepoxide hydrochloride
- 90. Hydrolysis reaction are involved with the metabolism of following drugs, except**
- (a) Procaine
  - (b) Diazepam
  - (c) Aspirin
  - (d) Lidocaine
- 91. Flurazepam has  $pK_a$  of 8.2. What percentage of flurazepam will be ionized at a urine pH of 5.2?**
- (a) 0.1%
  - (b) 1%
  - (c) 50%
  - (d) 99%
  - (e) 99.9%
- 92. Precipitation may occur when mixing aqueous solutions of meperidine hydrochloride with which of the following solutions?**
- (a) Sodium bicarbonate injection
  - (b) Atropine sulfate injection
  - (c) Sodium chloride injection
- 93. The excretion of a weakly acidic drug generally is more rapid in alkaline urine than in acidic urine. This process occurs because**
- (a) A weak acid in alkaline media will exist primarily in its ionized form, which cannot be reabsorbed easily
  - (b) A weak acid in alkaline media will exist in its lipophilic form, which cannot be reabsorbed easily.
  - (c) All drugs are excreted more rapidly in an alkaline urine.
- 94. Which of the following drugs is considered to be the agent of choice for anaphylactic reactions?**
- (a) Edrophonium
  - (b) Ipratropium
  - (c) Ambenonium
  - (d) Propantheline
  - (e) Homatropine
- 95. Which of the following drugs is considered to be the agent of choice for anaphylactic reactions?**
- (a) Clonidine
  - (b) Isoproterenol
  - (c) Epinephrine
  - (d) Phenylephrine
  - (e) Terbutaline
- 96. Which of the following emissions from the decay of radionuclides is most commonly used in nuclear medicine imaging?**
- (a) X-ray
  - (b) Beta
  - (c) Alpha
  - (d) Gamma
  - (e) Positron
- 97. Which of the following radionuclides is not commonly used in nuclear pharmacy practice?**
- (a)  $^{67}Ga$
  - (b)  $^{201}Tl$
  - (c)  $^{99m}Tc$
  - (d)  $^{123}I$
  - (e)  $^{133}Xe$
- 98. Which of the following radionuclides is generator produced?**
- (a)  $^{99m}Tc$
  - (b)  $^{201}Tl$
  - (c)  $^{67}Ga$
  - (d)  $^{133}Xe$
  - (e)  $^{123}I$
- 99. Abrasives, ingredients in dentifrices, are noted for which of the following actions?**
- (a) Providing flavor
  - (b) Cleansing via a foaming detergent action
  - (c) Removing plaque and debris
  - (d) Preventing dental caries
  - (e) Adding thickness to the product
- 100. The appropriate pH range for ophthalmic products is**
- (a) 2.0 – 3.0
  - (b) 4.0 – 6.0
  - (c) 6.0 – 8.0
  - (d) 8.0 – 10.0



- 101. Which type of contact lens can most easily be ruined by the absorption of chemicals?**  
(a) Hard lenses      (b) Soft lenses  
(c) Gas-permeable lenses
- 102. All of the following desensitizing agents are recommended for sensitive teeth except**  
(a) 10% carbamide peroxide  
(b) 5% potassium nitrate  
(c) Dibasic sodium citrate  
(d) 10% strontium chloride hexahydrate
- 103. Carbamide peroxide appears to soften earwax by**  
(a) Causing oxygen to be released, which loosens the wax  
(b) Stimulating fluid secretion in the ear canal  
(c) Actually dissolving the ear wax  
(d) Decreasing lipid content of the wax  
(e) None of the above
- 104. A common oral problem caused by herpes simplex type I virus (HSV-1) is**  
(a) Aphthous ulcers  
(b) Canker sores  
(c) Aphthous stomatitis  
(d) Fever blisters  
(e) Thrush
- 105. The definition of a surfactant (an ingredient in toothpaste) can best be described by which of the following statements? Surfactant**  
(a) Prevents drying of the preparation  
(b) Removes debris by its detergent action and causes foaming, which is usually desired by the patient  
(c) Physically removes plaque and debris  
(d) Determines the texture, dispersiveness, and appearance of the product  
(e) Adds flavor to the preparation which makes it more appealing to the patient
- 106. Which is not a risk factor for hyperphosphatemia and death from sodium phosphate enemas when used in children?**  
(a) Renal insufficiency  
(b) Hirschsprung's disease  
(c) Anorectal malformations  
(d) Children between the ages of 6 and 12 years
- 107. Which of the following factors is associated with an increased risk of non-compliance in the elderly?**  
(a) Polypharmacy  
(b) Hypertension  
(c) Male gender  
(d) Living with a spouse in an isolated environment  
(e) Expensive medications
- 108. The principal difference between competitive and non-competitive inhibition is**  
(a) Extent of receptor site blocking  
(b) Whether inhibition occurs  
(c) Extent of enzyme inhibition  
(d) Degree of agonism  
(e) None of the above
- 109. Drug administered through which of the following routes is not likely to be subjected to first-pass metabolism:**  
(a) Oral                      (b) Sublingual  
(c) Subcutaneous          (d) Rectal
- 110. Many receptors use distinct hetero \_\_\_\_\_ GTP-binding regulatory proteins**  
(a) Tetrameric              (b) Trimeric  
(c) Dimeric                  (d) Monomeric
- 111. Alkalinization of urine hastens the excretion of**  
(a) Weakly basic drugs  
(b) Weakly acidic drugs  
(c) Strong electrolytes  
(d) Nonpolar drugs
- 112. Majority of drugs cross biological membranes primarily by**  
(a) Weakly basic drugs  
(b) Weakly acidic drugs  
(c) Strong electrolytes  
(d) Nonpolar drugs

- 113. The most important factor which governs diffusion of drugs across capillaries other than those in the brain is**
- (a) Blood flow through the capillary
  - (b) Lipid solubility of the drug
  - (c) pKa value of the drug
  - (d) pH of the medium
- 114. Active transport of a substance across biological membrane has the following characteristics except**
- (a) It is specific
  - (b) It is pH dependent
  - (c) It is saturable
  - (d) It requires metabolic energy
- 115. Bioavailability differences among oral formulations of a drug are most likely to occur if the drug**
- (a) Is freely water soluble
  - (b) Is completely absorbed
  - (c) Is incompletely absorbed
  - (d) Undergoes little first-pass metabolism
- 116. Bioavailability of drug refers to**
- (a) Percentage of administered dose that reaches systemic circulation in the unchanged form
  - (b) Ratio of oral to parental dose
  - (c) Ratio of orally administered drug to that excreted in the faeces
  - (d) Ratio of drug excreted unchanged in urine to that excreted as metabolites
- 117. The most important factor governing absorption of a drug from intact skin is**
- (a) Molecular weight of the drug
  - (b) Site of application
  - (c) Lipid solubility of the drug
  - (d) Nature of the base used in the formulation
- 118. Redistribution is a feature of**
- (a) Highly plasma protein bound drugs
  - (b) Depot preparations
  - (c) Poorly lipid soluble drugs
  - (d) Highly lipid soluble drugs
- 119. Weakly acidic drugs**
- (a) Are bound primarily to  $\alpha_1$  acid glycoprotein in plasma
  - (b) Are excreted faster in alkaline urine
  - (c) Are highly ionized in the gastric juice
  - (d) Do not cross blood—brain barrier
- 120. High plasma protein binding**
- (a) Increases the volume of distribution of the drug
  - (b) Facilitates glomerular filtration of the drug
  - (c) Minimizes drug interactions
  - (d) Generally makes the drug long acting
- 121. Biotransformation of drugs is primarily directed to**
- (a) Activate the drug
  - (b) Inactivate the drug
  - (c) Convert lipid soluble drugs into nonlipid soluble metabolites
  - (d) Convert nonlipid soluble drugs into lipid soluble metabolites
- 122. A prodrug is**
- (a) The prototype member of a class of drugs
  - (b) The oldest member of a class of drugs
  - (c) An inactive drug that is transformed in the body to an active metabolite
  - (d) A drug that is stored in body tissues and is then gradually released in the circulation
- 123. Which of the following cytochrome P450 isoenzymes is involved in the metabolism of a large number of drugs in human beings and has been implicated in some dangerous drug interactions:**
- (a) CYP 3A4
  - (b) CYP 2C9
  - (c) CYP 2E1
  - (d) CYP 1A2
- 124. The most commonly occurring conjugation reaction for drugs and their metabolites is**
- (a) Glucuronidation
  - (b) Acetylation
  - (c) Methylation
  - (d) Glutathione conjugation
- 125. G-protein coupled receptors span the plasma membrane as a bundle of \_\_\_\_\_ alpha helices**
- (a) One
  - (b) Three
  - (c) Seven
  - (d) Ten

- 126. Which of the following drug metabolizing reactions is entirely nonmicrosomal**
- (a) Glucuronide conjugation
  - (b) Acetylation
  - (c) Oxidation
  - (d) Reduction
- 127. Induction of drug metabolizing enzymes involves**
- (a) A conformational change in the enzyme protein to favor binding of substrate molecules
  - (b) Expression of enzyme molecules on the surface of hepatocytes
  - (c) Enhanced transport of substrate molecules into hepatocytes
  - (d) Increased synthesis of enzyme protein
- 128. Drugs which undergo high degree of first-pass metabolism in liver**
- (a) Have oral bioavailability
  - (b) Are excreted primarily in bile
  - (c) Are contraindicated in liver disease
  - (d) Exhibit zero order kinetics of elimination
- 129. Glomerular filtration of a drug is affected by its**
- (a) Lipid solubility
  - (b) Plasma protein binding
  - (c) Degree of ionization
  - (d) Rate of tubular secretion
- 130. If a drug undergoes net tubular secretion, its renal clearance will be**
- (a) More than the glomerular filtration rate
  - (b) Equal to the glomerular filtration rate
  - (c) Less than the glomerular filtration rate
  - (d) Equal to the rate of urine formation
- 131. Which of the following is not a primary/fundamental, but a derived pharmacokinetic parameter**
- (a) Bio-availability
  - (b) Volume of distribution
  - (c) Clearance
  - (d) Plasma half life
- 132. If a drug is eliminated by first order kinetics**
- (a) A constant amount of the drug will be eliminated per unit time
  - (b) Its clearance value will remain constant
  - (c) Its elimination half-life will increase with dose
  - (d) It will be completely eliminated from the body in 2 x half-life period
- 133. If a drug has a constant bio-availability and first order elimination, its maintenance dose rate will be directly proportional to its**
- (a) Volume of distribution
  - (b) Plasma protein binding
  - (c) Lipid solubility
  - (d) Total body clearance
- 134. The following dose of a drug is governed by its**
- (a) Aqueous diffusion
  - (b) Aqueous hydrolysis
  - (c) Lipid diffusion
  - (d) Pinocytosis or endocytosis
- 135. Monitoring plasma drug concentration is useful while using**
- (a) Antihypertensive drugs
  - (b) Levodopa
  - (c) Lithium carbonate
  - (d) MAO inhibitors
- 136. Microsomal enzyme induction has one of the following features**
- (a) Takes about one week to develop
  - (b) Results in increased affinity of the enzyme for the substrate
  - (c) It is irreversible
  - (d) Can be used to treat acute drug poisonings
- 137. Which of the following is a competitive type of enzyme inhibitor**
- (a) Acetazolamide
  - (b) Disulfiram
  - (c) Physostigmine
  - (d) Theophylline
- 138. What is true in relation to drug receptors**
- (a) All drugs act through specific receptors
  - (b) All drug receptors are located on the surface of the target cells
  - (c) Agonists induce a conformational change in the receptor

- (d) Partial agonists have low affinity for the receptor
- 139. A partial agonist can antagonize the effects of a full agonist because it has**
- (a) High affinity but low intrinsic activity
  - (b) Low affinity but high intrinsic activity
  - (c) No affinity and low intrinsic activity
  - (d) High affinity but no intrinsic activity
- 140. Receptor agonists possess**
- (a) Result in increased smooth endoplasmic reticulum
  - (b) Result in increased rough endoplasmic reticulum
  - (c) Result in decreased enzymes in the soluble cytoplasmic fraction
  - (d) Require 3–4 months to reach completion
- 141. Agonists affect the receptor molecule in the following manner**
- (a) Alter its amino acid sequence
  - (b) Denature the receptor protein
  - (c) Alter its folding or alignment of subunits
  - (d) Induce covalent bond formation
- 142. Receptors perform the following function/ functions**
- (a) Ligand recognition
  - (b) Signal transduction
  - (c) Both ligand recognition and signal transduction
  - (d) Disposal of agonists and antagonists
- 143. Which of the following receptor types has 7 helical membrane, spanning amino acid segments with 3 extracellular and 3 intracellular loops**
- (a) Tyrosine protein kinase receptor
  - (b) Gene expression regulating receptor
  - (c) Intrinsic ion channel containing receptor
  - (d) G protein coupled receptor
- 144. Which of the following is a G protein coupled receptor**
- (a) Muscarinic cholinergic receptor
  - (b) Nicotinic cholinergic receptor
  - (c) Glucocorticoid receptor
  - (d) Insulin receptor
- 145. Placebo effects result presumably from the**
- (a) Physician-patient relationship
  - (b) Mental set up imparted by the therapeutic settings
  - (c) Mental set up imparted by the physician
  - (d) All of the above
- 146. All of the following subserve as intracellular second messengers in receptor mediated signal transduction except**
- (a) Cyclic AMP
  - (b) Inositol trisphosphate
  - (c) Diacyl glycerols
  - (d) G protein
- 147. A receptor which itself has enzymatic property is**
- (a) Insulin receptor
  - (b) Progesterone receptor
  - (c) Thyroxine receptor
  - (d) Glucagon receptor
- 148. Down regulation of receptors can occur as a consequence of**
- (a) Continuous use of agonists
  - (b) Continuous use of antagonists
  - (c) Chronic use of CNS depressants
  - (d) Denervation
- 149. When therapeutic effects decline both below and above a narrow range of doses, a drug is said to exhibit**
- (a) Ceiling effect
  - (b) Desensitization
  - (c) Therapeutic window phenomenon
  - (d) Nonreceptor mediated action
- 150. 'Drug efficacy' refers to**
- (a) The range of diseases in which the drug is beneficial
  - (b) The maximal intensity of response that can be produced by the drug
  - (c) The therapeutic dose range of the drug
  - (d) The therapeutic index of the drug

- 151. If the dose-response curves of a drug for producing different actions are widely separated on the dose axis, the drug is**
- (a) Highly potent      (b) Highly efficacious  
(c) Highly toxic      (d) Highly selective
- 152. The therapeutic index of a drug is a measure of its**
- (a) Safety      (b) Potency  
(c) Efficacy      (d) Dose variability
- 153. If the effect of combination of two drugs is equal to the sum of their individual effects, the two drugs are exhibiting**
- (a) Potentiation      (b) Synergism  
(c) Cross tolerance      (d) Antagonism
- 154. The antagonism between adrenaline and histamine is called 'Physiological antagonism' because**
- (a) Both are physiologically present in the body  
(b) They act on physiological receptors  
(c) Both affect many physiological processes  
(d) They have opposite physiological effects
- 155. A drug 'R' producing no response by itself causes the log dose-response curve of another drug 'S' to shift to the right in a parallel manner without decreasing the maximal response : Drug 'R' is a**
- (a) Partial agonist  
(b) Inverse agonist  
(c) Competitive antagonist  
(d) Noncompetitive antagonist
- 156. A drug which does not produce any action by itself but decreases the slope of the log dose-response curve and suppresses the maximal response to another drug is a**
- (a) Physiological antagonist  
(b) Competitive antagonist  
(c) Noncompetitive antagonist  
(d) Partial agonist
- 157. A drug which is generally administered in standard doses without the need for dose individualization is**
- (a) Insulin      (b) Mebendazole  
(c) Prednisolone      (d) Digoxin
- 158. A fixed dose combination preparation meant for internal use must not contain the following class of drug**
- (a) Thiazide diuretic  
(b) Fluoroquinolone antimicrobial  
(c) Corticosteroid  
(d) H<sub>2</sub> blocker
- 159. Interindividual variations in equieffective doses of a drug are most marked if it is disposed by**
- (a) glomerular filtration  
(b) Tubular secretion  
(c) Both (a) and (b)  
(d) Hepatic metabolism
- 160. The pharmacokinetics of drugs in the neonate differs from that in adults, because their**
- (a) Intestinal transit is fast  
(b) Glomerular filtration rate is high  
(c) Tubular transport mechanisms are not well developed  
(d) Drug metabolizing enzymes are overactive
- 161. Pharmacodynamic tolerance may involve changes in \_\_\_\_ of drug receptors**
- (a) Number      (b) Affinity  
(c) Function      (d) All the above
- 162. Drug metabolism can be induced by the following factors except**
- (a) Cigarette smoking  
(b) Acute alcohol ingestion  
(c) Exposure to insecticides  
(d) Consumption of charcoal boiled meat
- 163. Which of the following is true of placebos**
- (a) Placebo is a dummy medication  
(b) Placebo is the inert material added to the drug for making tablets  
(c) Placebos do not produce any effect  
(d) All patients respond to placebos
- 164. In patients of hepatic cirrhosis**
- (a) The extent of change in pharmacokinetics of drugs can be predicted from the values of liver function tests

- (b) High doses of furosemide can be safely used  
(c) Metformin is the preferred oral hypoglycaemic  
(d) Disposition of atenolol is not significantly affected
- 165. An undesirable effect of a drug that occurs at therapeutic doses and can be predicted from its pharmacological actions is called**
- (a) Side effect (b) Toxic effect  
(c) Allergic reaction (d) Idiosyncrasy
- 166. Which of the following is a type II (unpredictable) adverse drug reaction**
- (a) Side effect  
(b) Toxic effect  
(c) Idiosyncrasy  
(d) Physical dependence
- 167. A 'toxic effect' differs from a 'side effect' in that**
- (a) It is not a pharmacological effect of the drug  
(b) It is a more intense pharmacological effect that occurs at high dose or after prolonged medication  
(c) It must involve drug induced cellular injury  
(d) It involves host defence mechanisms
- 168. Which of the following statements is true in relation to 'drug toxicity' and 'poisoning'**
- (a) The two terms are synonymous  
(b) When a toxic effect requires specific treatment, it is called poisoning  
(c) A toxic effect which endangers life by markedly affecting vital functions is called poisoning  
(d) Toxicity is caused by drugs while poisoning is caused by other harmful chemicals
- 169. The most vulnerable period of pregnancy for the causation of foetal malformations due to drugs is**
- (a) 18–55 days of gestation  
(b) 56–84 days of gestation  
(c) Second trimester  
(d) 36 weeks onwards
- 170. Which of the following is a proven human teratogen**
- (a) Chloroquine (b) Warfarin sodium  
(c) Dicyclomine (d) Methyldopa
- 171. Select the drug which has been found to be a strong human teratogen**
- (a) Isoniazid (b) Isotretinoin  
(c) Hydralazine (d) Propylthiouracil
- 172. Oral route**
- (a) Yields better absorption than parenteral administration for majority of drugs  
(b) Should be avoided in the recumbent position  
(c) Has no demerit  
(d) Produces quick onset of action
- 173. Intramuscular route**
- (a) Always produces faster absorption than oral route  
(b) Can be used to inject mild irritants  
(c) In a child is made into the gluteus maximus muscle  
(d) Can be used to inject a volume of 15 ml
- 174. Advantage of sublingual route include the following except**
- (a) It has a rapid onset of action  
(b) Spitting out the tablet can terminate its action  
(c) Its usefulness is limited to treat local conditions  
(d) It avoids first pass hepatic metabolism
- 175. First pass metabolism**
- (a) Can increase the oral bio-availability of the drug  
(b) Occurs only in the liver  
(c) Is higher on intravenous administration  
(d) Necessitates high oral dose for certain drugs
- 176. Bio-transformation**
- (a) Renders the drug more lipid soluble  
(b) Can be altered by drugs  
(c) Is necessary for all drugs for their elimination  
(d) Takes place only in the liver
- 177. Entry of a drug in the central nervous system is enhanced if the drug is**
- (a) Ionized  
(b) More lipid soluble  
(c) Given intravenously  
(d) Highly plasma protein bound



- 178. Kinetic processes of elimination for a large number of drugs is**
- (a) First order
  - (b) First order followed by zero order
  - (c) Zero order followed by first order
  - (d) Zero order
- 179. A drug is said to be potent when**
- (a) It produces maximal response
  - (b) The amount needed to produce a certain response is less
  - (c) It produces minimal/no side effects
  - (d) It has a rapid onset of action
- 180. Spare receptors are often found among drugs that elicit**
- (a) Smooth muscle contraction
  - (b) Smooth muscle relaxation
  - (c) Secretion
  - (d) Cardiac stimulation
- 181. What is the best criterion for judging the therapeutic superiority of a drug over its congeners?**
- (a) Potency
  - (b) Wide range of activity
  - (c) Efficacy
  - (d) Variability
- 182. pKa of a compound**
- (a) Is the pH of solution at which the compound is 50% ionized
  - (b) Is the pH of compound at which it is 50% ionized
  - (c) Is the time in which the compound is ionized
  - (d) Is the time in which total compound is ionized
- 183. Pharmacokinetics is**
- (a) The study of absorption, distribution, metabolism and excretion of drugs
  - (b) The study of biological and therapeutic effects of the drugs
  - (c) The method of development of new pharmacological agent
  - (d) The study of carcinogenic activity of a new drug
- 184. In which form the drug is absorbed more rapidly?**
- (a) In aqueous solution
  - (b) In suspension
  - (c) In oily solution
  - (d) In solid form
- 185. Alcohol is rapidly absorbed from the intestine because**
- (a) It is lipid soluble and non-electrolyte
  - (b) It is lipid soluble and highly ionised
  - (c) It is absorbed by active transport
  - (d) It is not absorbed quickly
- 186. After intramuscular injection, the drugs**
- (a) In oily solution are more rapidly absorbed
  - (b) In aqueous solution are more rapidly absorbed
  - (c) Suspended in various repository vehicles are more rapidly absorbed
  - (d) All solutions are rapidly absorbed
- 187. Bio-availability of a drug is**
- (a) The percentage of drug released from a formulation that becomes available for biological effect
  - (b) The percentage of drug that is ionized from a formulation
  - (c) The net amount of actual therapeutic agent present in the formulation
  - (d) The dose of a drug by which 50% animals show signs of toxicity
- 188. The absorption time of a drug can be reduced by**
- (a) Making a more soluble salt – for oral
  - (b) By using hyaluronidase – for injection
  - (c) By using vasoconstrictor substances
  - (d) By giving combination of drugs
- 189. Reduction of heavy metal toxicity by dimercaprol is an example of**
- (a) Chemical antagonist
  - (b) Physiological antagonist
  - (c) Pharmacokinetic antagonist
  - (d) Antagonism by receptor block
- 190. Which of the following drugs is primarily stored in the natural fat of the body**
- (a) Primaquine
  - (b) Acetyl salicylic acid
  - (c) Thiopentone
  - (d) Vitamin C

- 191. Bio-transformation of the drugs is to render them**
- (a) Less lipid soluble
  - (b) More protein bound
  - (c) Less ionized
  - (d) Less protein bound
- 192. Drug metabolism occurs chiefly in**
- (a) Liver
  - (b) Brain
  - (c) Spleen
  - (d) Kidneys
- 193. For renal excretion the factors important are**
- (a) Extent of plasma protein binding of drugs
  - (b) Glomerular filtration rate
  - (c) Active renal tubular reabsorption
  - (d) All of the above
- 194. If tubular urine is made more acid**
- (a) Excretion of weak acid is reduced
  - (b) Excretion of weak acid is increased
  - (c) Excretion of weak base is increased
  - (d) Excretion of weak base is reduced
- 195. Simultaneous administration of two drugs may – (select the false statement)**
- (a) Show an additive effect
  - (b) Produce synergism
  - (c) Result in antagonism
  - (d) Produce any of above phenomena
- 196. The advantages of bio-assay over chemical assay include – (select false statement)**
- (a) It is cheaper
  - (b) The active principal does not have to be known
  - (c) The active principal does not have to be in a pure state
  - (d) The sensitivity may be greater
- 197. In presence of competitive antagonist**
- (a) The maximum response of agonist can never be achieved
  - (b) The maximum can be achieved by increasing the concentration activity
  - (c) Maximum can be achieved only if the antagonist is having intrinsic activity
  - (d) None of the above
- 198. The receptor concept was first introduced by**
- (a) J.N. Langley in 1878
  - (b) Paul Ehrlich in 1926
  - (c) Somonis in 1964
  - (d) Wakesman in 1826
- 199. True tolerance develops because of**
- (a) Diminution in absorption
  - (b) Rapid excretion of the drug
  - (c) Both of the above
  - (d) None of the above
- 200. Two drugs binding to the same receptors is**
- (a) Chemical antagonism
  - (b) Pharmacokinetic antagonism
  - (c) Competitive antagonism
  - (d) Non-competitive antagonism
- 201. Tachyphylaxis is**
- (a) A drug interaction between two similar types of drugs
  - (b) Rapidly developing tolerance
  - (c) A synergism between two types of drugs
  - (d) None of the above
- 202. Drug A in a dose of 10 mg produces same response as with 100 mg of drug B**
- (a) Drug A is 10 times more potent than drug B
  - (b) Drug B is 10 times more potent than drug A
  - (c) Drug A is 10 times more efficacious than drug B
  - (d) Both are equally potent
  - (e) Both are equally efficacious
- 203. Teratogenicity is**
- (a) The acute reaction to drugs
  - (b) Intolerance to drugs
  - (c) Tumour forming action of the drugs
  - (d) Malformation of the foetus
- 204. The chances of foetal malformation with a teratogenic drug is maximum**
- (a) During first trimester of pregnancy
  - (b) During second trimester of pregnancy
  - (c) During third trimester of pregnancy
  - (d) When given just prior to the labor



- 205. Phocomelia is a known teratogenic effect of**
- Anticancer drugs
  - Antiviral drugs
  - Antiepileptic drugs
  - Thalidomide
- 206. Which of the following drugs are known to cause toxic cataract?**
- Chloroquine
  - Ergot
  - Phenothiazine
  - Naphthalene
  - All of the above
- 207. The passage of drugs into the foetus from placenta**
- Is by active transport
  - Is by passive diffusion
  - Is by carrier mediated transport
  - By any of the above methods
- 208. Idiosyncrasy reaction of a drug is**
- A type of hypersensitivity reaction
  - A type of drug antagonism
  - Unpredictable, inherent, qualitatively abnormal reaction of a drug
  - Quantitatively exaggerated response
- 209. Two drugs having similar effects are termed as**
- Heterergic drugs
  - Isomer drugs
  - Homergic drugs
  - Antagonistic drugs
- 210. If the combined effect of two drugs acting by the same mechanism is equal to the allegeric sum of their individual effect, it is called as**
- Antagonism
  - Additive effect
  - Potiation
  - None of the above
- 211. Antagonism between barbiturate and amphetamine is termed as**
- Non-competitive antagonism
  - Physiological antagonism
  - Competitive antagonism
  - Synergism
- 212. Which one of the following is an example of physical or chemical interaction?**
- Warfarin plus salicylates—prolongation of anticoagulant effect and bleeding tendency
  - Methotrexate plus sulfonamides—pancytopenia
  - Heparin plus protamine—reversal of heparin effect
  - Sulfonamides plus salicylate—sulfa toxicity
- 213. First order kinetics of the drugs is called when**
- A constant fraction of the drug is removed in per unit time
  - A constant amount of the drug is removed in per unit time
  - Total amount of the drug is removed in one hour
  - Total amount of the drug is removed in first passage through the kidneys
- 214. For the drugs which follow first order kinetics, after 4 half life the elimination will be approximately**
- 40%
  - 94%
  - 25%
  - 4%
- 215. Passive diffusion of a drug across cell membrane is low when its molecular mass is greater than**
- 50–100 Da
  - 100–200 Da
  - 200–300 Da
  - 300–400 Da
- 216. Passage of drug across most capillary endothelial membranes is dependent upon**
- Lipid solubility
  - pH gradient
  - Blood flow
  - All of the above
- 217. Following receptors are membrane proteins, except**
- Receptors for fast neurotransmitters, coupled directly to an ion channel
  - Receptors for many hormones and slow transmitters, coupled to effector system
  - Receptor for insulin and various growth factors, which are directly linked linked to tyrosine kinase
  - Receptors for steroid hormone

- 218. pH difference between extracellular and intracellular fluid is**  
(a) Nil (b) 0.2  
(c) 0.4 (d) 0.8
- 219. Which type of drugs penetrate CNS better**  
(a) Lipid soluble (b) Weak acids  
(c) Weak bases (d) All equally
- 220. Acidic drugs mostly bind to plasma**  
(a) Albumin (b) Globulin  
(c) Glycoprotein (d) None of the above
- 221. The number of P<sub>450</sub> gene families identified in human being is**  
(a) 4 (b) 8  
(c) 12 (d) 16
- 222. The majority of drug biotransformation occurs by which cytochrome family**  
(a) CYP<sub>1</sub> (b) CYP<sub>2</sub>  
(c) CYP<sub>3</sub> (d) None of the above
- 223. Nonlinearity in pharmacokinetics of a drug is due to saturation of**  
(a) Protein binding  
(b) Hepatic metabolism  
(c) Active renal transport  
(d) All of the above
- 224. Which of the following disease is due to G protein receptor malfunction**  
(a) Precocious puberty  
(b) Retinitis pigmentosa  
(c) Malignant hyperthyroidism  
(d) All of the above
- 225. The pharmacokinetic alternations in elderly are due to**  
(a) Reduction in lean body mass and total body water  
(b) Increase in percentage of body fat  
(c) Reduced cytochrome P<sub>450</sub> enzymes  
(d) All of the above
- 226. The effect of enzyme induction is greatest when the drug is given**  
(a) Digoxin (b) Furosemide  
(c) Enalapril (d) Amrinone
- 227. The hepatic enzyme inducer naringenin is present in**  
(a) Tobacco smoke (b) Grape juice  
(c) Alcohol (d) Apple Juice
- 228. In gene transfer which metal particle is often used**  
(a) Iron (b) Gold  
(c) Platinum (d) Mobybdenum
- 229. Slow reacting substance of anaphylaxis refers to**  
(a) LTC<sub>4</sub> (b) LTD<sub>4</sub>  
(c) Both of the above (d) None of the above
- 230. Drugs producing allergic reaction generally act as**  
(a) Complete antigens  
(b) Haptens  
(c) Antibodies  
(d) Mediators
- 231. An addicting drug which produces little or no physical dependence is**  
(a) Amphetamine (b) Methadone  
(c) Phenobarbitone (d) Diazepam
- 232. Which of the following statements regarding therapeutic window is correct ?**  
(a) The ratio of LD<sub>50</sub> to the ED<sub>50</sub>  
(b) The Dosage range between the minimum effective therapeutic concentration and the minimum toxic concentration  
(c) Both the above  
(d) None of the above
- 233. Which of the following statements regarding acid -base balance is not correct ?**  
(a) it is an essential balance between the amount of carbonic acid and biocarbonate in blood.  
(b) It must be kept constant so that the hydrogen in concentration in the blood plasma is in turn kept constant  
(c) Any deviation in the balance can have a profound effect on physiological function  
(d) All the above  
(e) None of the above

- 234. During liver disease the metabolism and elimination of which of the following drugs is decreased**
- Morphine
  - Pentobarbitone
  - Propranolol
  - All the above
  - None of the above
- 235. In celiac disease oral absorption of which of the following drugs is decreased**
- Amoxicillin
  - Cephalexin
  - Cotrimoxazole
  - All the above
- 236. Which people are said to be slowest acetylators because they metabolize isoniazid by the process of acetylation very slowly**
- Canadian Eskimos
  - Indians
  - Asiatic Jews
  - Chinese
  - Europeans
  - all the above
- 237. Which people are said to be fastest acetylators because they metabolize isoniazid by the process of acetylation very quickly**
- Canadian Eskimos
  - Indians
  - Asiatic Jews
  - Chinese
  - Europeans
  - all the above
- 238. Clearance of which of the following drugs is reduced parallel to decrease in the creatine clearance**
- Aminoglycosides
  - Digoxin
  - Phenobarbitone
  - All the above
  - None of the above
- 239. Pharmaceutical factors which can modify the effect of drug are**
- Formulation type
  - Bioavailability
  - Bioequivalence
  - Fixed Dose combination
  - All the above
  - None of the above
- 240. Following statement is true about receptors linked directly to ion channels**
- These receptors are involved mainly in fast synaptic transmission
  - These are monomeric proteins containing one transmembrane segment
  - Ligand binding and channel opening occur on a minute time-scale
  - All of the above
- 241. Route of administration suitable for emergency and permits titration of the dosage as well is**
- Oral
  - Intravenous
  - Intramuscular
  - Subcutaneous
  - All the above
  - None of the above
- 242. The disadvantage of oral route is**
- Vomiting as a result of gastrointestinal irritation
  - Destruction of some drugs by the digestive enzyme and non-favorable gastric pH
  - Irregularities in the absorption in the presence of the food and other drugs
  - Patient non-compliance
  - All the above
  - None of the above
- 243. Drugs which have a tendency to accumulate in the body fat mostly have**
- Extremely high lipid-water partition coefficient
  - Extremely low lipid-water partition coefficient
  - None of the above
- 244. Once the drug enters the blood, the rate at which it subsequently penetrates the tissues and other body fluids depends on**
- Capillary permeability
  - Extent of plasma protein and tissue binding
  - Transport mechanism

- (d) All the above  
(e) None of the above
- 245. Factor which can effect the absorption of drug is**  
(a) Dissolution rate (b) Particle Size  
(c) Lipid Solubility (d) All the above  
(e) None of the above
- 246. The movement of drug molecules across the cell membrane is by**  
(a) Diffusion through the lipid  
(b) Diffusing through aqueous pores that traverse the lipid  
(c) Combination with a carrier molecule which acts as a catalyst  
(d) Pinocytosis  
(e) All the above  
(f) None of the above
- 247. Which of the following responses develops to drugs due to antigen-antibody reaction ?**  
(a) Toxic response  
(b) Idiosyncratic response  
(c) Allergic response  
(d) None of the above
- 248. The microsomal oxidation of drugs is carried out through a larger or smaller extent in**  
(a) Liver (b) Kidney  
(c) Lung (d) small intestine  
(e) all of the above
- 249. The mechanism of Biotransformation of Aspirin to Salicylic acid and Acetic acid is**  
(a) Oxidation (b) Reduction  
(c) Hydrolysis (d) None of the above
- 250. Which one of the statements regarding microsomal enzymes is not correct**  
(a) They lack specificity  
(b) Capable of metabolizing substances of different structure  
(c) Only catalyze reaction of compounds which are lipid insoluble  
(d) All the above
- 251. Which one of the following is a Phase II – Drug metabolizing reaction**  
(a) Oxidation (b) Reduction  
(c) Acetylation (d) All the above
- 252. The metabolic reaction which makes the metabolite of codeine more Pharmacologically potent analgesic is**  
(a) Dealkylation (b) Oxidation  
(c) Deamination (d) All the above
- 253. Prodrug**  
(a) Facilitates absorption and distribution of drugs with poor lipid solubility  
(b) Increases the duration of action of drugs that are rapidly eliminated  
(c) Promotes Site specific delivery of drugs  
(d) All the above
- 254. The removal of oxygen or an alteration in a drug which leads to a decrease in the proportion of oxygen in the drug compound is known as**  
(a) Oxidation (b) Reduction  
(c) Hydrolysis (d) All the above
- 255. Excipients are**  
(a) Pharmacologically inert substances  
(b) Used to mask an unpleasant taste  
(c) Used to increase solubility or stability to the agent  
(d) Employed to add bulk to the active agent used in small quantities  
(e) All the above
- 256. Bio-assay is used to**  
(a) Determine the relationship between the dose administered and the magnitude of response  
(b) Determine the potency of a new agent compared with that of an established drug  
(c) Determine the relationship between the doses producing a desired effect and those eliciting undesirable or toxic effect  
(d) All the above  
(e) None of the above
- 257. Which of the following endogenous compounds undergo methylation ?**  
(a) Histamine (b) Estradiol  
(c) Thyroxine (d) All the above  
(e) None of the above

- 258. Which one of the following statements regarding glucuronide conjugation is not correct**
- The most frequently occurring reactions
  - The conjugating agent is glucuronic acid,  $C_6H_{10}O_6$
  - The glucuronide are rapidly eliminated in the urine
  - The glucuronides are also secreted in the bile, but this does not always lead to their elimination in the feces
  - All the above
  - None of the above
- 259. Which of the following therapeutic systems provides continuous, unattended, controlled drug input for a long period without gastrointestinal or hepatic drug inactivation prior to systemic circulation ?**
- Parenteral
  - Oral
  - Transdermal
  - All the above
  - None of the above
- 260. The translocation of a solute from one side of a biologic barrier to the other side and the transferred solute appearing in the same form on both side of the biological barrier is known as**
- Bioavailability
  - Biotransport
  - Bioequivalence
  - None of the
- 261. Guanine nucleotides bind to the \_\_\_\_\_ subunit of G-proteins**
- $\alpha$
  - $\beta$
  - $\gamma$
  - All the above
- 262. Pharmacodynamics include**
- The biological effects produced by chemicals
  - The site/s and mechanism by which the biological effects are produced
  - The factors that effect the safety and effectiveness of the agent
  - All the above
  - None of the above
- 263. The person who set forth the principles that drugs are effective only after reaching a responsive tissue and that there is a relationship between the structure of drugs and the effects that they produce**
- Paracelsus
  - William Harvey
  - James Blake
  - Rudolf Buccheim
  - None of the above
- 264. The great scientist who explained the circulation of the blood to the world which signaled of the beginning of the scientific study of the medical sciences was**
- Paracelsus
  - William Harvey
  - James Blake
  - Rudolf Buccheim
  - None of the above
- 265. All the below mentioned drugs cause enzyme inhibition in man except one**
- Acetazolamide
  - Allopurinol
  - Meprobamate
  - Disulfiram
  - Selegiline
- 266. All the below mentioned drugs cause enzyme induction in man except one**
- Phenytoin
  - Phenobarbitone
  - Griseofulvine
  - Enalapril
  - Rifampicin
- 267. Cimetidine potentiates the action of propranolol, theophylline, warfarin and phenytoin because**
- It causes deficiency of G - 6-PD
  - It blocks the H<sub>2</sub> – histaminergic receptors
  - It is an inhibitor of microsomal P-450
  - None of the above
- 268. The incidence of adverse drug reaction rises with age in the adult, especially after 65 years because of**
- The increasing number of drugs they need to take because they tend to have multiple diseases
  - Poor compliance with dosing regimens
  - Bodily changes of aging that require modification of dosage regimens
  - All the above
  - None of the above
- 269. Agranulocytosis is**
- Virtual absence from the blood of white cells known as neutrophils

- (b) It is a life-threatening conditions that results from toxic damage to the bone-marrow by some drugs
- (c) Can be treated with antibiotics and sometimes transfusion of white blood cells
- (d) All the above

**270. Characteristically following oral administration to a man, drugs**

- (a) Are absorbed readily when in the unionized rather than in the ionized form
- (b) Are absorbed primarily in the intestine
- (c) Cross membranes mainly by simple diffusion
- (d) With high lipid solubility readily penetrate into CNS
- (e) All the above

**271. Competitive antagonists**

- (a) Dissociate from receptors faster than their respective agonists
- (b) Alter the shape of the log dose response curve of an agonist
- (c) According to the rate theory have low dissociation rate constants
- (d) Initiate the opposite cellular response to receptor occupancy to that obtained by the agonist
- (e) All the above

**272. A non-competitive antagonist**

- (a) Alters the mechanism of action of an agonist
- (b) Alters the potency of an agonist
- (c) Shifts the dose-response curve of an agonist to the right
- (d) Decreases the maximum response to an agonist
- (e) None of the above

**273. Repeated administration of a drug may**

- (a) Increase its own metabolism
- (b) Increase the metabolism of other drugs
- (c) Increase the metabolism of endogenous compounds
- (d) All the above
- (e) None of the above

**274. Plasma concentration is useful for**

- (a) Drugs with high safety margin

- (b) Drugs with low safety margin
- (c) Drugs activated in the body
- (d) Hit and run drugs

**275. During competitive equilibrium type of antagonism**

- (a) Equilibrium constant ( $K_m$ ) is unchanged, but total number of binding sites ( $V_{max}$ ) is reduced
- (b) Equilibrium constant ( $K_m$ ) is increased and total number of binding sites ( $V_{max}$ ) is reduced
- (c) Equilibrium constant ( $K_m$ ) is increased and total number of binding sites ( $V_{max}$ ) remain unchanged
- (d) None of the above

**276. Addition of oxygen or negatively charged radical and removal of hydrogen or positively charged radical is known as**

- (a) Reduction
- (b) Oxidation
- (c) Acetylation
- (d) Hydrolysis
- (e) None of the above

**277. Pharmacopoeia includes list of established drugs and medicinal preparation with the description of their**

- (a) Physical properties
- (b) Identification test
- (c) Purification test
- (d) Potency test
- (e) All the above

**278. Claude Bernard is known as**

- (a) Father of Medicine
- (b) Father of Pharmacognosy
- (c) Father of Polypharmacy
- (d) Father of Pharmacology
- (e) Father of Experimental Medicine

**279. Oswald Schmiedeberg is known as**

- (a) Father of Medicine
- (b) Father of Pharmacognosy
- (c) Father of Polypharmacy
- (d) Father of Pharmacology
- (e) Father of Experimental Medicine

**280. Catalytic conversion of GTP to GDP is carried out by \_\_\_\_\_ subunit of G-proteins**

- (a)  $\alpha$
- (b)  $\beta$
- (c)  $\gamma$
- (d) All the above



**281. Theophrastus is known as**

- (a) Father of Medicine
- (b) Father of Pharmacognosy
- (c) Father of Polypharmacy
- (d) Father of Pharmacology
- (e) Father of Experimental Medicine

**282. Hippocrates is known as**

- (a) Father of Medicine
- (b) Father of Pharmacognosy
- (c) Father of Polypharmacy
- (d) Father of Pharmacology
- (e) Father of Experimental Medicine

**283. When a drug lacking effect of its own increases the effects of the second active drug [0 + 1 = >1]; such an effect is called**

- (a) Additive effect
- (b) Synergism
- (c) Potentiation

**284. When two drugs with the same effect produce an effect greater than the sum of the effects of individual drugs [1 + 1 > 2]; such an effect is called**

- (a) Additive effect
- (b) Synergism
- (c) Potentiation

**285. Weak acids ionize more in**

- (a) Alkaline pH
- (b) Acidic pH
- (c) Not dependent of pH

**286. Theophylline has shorter half life in infants and children because**

- (a) Renal tubular secretory mechanism is deficient
- (b) Immaturity of the nephron
- (c) Immaturity of the blood-brain barrier
- (d) Reduced plasma - protein binding
- (e) Liver size larger on a body weight basis

**287. An antagonist has**

- (a) Intrinsic activity and no affinity
- (b) Only intrinsic activity and no affinity
- (c) No intrinsic activity and no affinity
- (d) Affinity same as agonist and devoid of intrinsic activity
- (e) None of the above

**288. Acetylcholine and atropine action on the muscarinic receptors is a classical example of**

- (a) Competitive antagonism
- (b) Non-competitive antagonism
- (c) Non-equilibrium antagonism
- (d) Physiological antagonism
- (e) Chemical antagonism

**289. Biological half-life of is calculated as**

- (a)  $t_{1/2} = 0.693 \times CL/Vd$
- (b)  $t_{1/2} = 0.693 \times K/\ln 2$
- (c)  $t_{1/2} = 0.693 \times Vd/CL$
- (d)  $t_{1/2} = 0.693 \times \ln 2/K$
- (e) None of the above

**290. Following statement is true regarding therapeutic index**

- (a) It is based on animal toxicity data
- (b) It reflects forms of toxicity that are important clinically
- (c) It takes into account idiosyncratic toxic reaction
- (d) All the above

**291. Ocuserts are**

- (a) Placed under the eyelid
- (b) Intrauterine contraceptives
- (c) Monoclonal antibodies
- (d) None of the above

**292. Nitroglycerin is given in angina pectoris by sublingual route because:**

- (a) Liver is by-passed
- (b) Can be spat after desired effect
- (c) Rapid absorption
- (d) Non irritant and lipid soluble drug
- (e) All the above

**293. Volatile drug may be best administered by:**

- (a) Oral route
- (b) Inhalation
- (c) Sublingual route
- (d) Intrathecal route
- (e) Rectal route

**294. A desired clinical response may be delayed altered or blocked by:**

- (a) A drug that does not go into solution
- (b) A drug that does not get to its site of action

- (c) Abnormal pharmacogenetics  
(d) Lack of absorption from site of administration  
(e) All the above
- 295. Following compartment constitutes the largest percentage**  
(a) Plasma (b) Intestinal fluid  
(c) Intracellular fluid (d) Fat
- 296. The duration of action of a drug is dependent of its**  
(a) Plasma and tissue binding  
(b) Metabolism  
(c) Tubular filtration and secretion  
(d) All the above
- 297. When a drug has a low therapeutic index, that drug should be**  
(a) Used mostly orally  
(b) Used mostly intravenously  
(c) Considered a potentially toxic substance  
(d) Given only in submilligram doses
- 298. A drug is being metabolized by zero-order kinetics. This indicates that**  
(a) A constant amount of drug is being catabolised each hour  
(b) A constant fraction of drug is being catabolised each hour  
(c) A drug is water soluble substance  
(d) The time required to catabolise half of the drug is independent of the initial concentration of the drug
- 299. Drugs interact with their receptors sites by forming**  
(a) Ionic bonds  
(b) Hydrogen bonds  
(c) Van der Waals bond  
(d) All the above
- 300. The main route of administration of a drug to produce a local effect is**  
(a) Topical (b) Oral  
(c) Parenteral
- 301. The main routes of administration of a drug is to provide a systemic effect. Identify the wrong answer**  
(a) Topical (b) Oral  
(c) Parenteral
- 302. Parenteral administration of a drug refers to the giving of a preparation, except**  
(a) Orally  
(b) Intradermally  
(c) Intramuscularly  
(d) Intravenously
- 303. Pharmacokinetics considers**  
(a) The way in which the body affects a drug by the process of absorption, distribution, metabolism and excretion  
(b) The effects of the drug on the body and the mode of drug action.  
(c) The proportion of administered drug that is available to have an effect.  
(d) The removal of the drug by the liver before it has become available
- 304. If gut motility is increased then**  
(a) Drug absorption is decreased  
(b) Drug absorption is increased  
(c) Drug absorption is not effected
- 305. The rate of drug absorption is greatest in**  
(a) The small intestine  
(b) The large intestine  
(c) The stomach
- 306. Drug distribution may depend on tissue perfusion**  
(a) Highly vascular organs rapidly acquire a drug  
(b) Highly vascular organs acquire a drug slowly  
(c) Levels of a drug in bone may rise quickly due to its high vascularity  
(d) Levels of a drug in bone may rise slowly due to its reduced
- 307. Most drugs and metabolites are excreted by**  
(a) The kidneys  
(b) The bile  
(c) The lungs  
(d) Perspiration, saliva and tears



**308. Pharmacodynamics considers:**

- (a) The way in which the body affects the drug
- (b) The effects of the drug on the body and the mode of drug action
- (c) Drug metabolism

**309. A drug that binds to a cell receptor and causes a response is called an:**

- (a) Agonist
- (b) Antagonist
- (c) Receptor blocker

**310. Receptors for \_\_\_\_\_ are DNA-binding proteins**

- (a) Steroids
- (b) Vitamin D
- (c) Retinoids
- (d) all the above

**311. Factors affecting a client's response to a drug include all the following except:**

- (a) A body weight i.e. the larger the individual, the larger the area for drug distribution
- (b) Body fat—A loss of body fat stores means less drug available for activity
- (c) Body fat—An increase in body fat means greater sequestering in body fat and less drug activity
- (d) The presence of certain foods

**ANSWERS**

- |                            |        |                      |        |                            |        |
|----------------------------|--------|----------------------|--------|----------------------------|--------|
| 1. b                       | 2. b   | 3. d                 | 4. c   | 5. e                       | 6. a   |
| 7. a                       | 8. b   | 9. d                 | 10. a  | 11. e                      | 12. c  |
| 13. a                      | 14. a  | 15. a                | 16. a  | 17. b                      | 18. e  |
| 19. a                      | 20. a  | 21. a                | 22. a  | 23. a                      | 24. c  |
| 25. e                      | 26. d  | 27. b                | 28. c  | 29. b                      | 30. c  |
| 31. c                      | 32. e  | 33. a                | 34. c  | 35. a                      | 36. d  |
| 37. b                      | 38. a  | 39. b                | 40. c  | 41. a                      | 42. a  |
| 43. a                      | 44. a  | 45. c                | 46. a  | 47. c                      |        |
| 48. 1. a, 2. d, 3. b, 4. a |        | 49. 1. a, 2. d, 3. c |        | 50. 1. b, 2. e, 3. c, 4. a |        |
| 51. b                      | 52. b  | 53. c                | 54. d  | 55. d                      | 56. b  |
| 57. d                      | 58. b  | 59. b                | 60. a  | 61. b                      | 62. d  |
| 63. e                      | 64. e  | 65. c                | 66. a  | 67. c                      | 68. d  |
| 69. a                      | 70. b  | 71. c                | 72. b  | 73. d                      | 74. a  |
| 75. b                      | 76. a  | 77. c                | 78. c  | 79. b                      | 80. b  |
| 81. c                      | 82. d  | 83. a                | 84. a  | 85. c                      | 86. c  |
| 87. c                      | 88. a  | 89. d                | 90. b  | 91. e                      | 92. a  |
| 93. a                      | 94. b  | 95. c                | 96. d  | 97. c                      | 98. a  |
| 99. c                      | 100. c | 101. b               | 102. a | 103. a                     | 104. d |
| 105. b                     | 106. d | 107. a               | 108. c | 109. a                     | 110. b |
| 111. b                     | 112. a | 113. a               | 114. b | 115. c                     | 116. a |
| 117. c                     | 118. d | 119. b               | 120. d | 121. c                     | 122. c |
| 123. a                     | 124. a | 125. c               | 126. b | 127. d                     | 128. a |

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129. b	130. a	131. d	132. b	133. d	134. c
135. c	136. b	137. c	138. c	139. a	140. c
141. c	142. c	143. d	144. a	145. d	146. d
147. a	148. a	149. c	150. b	151. d	152. a
153. b	154. d	155. c	156. c	157. b	158. c
159. d	160. c	161. d	162. b	163. a	164. d
165. a	166. c	167. b	168. c	169. a	170. b
171. b	172. b	173. b	174. c	175. d	176. b
177. b	178. a	179. b	180. a	181. b	182. a
183. a	184. a	185. a	186. b	187. a	188. a
189. a	190. b	191. a	192. a	193. d	194. a
195. d	196. a	197. b	198. a	199. d	200. c
201. b	202. a	203. d	204. a	205. d	206. d
207. b	208. c	209. b	210. b	211. b	212. c
213. a	214. b	215. b	216. c	217. d	218. c
219. a	220. a	221. c	222. c	223. d	224. d
225. d	226. a	227. b	228. b	229. c	230. b
231. a	232. b	233. e	234. d	235. a	236. e
237. a	238. d	239. e	240. a	241. b	242. d
243. a	244. d	245. d	246. 5	247. c	248. e
249. c	250. c	251. c	252. a	253. d	254. b
255. d	256. b	257. d	258. f	259. c	260. b
261. a	262. d	263. c	264. b	265. c	266. d
267. c	268. d	269. d	270. e	271. c	272. d
273. d	274. b	275. c	276. b	277. e	278. e
279. d	280. a	281. b	282. a	283. c	284. b
285. a	286. e	287. d	288. a	289. c	290. a
291. a	292. e	293. b	294. e	295. c	296. d
297. c	298. a	299. d	300. a	301. a	302. a
303. a	304. a	305. a	306. a & d	307. a	308. b
309. a	310. d	311. a & d			

**EXPLANATIONS FOR ANSWERS**

7. a because of enhanced disassociation weak acids are excreted faster in basic (not acidic) urine.
20. a Chemical antagonism does not involve any receptors. Protamine is a positively charged protein at physiological pH and thus antagonizes the effects of Heparin which is negatively charged at physiological pH.
35. a Facilitated diffusion differs from active transport in that it does not require energy source and it carries the transport in the direction of electrochemical gradient.
52. a Glycoprotein binds to basic drugs and albumin binds to many acidic drugs and a small number of basic drugs.
65. c CYP3A4 is involved in the metabolism of majority of drugs and is also expressed extrahepatically. In fact, poor bioavailability of many drugs is attributed to the drug metabolism by CYP3A4 in gastrointestinal tract.
78. c N-oxidation is involved in the metabolism of dapson, meperidine and chloramphenicol. Metabolism of phenytoin involves oxidative N-dealkylation.
110. b Many receptors use heterotrimeric GTP-binding regulatory proteins. The subunits are designated as  $\beta$ ,  $\alpha$  and  $\alpha$  and their classification is based on  $\alpha$  subunits.
125. c G-protein coupled receptors are hydrophobic proteins and span the plasma membrane in seven  $\alpha$ -helical segments.
145. d Placebo effect is a desired response to a therapy without drug. Placebo effect is mainly because of various psychological reasons e.g. physician-patient relationship, mental set up affected by surroundings and positive mental set up because of known and trusted physician.
161. d Pharmacodynamic tolerance involves multiple mechanism such as number, affinity and function of receptors.
180. a Spare receptors are generally found whenever a receptor acts catalytically and not stoichiometrically. Hence, they are generally found among drugs, which elicit smooth muscle contraction.
189. a Dimercaprol interacts directly with heavy metals in blood and tissue fluids and prevents binding of heavy metals to cellular constituents. Dimercaprol forms an inactive complex with heavy metals.
200. c Two drugs binding to the same receptor is an example of competitive antagonism and effect of one drug can be decreased by increasing the concentration of other drug.
217. d Receptors for steroid hormones are intracellular DNA – binding proteins, which regulate gene transcription.
240. a Receptors linked directly to ion channels are involved in the fast synaptic transmission e.g. nicotinic acetylcholine receptor. This receptor is a pentamer i.e. it is made up of five poly-peptide subunits.
261. a In G-protein coupled receptors, agonist-receptor complex enhances GTP binding to the  $\alpha$  subunit, mainly by dissociating already bound GDP.
280. a The termination of agonist-receptor coupling in a G-protein-coupled receptor is because of conversion of GTP to GDP by a GTPase that is intrinsic to  $\alpha$  subunit.
290. a Therapeutic index is the range between minimal and maximal concentration required to elicit desired response.
295. c intracellular fluid comprises 35%, whereas contribution of other compartments is far less e.g. plasma – 5%; interstitial fluid – 16%; fat – 20% and transcellular fluid – 2%.
310. d Receptors for steroids, vitamin D, retinoids and also thyroid hormones are DNA-binding proteins, which regulate transcription of genes.

# CHAPTER 2

## DRUGS ACTING ON CENTRAL NERVOUS SYSTEM

- 1. A 50-year-old man has a history of frequent episodes of renal colic with high-calcium renal stones. The most useful agent in the treatment of recurrent calcium stones is**
  - (a) Mannitol
  - (b) Furosemide
  - (c) Spironolactone
  - (d) Hydrochlorothiazide
  - (e) Acetazolamide
- 2. Which of the following drugs is correctly associated with its site of action and maximal diuretic efficacy?**
  - (a) Thiazides—distal convoluted tubule—10% of filtered  $\text{Na}^+$
  - (b) Spironolactone—proximal convoluted tubule—40%
  - (c) Bumetanide—thick ascending limb—15%
  - (d) Metolazone—collecting tubule—2%
  - (e) All of the above
- 3. Substance secreted into the blood by a neuron is**
  - (a) Neurohormone
  - (b) Neuromodulator
  - (c) Neuromediator
  - (d) Neurotransmitter
- 4. Which of the following is a leukotriene receptor blocker?**
  - (a) Alprostadil
  - (b) Aspirin
  - (c) Ibuprofen
  - (d)  $\text{LTC}_4$
  - (e) Zafirlukast
- 5. A molecule that stimulates nitric oxide synthase, especially the eNOS isoform, is**
  - (a) Acetylcholine
  - (b) Citruline
  - (c) Isoproterenol
  - (d) Nitroglycerin
  - (e) Nitroprusside
- 6. The primary endogenous substrate for nitric oxide synthase is**
  - (a) Acetylcholine
  - (b) Angiotensinogen
  - (c) Arginine
  - (d) Citruline
  - (e) Heme
- 7. Which of the following is a recognized effect of nitric oxide?**
  - (a) Arrhythmia
  - (b) Bronchoconstriction
  - (c) Constipation
  - (d) Inhibition of acute graft rejection
  - (e) Pulmonary vasodilation
- 8. cAMP is an example of**
  - (a) Neurohormone
  - (b) Neuromodulator
  - (c) Neuromediator
  - (d) Neurotransmitter
- 9. One effect that theophylline, nitroglycerin, isoproterenol, and histamine have in common is**
  - (a) Direct stimulation of cardiac contractile force
  - (b) Tachycardia
  - (c) Increased gastric acid secretion
  - (d) Postural hypotension
  - (e) Throbbing headache

- 10. Which one of the following chemicals does not satisfy the criteria for a neurotransmitter role in the CNS?**
- (a) Acetylcholine (b) Dopamine  
(c) Glycine (d) Nitric Oxide  
(e) Substance P
- 11. Neurotransmitters may**
- (a) Increase chloride conductance to cause inhibition  
(b) Increase potassium conductance to cause excitation  
(c) Increase sodium conductance to cause inhibition  
(d) Increase calcium conductance to cause inhibition  
(e) Exert all of the above actions
- 12. Which of the following chemicals is most likely to function as a neurotransmitter in hierarchical systems?**
- (a) Dopamine (b) Glutamate  
(c) Metenkephalin (d) Norepinephrine  
(e) Serotonin
- 13. Activation of metabotropic receptors located presynaptically causes inhibition by decreasing the inward flux of**
- (a) Calcium (b) Chloride  
(c) Potassium (d) Sodium  
(e) None of the above
- 14. This compound decrease the functional activities of several CNS neurotransmitters, including dopamine, norepinephrine, and serotonin. At high doses it may cause parkinsonism-like extrapyramidal system dysfunction.**
- (a) Amphetamine (b) Baclofen  
(c) Diazepam (d) Ketamine  
(e) Reserpine
- 15. This amine neurotransmitter is found in high concentration in cell bodies in the pons and brain stem; at some sites, release of transmitter is autoregulated via presynaptic inhibition.**
- (a) Acetylcholine (b) Dopamine  
(c) Glutamate (d) Norepinephrine  
(e) Substance P
- 16. Suramin is an antagonists of \_\_\_\_\_ receptors**
- (a) Purine (b) Somatostatin  
(c) Neuropeptide Y (d) Neurotensin
- 17. Which one of the following statements best describes the mechanism of action of benzodiazepines?**
- (a) Benzodiazepines activate GABA<sub>B</sub> receptors in the spinal cord  
(b) Their inhibition of GABA transaminase leads to increased levels of GABA  
(c) Benzodiazepines block glutamate receptors in hierarchical neuronal pathways in the brain  
(d) They increase the frequency of opening of chloride ion channels that are coupled to GABA<sub>A</sub> receptors  
(e) They are direct-acting GABA receptor agonists in the CNS
- 18. Which one of the following statements about the use of triazolam in this elderly patient is accurate?**
- (a) Ambulatory dysfunction does not occur in elderly patients taking one-half of the conventional adult dose  
(b) Hypertension is a common adverse effects of benzodiazepines in patients over 70 years of age  
(c) Over-the-counter cold medications may antagonize the hypnotic effects of the drug  
(d) She may experience amnesia, especially if she also drinks alcoholic beverages  
(e) Triazolam is distinctive in that it does not cause rebound insomnia on abrupt discontinuance
- 19. The most likely explanation for the increased sensitivity of elderly patients to a single dose of triazolam and other sedative-hypnotic drugs is**
- (a) Changes in brain function that accompany the aging process  
(b) Decreased renal function  
(c) Increased cerebral blood flow  
(d) Decreased hepatic metabolism of lipid-soluble drugs  
(e) Changes in plasma protein binding

- 20. Induction of various forms of synaptic plasticity is more closely associated with \_\_\_\_\_ receptors**
- (a) AMPA (b) Kainate  
(c) NMDA (d) All of the above
- 21. Which one of the following drugs may increase anticoagulant effects by displacement of warfarin from plasma protein binding sites and is inactive until converted in the body to an active metabolite?**
- (a) Buspirone (b) Chloral hydrate  
(c) Clorazepate (d) Secobarbital  
(e) Zaleplon
- 22. Which one of the following drugs has been used in the management of alcohol withdrawal states and in maintenance treatment of patient with tonic-clonic or partial seizure states? Its chronic use may lead to an increased metabolism of warfarin and phenytoin.**
- (a) Chlordiazepoxide (b) Meprobamate  
(c) Phenobarbital (d) Triazolam  
(e) Zolpidem
- 23. A 40-year-old patient with liver dysfunction is scheduled for a surgical procedure. Lorazepam can be used for preanesthetic sedation in this patient without concern for excessive CNS depression because the drug is**
- (a) A selective anxiolytic like buspirone  
(b) Actively secreted in the renal proximal tubule  
(c) Conjugated extrahepatically  
(d) Eliminated via the lungs  
(e) Reversible by administration of naloxone
- 24. This hypnotic drug facilitates the inhibitory actions of GABA, but it lacks anticonvulsant or muscle relaxing properties and has minimal effect on sleep architecture.**
- (a) Buspirone (b) Diazepam  
(c) Flurazepam (d) Phenobarbital  
(e) Zaleplon
- 25. The most frequent type of drug interaction that occurs in patients using drugs of the sedative hypnotic class is**
- (a) Additive CNS depression  
(b) Antagonism of sedative or hypnotic actions  
(c) Competition for plasma protein binding  
(d) Induction of liver drug-metabolizing enzymes  
(e) Inhibition of liver drug-metabolizing enzymes
- 26. A 42-year-old man with a history of alcoholism is brought to the emergency room in a confused and delirious state. He has truncal ataxia and ophthalmoplegia. The most appropriate immediate course of action is to administer.**
- (a) Chlordiazepoxide (b) Disulfiram  
(c) Folic acid (d) Lorazepam  
(e) Thiamine
- 27. Which one of the following statements about the bio-disposition of ethanol is accurate?**
- (a) Ethanol is absorbed at all levels of the gastrointestinal tract  
(b) Acetic acid is the initial product of ethanol metabolism  
(c) After an intravenous dose, plasma levels of ethanol are lower in women than in men  
(d) The elimination of ethanol follows first-order kinetics  
(e) Alcohol dehydrogenase exhibits genetic variability
- 28. Following is GABA<sub>A</sub> agonist**
- (a) Muscimol (b) Baclofen  
(c) Bicuculline (d) None of the above
- 29. Chronic use of ethanol is reported to increase**
- (a) Alcohol dehydrogenase  
(b) Aldehyde dehydrogenase  
(c) Microsomal ethanol-oxidizing system activity  
(d) Monoamine oxidase  
(e) NADH dehydrogenase
- 30. The chronic abuse of alcohol predisposes to hepatic damage following overdose of acetaminophen because ethanol**
- (a) Blocks acetaminophen metabolism  
(b) Causes thiamine deficiency  
(c) Displaces acetaminophen from plasma proteins

- (d) Induces liver drug-metabolizing enzymes  
(e) Inhibits renal clearance of acetaminophen
- 31. The activity of this enzyme is specifically decreased in the Wernicke-Korsakoff syndrome**
- (a) Alcohol dehydrogenase  
(b) Cytochrome P450  
(c) L-Aromatic amino acid decarboxylase  
(d) NADH dehydrogenase  
(e) Pyruvate dehydrogenase
- 32. Following is glycine antagonists**
- (a) Quisqualate (b) Taurine  
(c) Strychnine (d)  $\alpha$ -alanine
- 33. Which one of the following statements concerning the pharmacokinetics of antiseizure drugs is accurate?**
- (a) At high doses, phenytoin elimination follows first-order kinetics  
(b) Valproic acid may increase the activity of hepatic ALA synthase and the synthesis of porphyrins  
(c) The administration of phenytoin to patients in methadone maintenance programs has led to symptoms of opioid overdose, including respiratory depression  
(d) Although ethosuximide has a half-life of approximately 40 hours, the drug is usually taken twice a day  
(e) Treatment with vigabatrin may reduce the effectiveness of oral contraceptives
- 34. With chronic use in seizure states, the adverse effects of this drug include coarsening of facial features, hirsutism, gingival hyperplasia, and osteomalacia.**
- (a) Carbamazepine (b) Ethosuximide  
(c) Gabapentin (d) Phenytoin  
(e) Valproic acid
- 35. Which one of the following statements about vigabatrin is accurate?**
- (a) Blocks neuronal reuptake of GABA  
(b) Drug of choice in absence seizures  
(c) Is established to be teratogenic in humans  
(d) Life-threatening skin disorders may occur  
(e) Visual field defects occur in up to one-third of patients
- 36. Withdrawal of antiseizure drugs can cause increased seizure frequency and severity. Withdrawal is least likely to be a problem with**
- (a) Clonazepam (b) Diazepam  
(c) Ethosuximide (d) Phenobarbital  
(e) Phenytoin
- 37. A young femal patient who suffers from bipolar affective disorder (BAD) has been managed with lithium. If she becomes pregnant, which one of the following drugs is likely to be effective in bipolar affective disorder with minimal risk of teratogenicity?**
- (a) Carbamazepine (b) Clonazepam  
(c) Phenytoin (d) Valproic acid  
(e) None of the above
- 38. The most likely mechanism involved in the antiseizure activity of carbamazepine is**
- (a) Block of sodium ion channels  
(b) Block of calcium ion channels  
(c) Facilitation of GABA actions on chloride ion channels  
(d) Glutamate receptor antagonism  
(e) Inhibition of GABA transaminase
- 39. Which one of the following statements about phenytoin is accurate?**
- (a) Displaces sulfonamides from plasma proteins  
(b) Drug of choice in myoclonic seizures  
(c) Half-life is increased if used with phenobarbital  
(d) Isoniazid (INH) decreases steady state blood levels of phenytoin  
(e) Toxicity may occur with only small increments in dose
- 40. Which one of the following statements concerning nitrous oxide is accurate?**
- (a) It continues to be a useful component of anesthesia protocols because of its lack of cardiovascular depression  
(b) Megaloblastic anemia is a common adverse effect in patients exposed to nitrous oxide for periods longer than 2 hours  
(c) It is the most potent of the inhaled



- anaesthetics
- (d) There is a direct association between the use of nitrous oxide and malignant hyperthermia
- (e) More than 30% of nitrous oxide is eliminated via hepatic metabolism
- 41. Following is GABA<sub>B</sub> agonist**
- (a) Muscimol (b) Baclofen  
(c) Picrotoxin (d) Bicuculline
- 42. Following is GABA<sub>A</sub> antagonist**
- (a) Muscimol (b) Bicuculline  
(c) Strychnine (d) Baclofen
- 43. The inhalation anesthetic with the fastest onset of action is**
- (a) Enflurane (b) Isoflurane  
(c) Nitric oxide (d) Nitrogen dioxide  
(e) Nitrous oxide
- 44. An intravenous bolus dose of thiopental usually leads to loss of consciousness within 10–15 seconds. If no further drugs are administered, the patient will regain consciousness in just a few minutes. The reason for this, that thiopental is**
- (a) A good substrate for renal tubular secretion  
(b) Exhaled rapidly  
(c) Rapidly metabolized by hepatic enzymes  
(d) Redistributed from brain to other body tissues  
(e) Secreted in the bile
- 45. Respiratory depression following use of this agent may be reversed by administration of flumazenil**
- (a) Desflurane (b) Fentanyl  
(c) Ketamine (d) Midazolam  
(e) Propofol
- 46. Use of this agent is associated with a high incidence of disorientation, sensory and perceptual illusions, and vivid dreams during recovery from anesthesia**
- (a) Diazepam (b) Fentanyl  
(c) Ketamine (d) Midazolam  
(e) Thiopental
- 47. Postoperative vomiting is uncommon with this intravenous agent; patients are able to ambulate sooner than those who receive other anaesthetics**
- (a) Enflurane (b) Ketamine  
(c) Morphine (d) Propofol  
(e) Remifentanyl
- 48. The pK<sub>a</sub> of lidocaine is 7.9. In infected tissue at pH 6.9, the fraction in the ionized form will be**
- (a) 1% (b) 10%  
(c) 50% (d) 90%  
(e) 99%
- 49. Which of the following statements about nerve blockade with local anaesthetics is most correct?**
- (a) Block is faster in onset in infected tissues  
(b) Block is faster in onset in unmyelinated fibers  
(c) Block is slower in onset in hypocalcemia  
(d) Block is faster in onset in hyperkalemia  
(e) Block is slower in onset in the periphery of a nerve bundle than in the center of a bundle
- 50. Which of the following was the first compound to be identified Pharmacologically as a transmitter in the CNS?**
- (a) Glycine (b) Glutamate  
(c) Acetylcholine (d) Norepinephrine
- 51. You have a vial containing 4 mL of a 2% solution of lidocaine. How much lidocaine is present in 1 mL?**
- (a) 2 mg (b) 8 mg  
(c) 20 mg (d) 80 mg  
(e) 200 mg
- 52. Which one of the following statements about the toxicity of local anaesthetics is most correct?**
- (a) Serious cardiovascular reactions are more likely to occur with tetracaine than with bupivacaine  
(b) Cyanosis may occur following injection of large doses of lidocaine, especially in patients with pulmonary disease  
(c) Intravenous injection of local anaesthetics may stimulate ectopic cardiac pacemaker activity  
(d) In overdosage, hyperventilation (with oxygen) is helpful to correct acidosis and lower extracellular potassium  
(e) Most local anaesthetics cause vasoconstriction



- 53. Epinephrine added to a solution of lidocaine for a peripheral nerve block will**
- Increase the risk of convulsions
  - Increase the duration of anesthetic action of the local anesthetic
  - Both (A) and (B)
  - Neither (A) nor (B)
  - None of the above
- 54. A child requires multiple minor surgical procedures in the nasopharynx. Which of the following drugs has high surface activity and vasoconstrictor actions that reduce bleeding in mucous membrane?**
- Benzocaine
  - Bupivacaine
  - Cocaine
  - Lidocaine
  - Procaine
- 55. Characteristics of nondepolarizing neuromuscular blockade include which one of the following?**
- Block of posttetanic potentiation
  - Histamine blocking action
  - Poorly sustained tetanic tension
  - Significant muscle fasciculations during onset of block
  - Stimulation of autonomic ganglia
- 56. Which of the following does not cause skeletal muscle contractions or twitching?**
- Acetylcholine
  - Nicotine
  - Strychnine
  - Succinylcholine
  - Vecuronium
- 57. Which one of the following is most effective in the management of malignant hyperthermia?**
- Baclofen
  - Dantrolene
  - Haloperidol
  - Succinylcholine
  - Vecuronium
- 58. Following is a G-protein coupled receptor**
- AMPA
  - Kainate
  - NMDA
  - Metabotropic
- 59. Which one of the following drugs is most often associated with hypotension caused by histamine release?**
- Diazepam
  - Pancuronium
  - Tizanidine
  - Tubocurarine
  - Vecuronium
- 60. Which one of the following drugs has caused hyperkalemia leading to cardiac arrest in patients with neurologic disorders?**
- Baclofen
  - Dantrolene
  - Succinylcholine
  - Tubocurarine
  - Vecuronium
- 61. Following is an excitatory amino acid receptor antagonist?**
- Phencyclidine
  - Quisqualate
  - Homocysteate
  - Kainate
- 62. Which one of the following drugs has spasmolytic activity and could also be used in the management of seizures caused by overdose of a local anesthetic?**
- Baclofen
  - Cyclobenzaprine
  - Dantrolene
  - Diazepam
  - Tizanidine
- 63. Which one of the following drugs given preoperatively will prevent postoperative pain caused by succinylcholine?**
- Baclofen
  - Dantrolene
  - Diazepam
  - Lidocaine
  - Tubocurarine
- 64. As the physician, you could tell the patient (and close family members) all of the following things about levodopa except?**
- Taking the drug in divided doses will decrease nausea and vomiting
  - He should be careful when he stands up because he may get dizzy
  - Uncontrollable muscle jerks may occur
  - A net-like reddish to blue discoloration of the skin is a likely side effect of the medication
  - The drug will probably improve his symptoms for a period of time but not indefinitely
- 65. As the physician who is prescribing levodopa, you will note that the drug**
- Causes less severe behavioral side effects if given with carbidopa

- (b) Fluctuates in its effectiveness with increasing frequency as treatment continues
  - (c) Prevents extrapyramidal adverse effects of antipsychotic drugs
  - (d) Protects against cancer in patients with melanoma
  - (e) Has toxic effects that include pulmonary infiltrates
- 66. The major reason why carbidopa is of value in parkinsonism is that the compound**
- (a) Crosses the blood-brain barrier
  - (b) Inhibits monoamine oxidase type A
  - (c) Inhibits aromatic L-amino acid decarboxylase
  - (d) Is converted to the false neurotransmitter carbidopamine
  - (e) Inhibits monoamine oxidase type B
- 67. Which one of the following statements about bromocriptine is accurate?**
- (a) It should not be administered to patients taking antimuscarinic drugs
  - (b) Effectiveness in Parkinson's disease requires its metabolic conversion to an active metabolite
  - (c) The drug is contraindicated in patients with a history of psychosis
  - (d) The drug should not be administered to patients already taking levodopa
  - (e) Mental disturbances occur more commonly with levodopa than with bromocriptine
- 68. A 72-year-old patient with parkinsonism presents with swollen feet. They are red, tender, and very painful. You could clear up these symptoms within a few days if you told the patient to stop taking**
- (a) Amantadine      (b) Benztropine
  - (c) Bromocriptine      (d) Levodopa
  - (e) Selegiline
- 69. Concerning the drugs used in parkinsonism, which of the following statements is accurate?**
- (a) Levodopa causes mydriasis and can precipitate an attack of acute glaucoma
  - (b) Useful therapeutic effects of amantadine continue for several years
  - (c) The primary therapeutic benefit of antimuscarinic drugs in parkinsonism is their ability to relieve bradykinesia
  - (d) Dopamine receptor antagonist should not be used in Parkinson's disease prior to a trial of levodopa
  - (e) The concomitant use of selegiline may increase the peripheral adverse effects of levodopa
- 70. A previously healthy 50-year-old woman begins to suffer from slowed mentation and develops writhing movement of her tongue and hands. In addition, she has delusions of being persecuted. The woman has no past history of psychiatric or neurologic disorders. The most appropriate drug for treatment is**
- (a) Amantadine      (b) Bromocriptine
  - (c) Haloperidol      (d) Levodopa
  - (e) Trihexyphenidyl
- 71. Great caution must be exercised in the use of this drug (or drugs from the same class) in parkinsonian patients who have prostatic hypertrophy or obstructive gastrointestinal disease**
- (a) Benztropine      (b) Carbidopa
  - (c) Levodopa      (d) Ropinirole
  - (e) Selegiline
- 72. Which of the following statements about pramipexole is accurate?**
- (a) Activates dopamine D<sub>2</sub> receptors
  - (b) Commonly a first-line therapy for Parkinson's disease
  - (c) May cause postural hypotension
  - (d) Not an ergot derivative
  - (e) All of the above
- 73. Tolcapone may be of value in patient being treated with levodopa-carbidopa because it**
- (a) Activates catechol-O-methyltransferase
  - (b) Decreases formation of 3-O-methyldopa
  - (c) Inhibits monoamine oxidase type B
  - (d) Inhibits dopamine reuptake
  - (e) Releases dopamine from nerve endings

- 74. Concerning hypotheses for the pathophysiologic basis of schizophrenia, which one of the following statements is accurate?**
- Positron emission tomography has shown decreased dopamine receptors in the brains of both untreated and drug-treated schizophrenics
  - Drugs that block dopamine receptors are useful for alleviating psychotic symptoms in parkinsonian patients
  - The clinical potency of many antipsychotic drugs correlates well with their beta adrenoceptor-blocking actions
  - Drug-induced psychosis can occur without activation of brain dopamine receptors
  - All effective antipsychotic drugs have high affinity for dopamine D<sub>2</sub> receptors
- 75. Choose the correct statement from the following?**
- Muscimol is GABA<sub>B</sub> selective
  - Bicuculline is GABA<sub>A</sub> agonist
  - Picrotoxin blocks chloride channels associated with GABA<sub>A</sub> receptors
  - Baclofen is GABA<sub>A</sub> agonist
- 76. A 30-year-old male patient is on drug therapy for a psychiatric problem. He complains that he feels "flat" and that he gets confused at times. He has been gaining weight and has lost his sex drive. As he moves his head, you notice a slight tremor. He tells you that since he has been on medication he is always thirsty and frequently has to urinate. The drug he is most likely to be taking is**
- Clonazepam
  - Clozapine
  - Haloperidol
  - Lithium
  - Trifluoperazine
- 77. A young male patient diagnosed as schizophrenic develops severe muscle cramps with torticollis a short time after drug therapy is initiated with haloperidol. The best course of action would be to**
- Add clozapine to the drug regimen
  - Discontinue haloperidol and observe the patient
  - Give oral diphenhydramine
  - Switch the patient to fluphenazine
  - Inject benzotropine
- 78. Which one of the following statements about the action of phenothiazines is accurate?**
- They activate muscarinic receptors
  - They are antiemetic
  - They decrease serum prolactin levels
  - They elevate the seizure threshold
  - They raise blood pressure
- 79. Within days of starting haloperidol treatment for a psychiatric disorder, a young male patient developed severe generalized muscle rigidity and a high fever. In the emergency room he was incoherent, with increased heart rate, hypotension, and diaphoresis. Laboratory studies indicated acidosis, leukocytosis, and increased creatine kinase. The most likely reason for these symptoms is that the patient was suffering from**
- Agranulocytosis
  - A severe bacterial infection
  - Neuroleptic malignant syndrome
  - Spastic retrocollis
  - Tardive dyskinesia
- 80. Following is the main inhibitory transmitter in the brain**
- Dopamine
  - Norepinephrine
  - Glycine
  - GABA
- 81. Concerning the proposed mechanisms of action of antidepressant drugs, which one of the following statements is accurate?**
- Bupropion is an effective inhibitor of NE and 5-HT transporters
  - Chronic treatment with an antidepressant often leads to the up-regulation of adrenoceptors
  - Elevation in amine metabolites in cerebrospinal fluid is characteristic of most depressed patients prior to drug therapy
  - MAO inhibitors used as antidepressants selectively decrease the metabolism of norepinephrine

- (e) The acute effect of most tricyclics is to block the neuronal reuptake of both norepinephrine and serotonin in the CNS
- 82. Which one of the following effects is unlikely to occur during treatment with amitriptyline?**
- (a) Alpha adrenoceptor blockade  
(b) Elevation of the seizure threshold  
(c) Mydriasis  
(d) Sedation  
(e) Urinary retention
- 83. A 54-year-old male patient was using fluoxetine for depression but decided to stop taking the drug. When questioned, he said that it affected his sexual performance and that "he wasn't getting any younger." You notice that he is a user of tobacco products. If you decide to reinstitute drug therapy in this patient, the best choice would be**
- (a) Amoxapine      (b) Bupropion  
(c) Imipramine      (d) Sertraline  
(e) Venlafaxine
- 84. Regarding maprotiline, which one of the following statements is accurate?**
- (a) Blocks serotonin reuptake selectively  
(b) Cause hypertension  
(c) Raises the seizure threshold  
(d) Sedation occurs commonly  
(e) Has a tricyclic structure
- 85. Which one of the following drugs is most likely to be of value in obsessive compulsive disorders (OCD)?**
- (a) Amitriptyline      (b) Bupropion  
(c) Clomipramine      (d) Desipramine  
(e) Mirtazapine
- 86. Compared with other antidepressant drugs, mirtazapine has the distinctive ability to act as an antagonist of**
- (a) Alpha<sub>2</sub> adrenoceptors  
(b) Beta adrenoceptors  
(c) D<sub>2</sub> receptors  
(d) NE transporters  
(e) 5-HT transporters
- 87. Established clinical uses of this drug include enuresis and chronic pain**
- (a) Bupropion      (b) Fluvoxamine  
(c) Imipramine      (d) Phenelzine  
(e) Selegiline
- 88. Which one of the following drugs is most likely to increase plasma levels of alprazolam, theophylline, and warfarin**
- (a) Desipramine      (b) Fluvoxamine  
(c) Imipramine      (d) Nefazodone  
(e) Venlafaxine
- 89. Which one of the following actions of opioid analgesics is mediated via activation of kappa receptors?**
- (a) Cerebral Vascular dilation  
(b) Decreased uterine tone  
(c) Euphoria  
(d) Sedation  
(e) Psychologic dependence
- 90. \_\_\_\_\_ antagonists are known to attenuate some of the actions of alcohol.**
- (a) GABA<sub>A</sub>      (b) GABA<sub>B</sub>  
(c) NMDA      (d) Glycine
- 91. Which one of the following statements about propoxyphene is accurate?**
- (a) Analgesia equivalent to oxycodone  
(b) Antagonist at mu receptors  
(c) Causes dose-limiting diarrhea  
(d) Highly effective cough suppressant  
(e) Seizures have occurred in overdose
- 92. A young male patient is brought to the emergency room of a hospital suffering from an overdose of cocaine following intravenous administration. His symptoms are unlikely to include**
- (a) Agitation      (b) Bradycardia  
(c) Hyperthermia      (d) Myocardial infarct  
(e) Seizures
- 93. Which one of the following statements about hallucinogens is accurate?**
- (a) Mescaline and related hallucinogens are thought to exert their CNS actions through dopaminergic systems in the brain

- (b) Teratogenic effects are known to occur with the use of LSD during pregnancy
- (c) Scopolamine is unique among hallucinogens in that animals will self-administer it
- (d) Dilated pupils, tachycardia, tremor and increased alertness are characteristic effects of psilocybin
- (e) Phencyclidine can be anticipated to cause dry mouth and urinary retention
- 94. Which one of the following signs or symptoms is likely to occur with marijuana?**
- (a) Bradycardia
- (b) Conjunctival reddening
- (c) Hypertension
- (d) Increased psychomotor performance
- (e) Mydriasis
- 95. This agent has sedative and amnestic properties. Small doses added to alcoholic beverages are not readily detected by taste and have been used in "date rape" attacks. The drug is chemically related to a brain inhibitory neurotransmitter. Which one of the following most closely resembles the description given?**
- (a) Amyl nitrite
- (b) Flunitrazepam
- (c) Gamma-hydroxybutyrate
- (d) Hashish
- (e) Metcathinone
- 96. The patient is started on gemfibrozil. The major mechanism of action of gemfibrozil is**
- (a) Increased excretion of bile acid salts
- (b) Increased expression of high-affinity LDL receptors
- (c) Increased lipid hydrolysis by lipoprotein lipase
- (d) Inhibition of secretion of VLDL by the liver
- (e) Reduction of secretion of HDL by the liver
- 97. When used as monotherapy, a major toxicity of gemfibrozil is increased risk of**
- (a) Bloating and constipation
- (b) Cholelithiasis
- (c) Hyperuricemia
- (d) Liver damage
- (e) Severe cardiac arrhythmia
- 98. Alcohol drinking is associated with which of the following changes in serum lipid concentrations?**
- (a) Decreased HDL cholesterol
- (b) Decreased IDL cholesterol
- (c) Decreased VLDL cholesterol
- (d) Increased LDL cholesterol
- (e) Increased triglyceride
- 99. A patient suffering from a depressive disorder is being treated with imipramine. If he uses diphenhydramine for allergic rhinitis, a drug interaction is likely to occur because**
- (a) Diphenhydramine inhibits imipramine metabolism
- (b) Both drugs block reuptake of norepinephrine released from sympathetic nerve endings
- (c) Imipramine inhibits the metabolism of diphenhydramine
- (d) Both drugs block muscarinic receptors
- (e) The drugs compete with each other for renal elimination
- 100. If phenelzine is administered to a patient taking fluoxetine, the most likely result is**
- (a) Antagonism of the antidepressant action of fluoxetine
- (b) A decrease in the plasma levels of fluoxetine
- (c) Hypertensive crisis
- (d) Priapism
- (e) Agitation, muscle rigidity, hyperthermia, seizures
- 101. The antihypertensive effects of captopril can be antagonized (reduced) by**
- (a) Angiotensin II receptor blockers
- (b) Loop diuretics
- (c) NSAIDs
- (d) Sulfonylurea hypoglycemics
- (e) Thiazides
- 102. Which one of the following drugs most resembles the psychoactive constituent(s)**

- of St. John's wort in terms of proposed mechanism of action?**
- (a) Alprazolam      (b) Fluoxetine  
(c) Levodopa      (d) Methylphenidate  
(e) Selegine
- 103. The primary site of action of tyramine is**
- (a) Ganglionic receptors  
(b) Gut and liver catechol-O-methyltransferase  
(c) Postganglionic sympathetic nerve terminals  
(d) Preganglionic sympathetic nerve terminals  
(e) Vascular smooth muscle cell receptors
- 104. Which one of the following drugs has been used in ophthalmology, but causes mydriasis and cycloplegia lasting more than 24 hours?**
- (a) Atropine      (b) Echothiophate  
(c) Edrophonium      (d) Ephedrine  
(e) Tropicamide
- 105. The antihypertensive drug most likely to aggravate angina pectoris is**
- (a) Clonidine      (b) Guanethidine  
(c) Hydralazine      (d) Methyl dopa  
(e) Propranolol
- 106. After an intravenous bolus injection of lidocaine, the major factors determining the initial plasma concentration are**
- (a) Dose and clearance  
(b) Dose and apparent volume of distribution  
(c) Apparent volume of distribution and clearance  
(d) Clearance and half-life  
(e) Half-life and dose
- 107. Diuretics that increase the delivery of poorly absorbed solute to the thick ascending limb of the nephron include**
- (a) Furosemide      (b) Indapamide  
(c) Mannitol      (d) Spironolactone  
(e) All of the above
- 108. Following is used in methanol poisoning**
- (a) Disulfiram      (b) Naltrexone  
(c) Ethanol      (d) None of the above
- 109. Recreational use of drugs sometimes leads to dependence. Which of the following is least likely to cause physical dependence?**
- (a) Alcohol is excitatory in nature  
(b) Alcohol has a direct stimulatory effect on sexual responsiveness  
(c) Alcohol is teratogenic  
(d) Alcohol increases ADA production
- 110. This agent is currently a first-choice drug in the management of absence seizures as well as partial, primary generalized, and tonic-clonic seizures.**
- (a) Carbamazepine      (b) Clonazepam  
(c) Ethosuximide      (d) Phenytoin  
(e) Valproic acid
- 111. If one patient is taking amitriptyline and another patient is taking chlorpromazine, they are both likely to experience**
- (a) Excessive salivation  
(b) Extrapyramidal dysfunction  
(c) Gynecomastia  
(d) Increased gastrointestinal motility  
(e) Postural hypotension
- 112. The phenothiazines have a variety of actions at different receptor types. However, they do not appear to interact with receptors for**
- (a) Dopamine      (b) Histamine  
(c) Nicotine      (d) Norepinephrine  
(e) Muscarine
- 113. A psychiatric patient taking medications develops a tremor, thyroid enlargement, and leukocytosis. The drug he is taking is most likely to be**
- (a) Clomipramine      (b) Haloperidol  
(c) Imipramine      (d) Lithium  
(e) Sertraline
- 114. The mechanism of action of benzodiazepines is**
- (a) Activation of GABA<sub>B</sub> receptors  
(b) Antagonism of glycine receptors in the spinal cord



- (c) Blockade of the action of glutamic acid  
 (d) Increased GABA mediated chloride ion conductance  
 (e) Inhibition of GABA aminotranferase
- 115. A drug that is used in the treatment of parkinsonism and will also attenuate reversible extrapyramidal side effects of neuroleptics is**
- (a) Amantadine (b) Levodopa  
 (c) Pergolide (d) Selegiline  
 (e) Trihexyphenidyl
- 116. The characteristics of one-daily dosing with aminoglycosides compared with conventional dosing protocols (every 6-12 hours) include**
- (a) Decreased drug uptake into the renal cortex  
 (b) Higher peak serum drug levels to MIC ratios  
 (c) Postantibiotic actions  
 (d) All of the above  
 (e) None of the above
- 117. A young mother is breast-feeding her 2-month-old infant. Which one of the following drug situations involving the mother is most likely to be safe for the nursing infant?**
- (a) Doxycycline, for Lyme disease  
 (b) Metronidazole, for trichomoniasis  
 (c) Nystatin, for a yeast infection  
 (d) Phentermine, used for weight reduction  
 (e) Triazolam, used as a sleeping pill
- 118. Cocaine intoxication has become a common problem in hospital emergency rooms. Which one of the following drugs is not likely to be of any value in the management of cocaine overdose?**
- (a) Dantrolene (b) Diazepam  
 (c) Lidocaine (d) Naltrexone  
 (e) Nitroprusside
- 119. Which one of the following agents used in hypertension is a prodrug that is converted to its active form in the brain?**
- (a) Clonidine (b) Doxazosin  
 (c) Methyldopa (d) Nitroprusside  
 (e) Verapamil
- 120. the consumption of shellfish harvested during a "red tide" (due to a large population of a dinoflagellate species) is not recommended. This is because the shellfish are likely to contain**
- (a) Arsenic (b) Botulinum toxins  
 (c) Cyanide (d) Saxitoxin  
 (e) Tetrodotoxin
- 121. A 35-year-old female who has never been pregnant suffers each month from pain, discomfort, and mood depression at the time of menses. She may benefit from the use of this selective inhibitor of the reuptake of serotonin.**
- (a) Amitriptyline (b) Bupropion  
 (c) Mirtazapine (d) Paroxetine  
 (e) Trazodone
- 122. Which of the following is a common effect of muscarinic stimulant drugs?**
- (a) Decreased peristalsis  
 (b) Decreased secretion by salivary glands  
 (c) Hypertension  
 (d) Inhibition of sweat glands  
 (e) Miosis
- 123. Four stages of general anesthesia are distinctly seen with the use of**
- (a) Halothane (b) Diethyl ether  
 (c) Nitrous oxide (d) Enflurane
- 124. Infusion of phenotolamine into the cerebrospinal fluid of an experimental animal will prevent the blood pressure - lowering action of**
- (a) Clonidine (b) Enalapril  
 (c) Guanethidine (d) Reserpine  
 (e) Trimethaphan
- 125. A drug suitable for producing a brief (5 to 15 minute) increase in cardiac vagal tone is**
- (a) Digoxin (b) Edrophonium  
 (c) Ergotamine (d) Pralidoxime  
 (e) Pyridostigmine
- 126. Propranolol and hydralazine have which of the following effects in common?**

- (a) Decreased cardiac force
- (b) Decreased cardiac output
- (c) Decreased mean arterial blood pressure
- (d) Increased systemic vascular resistance
- (e) Tachycardia

**127. Toxicities of local anaesthetics do not include**

- (a) Cardiovascular arrhythmias and collapse (bupivacaine)
- (b) Convulsions (lidocaine)
- (c) Dizziness, sedation (lidocaine)
- (d) Hypertensive emergencies, strokes (procaine)
- (e) Methemoglobinemia

**128. Benzodiazepines are least effective in**

- (a) Alcohol withdrawal syndromes
- (b) Balanced anesthesia regimens
- (c) Initial management of phencyclidine overdose
- (d) Obsessive – compulsive disorders
- (e) Social phobias

**129. Which one of the following drugs exerts its anticonvulsant effects by blocking sodium channels in neuronal membranes?**

- (a) Acetazolamide      (b) Carbamazepine
- (c) Diazepam            (d) Gabapentin
- (e) Vigabatrin

**130. Regarding the pharmacodynamic actions of local anaesthetics, which one of the following statements is most accurate?**

- (a) All local anaesthetics with ester bonds are vasodilators
- (b) Amides cause a high incidence of hypersensitivity reactions
- (c) Protonated forms of such drugs readily penetrate bio-membranes
- (d) The ionized forms of local anaesthetics cause a use-dependent blockade of sodium ion channels
- (e) Type A alpha nerve fibers are highly sensitive to blockade

**131. A patient is brought to the emergency room suffering from an overdose of an illicit drug. She is agitated, has disordered**

**thought processes, suffers from paranoia, and "hears voices". The drug most likely to be responsible for her condition is**

- (a) Gamma-hydroxybutyrate (GHB)
- (b) Hashish
- (c) Heroin
- (d) Marijuana
- (e) Methamphetamine

**132. Mental retardation, microcephaly, and underdevelopment of the mid face region in an infant is associated with chronic maternal abuse of**

- (a) Amphetamine      (b) Cocaine
- (c) Ethanol            (d) Mescaline
- (e) Phencyclidine

**133. After ingestion of a meal that included sardines, cheese, and red wine, a patient taking an antidepressant drug experiences a hypertensive crisis. The drug most likely to be responsible is**

- (a) Bupropion          (b) Fluoxetine
- (c) Imipramine        (d) Phenelzine
- (e) Trazodone

**134. A woman taking haloperidol develops a spectrum of adverse effects that include the amenorrheagalactorrhea syndrome and extrapyramidal dysfunction, including bradykinesia, muscle rigidity, and tremor at rest. Her psychiatrist prescribes a newer antipsychotic drug that improves both positive and negative symptoms of schizophrenia with few of the side effects that result from dopamine receptor blockade. Since weekly blood tests are not deemed necessary the drug prescribed by the psychiatrist is probably**

- (a) Bupropion          (b) Clozapine
- (c) Nefazodone        (d) Olanzapine
- (e) Sertraline

**135. A 24-year-old man with a history of partial seizures has been treated with standard anticonvulsants for several years. He is currently taking valproic acid, which is not fully effective and his neurologist prescribes a new drug approved**



for adjunctive use in partial seizures. Unfortunately, the patient develops toxic epidermal necrolysis. The new drug prescribed was

- (a) Felbamate (b) Gabapentin  
(c) Lamotrigine (d) Tiagabine  
(e) Vigabatrin

**136. The introduction of this drug may represent a novel approach to the treatment of major depressive disorders since it appears to act as an antagonist at  $\alpha_2$  adrenoceptors in the CNS**

- (a) Amoxapine (b) Bupropion  
(c) Citalopram (d) Mirtazapine  
(e) Paroxetine

**137. Which one of the following pairs of drug: indication is accurate?**

- (a) Amphetamine:Alzheimer's dementia  
(b) Bupropion:Acute anxiety  
(c) Fluoxetine:Insomnia  
(d) Ropinirole:Parkinson's disease  
(e) Trazodone:Attention deficit disorder

**138. The dose of this immunosuppressive prodrug must be significantly reduced in patients who are also taking the xanthine oxidase inhibitor allopurinol.**

- (a) Azathioprine  
(b) Cyclosporine  
(c) Hydroxychloroquine  
(d) Methotrexate  
(e) Tacrolimus

**139. Which one of the following drugs is most likely to cause hypoglycemia when used as monotherapy in the treatment of type 2 diabetes?**

- (a) Acarbose (b) Glipizide  
(c) Metformin (d) Miglitol  
(e) Rosiglitazone

**140. Anticoagulation is needed immediately in a patient with pulmonary embolism. Since there is some concern about a possible drug-induced thrombocytopenia, the most appropriate drug for parenteral administration in this patient is**

- (a) Clopidogrel (b) Enoxaparin  
(c) Heparin (d) Ticlopidine  
(e) Warfarin

**141. Following general anesthetic is not metabolized**

- (a) Halothane (b) Ether  
(c) Isoflurane (d) Nitrous oxide

**142. Which of the following statements concerning morphine and hydromorphone is true?**

- (a) Hydromorphone is a more effective analgesic because it has a smaller  $ED_{50}$  than morphine.  
(b) Morphine and hydromorphone are equally potent because they have the same  $E_{max}$   
(c) Morphine has a greater  $ED_{50}$  and is thus a less effective analgesic than hydromorphone  
(d) Hydromorphone is a more potent analgesic because it has a greater  $E_{max}$  than morphine  
(e) Hydromorphone has a smaller  $ED_{50}$  and is thus a more potent analgesic than morphine

**143. Meperidine is classified as a**

- (a) Weak acid (b) Salt  
(c) Weak base

**144. Assuming that meperidine is absorbed after oral administration and that a large percentage of the dose is excreted unchanged, the effect of alkalization of the urine will increase its**

- (a) Duration of action  
(b) Rate of excretion  
(c) Ionization in the glomerular filtrate for growth

**145. The appropriate chemical classification for meperidine is**

- (a) Phenylpropylamines  
(b) Piperazines  
(c) 4-phenylpiperidines

**146. Which of the following neuromuscular blocking agents can cause muscarinic responses such as bradycardia and increased glandular secretions?**

- (a) Tubocurarine (b) Succinylcholine  
(c) Pancuronium (d) Decamethonium  
(e) Gallamine

- 147. Which of the following drugs is a volatile substance that is administered by inhalation?**
- (a) Thiopental (b) Halothane  
(c) Alprazolam (d) Buspirone  
(e) Phenytoin
- 148. The brief duration of action of an ultra-short acting barbiturate is due to a**
- (a) Slow rate of metabolism in the liver  
(b) Low lipid solubility, resulting in a minimal concentration in the brain  
(c) High degree of binding to plasma proteins  
(d) Rapid rate of redistribution from the brain due to its high liposolubility  
(e) Slow rate of excretion by the kidneys
- 149. Which of the following mechanisms of action most likely contributes to the treatment of parkinsonism?**
- (a) The direct-acting dopaminergic agonist amantadine mimics the activity of striatal dopamine  
(b) The antimuscarinic activity of dophenhydramine contributes to the restoration of striatal dopaminergic-cholinergic neurotransmitter balance  
(c) Striatal  $H_1$  – receptors are blocked by the antihistaminic trihexyphenidyl  
(d) The ergoline bromocriptine stimulates the release of striatal dopamine from intact terminals.  
(e) One of the above
- 150. All of the following adverse effects are associated with the use of levodopa except**
- (a) Sialorrhea  
(b) Orthostatic hypotension  
(c) Delusions, confusion, and depression  
(d) Dyskinesia and dystonia  
(e) Livedo reticularis
- 151. The activity of which of the following drugs is dependent on a *p*-phenyl – *N* – alkylpiperidine moiety?**
- (a) Phenobarbital (b) Chlorpromazine  
(c) Diazepam (d) Imipramine  
(e) Meperidine
- 152. Which of the following agents would not be an alternative to Phenobarbital in the treatment of partial seizures?**
- (a) Trimethadione (b) Gabapentin  
(c) Felbamate (d) Lamotrigine  
(e) None of the above
- 153. A 32-year-old forklift operator with a past history of cardiac arrhythmias is suffering from seasonal rhinitis. Which of the following choices is the best recommendation for this patient?**
- (a) Diphenhydramine (b) Meclizine  
(c) Astemizole (d) Fexofenadine  
(e) Famotidine
- 154. Which of the following diuretics is most similar in chemical structure to the antihypertensive agent diazoxide?**
- (a) Furosemide (b) Spironolactone  
(c) Mannitol (d) Acetazolamide  
(e) Chlorothiazide
- 155. Following is an example of ideal anesthetic**
- (a) Ether (b) Halothane  
(c) Thiopental (d) None of the above
- 156. An action common to most general anesthetic**
- (a) Increase in the cellular threshold of firing  
(b) Potentiation of spontaneous and evoked activity of neurons  
(c) Inhibition of effects of glutamate  
(d) None of the above
- 157. An unconscious patient is brought to the emergency department with a history of an unknown drug overdose. Which of the following actions should the physician perform?**
- (a) Administer 50ml of 50% dextrose, thiamine 100 mg IV push, and naloxone 0.8 mg IV push, and naloxone 0.8 mg IV push  
(b) Protect the patient's airway and ensure that vital signs are stable  
(c) Perform gastric lavage  
(d) Order the following laboratory tests: CBC, electrolytes, and a toxicology screen  
(e) All of the above

- 158. Ethyl alcohol (EtOH) is administered to patients who have ingested either ethylene glycol or methanol because EtOH**
- To call EMS and have the child taken to the hospital emergency department
  - Administer 1 g/kg of activated charcoal with sorbitol
  - Administer syrup of ipecac 15 ml by mouth to induce vomiting
  - Suggest that the child receive emergency hemodialysis
  - Suggest that the child receive acid diuresis with ammonium chloride
- 159. Parenteral calcium is used as an antidote for which of the following situations?**
- Verapamil overdoses
  - Hyperkalemia
  - Cocaine intoxication
  - Verapamil overdoses and hyperkalemia
- 160. An overdose victim presents to the emergency department with an elevated heart rate, decreased blood pressure, dilated pupils, and lethargy, upon arrival to the ICU, she has a generalized tonic-clonic seizure that is treated with IV diazepam and fosphenytoin. Which of the following is the most likely intoxicant?**
- Ethyl alcohol
  - Methanol
  - Acetaminophen
  - Oxycodone
  - Amitriptyline
- 161. Ophthalmic agents contraindicated in glaucoma patients include which of the following substances?**
- Antioxidants
  - Antipuritics
  - Decongestants
  - Emollients
- 162. Which of the following drugs is excepted to cause anticholinergic adverse effects in the elderly?**
- Propoxyphene
  - Ciprofloxacin
  - Amitriptyline
  - Propranolol
  - Cimetidine
- 163. Which of the following antihypertensive agents should be avoided in elderly patients?**
- Amlodipine 5 mg every day
  - Atenolol 25 mg every day
  - Benazepril 10 mg every day
  - Hydrochlorothiazide 25 mg every day
  - Methyldopa 250 mg three times a day
- 164. Which of the following benzodiazepines is expected to cause the least amount of adverse effects in the elderly?**
- Chlordiazepoxide
  - Diazepam
  - Fluazepam
  - Oxazepam
  - Temazepam
- 165. The use of morphine in the patient who has had a myocardial infarction (MI) centers around three distinct pharmacologic properties. Which of the following choices includes these properties?**
- Relief of pain, relief of anxiety, and increased oxygen supply
  - Relief of anxiety, after load reduction, increased preload
  - Relief of anxiety, preload reduction, and relief of pain
  - Vagomimetic effect, relief of anxiety, respiratory depression
  - Bradycardia, preload reduction, and increased after load
- 166. Which of the following agents represents a relatively new class of drugs used in treating hypertension?**
- Trandolapril
  - Carvedilol
  - Lorsartan
  - Moexipril
  - Nitrendipine
- 167. Reflex tachycardia, headache, and postural hypotension are adverse effects that limit the use of which of the following antihypertensive agents?**
- Prazosin
  - Captopril
  - Methyldopa
  - Guanethidine
  - Hydralazine
- 168. Following is inverse agonist of benzodiazepine receptors**
- Flumazenil
  - $\beta$ -Carbolines
  - Chlordiazepoxide
  - Glutethimide

- 169. Match the adverse effects with the antihypertensive agent that is most likely to cause them.**
- (a) Trandolapril      (b) Methyldopa  
 (c) Nitroprusside    (d) Terazosin  
 (e) Propranolol
- (1) Thiocyanate intoxication, hypotension, and convulsions  
 (2) Bradycardia, bronchospasm, and cardiac decompensation  
 (3) Postural, hypotension, fever, and a positive Coombs' test  
 (4) First-dose syncope, postural hypotension, and palpitations
- 170. Match each description of a  $\beta$ -blocker with the most appropriate  $\beta$ -adrenergic blocking agent.**
- (a) Esmolol            (b) Labetalol  
 (c) Bisoprolol        (d) Nadolol  
 (e) Pindolol
- (1) A  $\beta$ -blocker with intrinsic sympathomimetic activity  
 (2) A  $\beta$ -blocker that also blocks  $\alpha$ -adrenergic receptors  
 (3) A  $\beta$ -blocker with an ultrashort duration of action  
 (4) A  $\beta$ -blocker with a long duration of action and nonselective blocking activity  
 (5) A  $\beta$ -blocker with relative cardioselective blocking activity
- 171. Phenytoin is effective for the treatment of all of the following types of seizures except**
- (a) Generalized tonic-clonic  
 (b) Simple partial  
 (c) Complex partial  
 (d) Absence  
 (e) Grand mal
- 172. Which of the following anticonvulsants is contraindicated in patients with a history of hypersensitivity to tricyclic antidepressants?**
- (a) Phenytoin            (b) Ethosuximide  
 (c) Acetazolamide      (d) Carbamazepine  
 (e) Phenobarbital
- 173. Which anticonvulsant drug requires therapeutic monitoring of Phenobarbital serum levels as well as its own serum levels?**
- (a) Phenytoin            (b) Primidone  
 (c) Clonazepam        (d) Ethotoin  
 (e) Carbamazepine
- 174. Zolpidem belongs to following class of drugs**
- (a) Benzodiazepines  
 (b) Carbamates  
 (c) Imidazopyridines  
 (d) None of the above
- 175. What are the most common adverse effects of anticonvulsive drugs?**
- (a) headache and dizziness  
 (b) Gastrointestinal symptoms  
 (c) Alternation of cognition and mentation  
 (d) Adverse effects on appetite and body weight  
 (e) All of the above
- 176. What are the important elements in considering treatment strategies for Parkinson's patients?**
- (a) Age  
 (b) Clinical presentation of disease  
 (c) Sex  
 (d) Etiology of the disease  
 (e) All of the above
- 177. Which of the following have liver failure in their side effect profile and how often the liver function tests should be monitored?**
- (a) Ropinirole  
 (b) Pramipexole  
 (c) Levodopa/carbidopa  
 (d) Tolcapone  
 (e) Both (a) and (b)
- 178. Which of the following agents should not be used concurrently with levodopa?**
- (a) Diphenhydramine  
 (b) Benztropine  
 (c) Amantadine  
 (d) Monoamine oxidase (MAO) inhibitors  
 (e) Carbidopa

- 179. Amantadine has which of the following advantages over levodopa?**
- (a) More rapid relief of symptoms
  - (b) Higher success rate
  - (c) Better long-term effects
- 180. A patient that has been treated with haloperidol for 3 weeks presents with muscle stiffness, tremor, and shuffling gait. This is most likely which type of extrapyramidal side effect?**
- (a) Akathisia
  - (b) Tardive dyskinesia
  - (c) Pseudoparkinsonism
  - (d) Acute dystonia
- 181. The atypical antipsychotics differ from the typical agents in various ways that define them as atypical. Which of the following is not a defining property of the atypical antipsychotics?**
- (a) Sustained hyperprolactinemia
  - (b) Improved efficacy in treating the negative symptoms
  - (c) Lower risk for extrapyramidal symptoms (EPS)
  - (d) Greater serotonin receptor blockade than dopamine blockade
- 182. Which of the following atypical antipsychotics would be the least sedating?**
- (a) Quetiapine
  - (b) Risperidone
  - (c) Olanzapine
  - (d) Clozapine
- 183. The typical antipsychotic agents are classified into high and low potency agents. Which of the following statements best defines high and low potency?**
- (a) High potency = more weight gain; low potency = weight loss
  - (b) High potency = less extrapyramidal symptoms (EPS); low potency = high EPS
  - (c) High potency = high EPS; low potency = low EPS
  - (d) High potency = high dose; low potency = low dose
- 184. Which of the following agents is not used to treat extrapyramidal symptoms?**
- (a) Donepezil (Aricept)
  - (b) Trihexyphenidyl (Artane)
  - (c) Diphenhydramin (Benadryl)
  - (d) Benztropine (Cogentin)
- 185. Which of the following statements about depression is true?**
- (a) The incidence of depression is greater in men than in women
  - (b) Approximately 5% of institutionalized elders develop depression
  - (c) Depression has no genetic link
  - (d) Depression is diagnosed using the DSM-IV criteria
- 186. A patient with major depression should receive antidepressant therapy for at least**
- (a) 2 weeks
  - (b) 6 weeks
  - (c) 2 months
  - (d) 6 months
- 187. Which of the following patients is not likely to require maintenance antidepressant therapy?**
- (a) A 22-year-old woman depressed about the loss of a parent
  - (b) A 33-year-old man presenting with his second episode of depression
  - (c) A 67-year-old man experiencing his first episode of depression
  - (d) A 34-year-old woman experiencing postpartum depression
- 188. Which of the following medications would most likely exacerbate a preexisting seizure disorder?**
- (a) Venlafaxine
  - (b) Trazodone
  - (c) Bupropion
  - (d) Paroxetine
- 189. A patient receiving astemizole for seasonal allergies is diagnosed with major depression. Which of the following antidepressants would most likely interact with the current regimen?**
- (a) Nefazodone
  - (b) Amitriptyline
  - (c) Sertraline
  - (d) Venlafaxine
- 190. Which of the following medications would be considered first-line monotherapy for the treatment of bipolar disorder?**

- (a) Gabapentin (b) Lithium  
(c) Risperidone (d) Lamotrigine

**191. Which of the following is the appropriate therapeutic range for lithium in the treatment of acute mania?**

- (a) 0.6–1.0 mEq/L (b) 0.6–1.5 mEq/L  
(c) 0.6–0.8 mEq/L (d) 0.8–1.2 mEq/L

**192. Which of the following mood stabilizers would be most appropriate in a patient with liver disease?**

- (a) Lithium (b) Valproic acid  
(c) Carbamazepine (d) None of the above

**193. Ethinamate is \_\_\_\_\_ derivative**

- (a) Phenothiazine (b) Urethane  
(c) Piperidine (d) Tertiary alcohol

**194. Which of the following factors may reduce lithium concentrations?**

- (a) Dehydration  
(b) Pregnancy  
(c) Reduced sodium intake  
(d) Nonsteroidal anti-inflammatory drugs

**195. Match the description with the appropriate agent.**

- |                   |  |
|-------------------|--|
| (a) Cimetidine    | (1) Decrease theophylline clearance                    |
| (b) Albuterol     | (2) Has anticholinergic activity with few side effects |
| (c) Imipratropium | (3) Has high $\beta_2$ -adrenergic selectivity bromide |
| (d) Epinephrine   |  |
| (e) Atropine      |  |

**196. The diuretic of choice for the initial treatment of a patient with either acute or chronic renal failure (ARF, CRF) whose creatinine clearance is below 25 ml/min is**

- (a) Hydrochlorothiazide  
(b) Bumetanide  
(c) Furosemide  
(d) Ethacrynic acid

**197. Erythropoietin is used commonly to treat the anemia associated with chronic renal failure (CRF). Which of the following**

**conditions limits the effectiveness of erythropoietin?**

- (a) A patient's allergy to erythropoietin  
(b) Depletion of iron stores, requiring oral or parenteral supplementation  
(c) The ineffectiveness of erythropoietin, as 30% of patients do not respond  
(d) The anemia of chronic renal failure is not due to a lack of erythropoietin, so erythropoietin will not ameliorate

**198. Morphine stimulates**

- (a) Biliary and pancreatic secretions  
(b) Nonpropulsive rhythmic contractions of small intestine of man  
(c) Propulsive contractions in small intestine of man  
(d) Propulsive peristaltic waves in colon  
(e) Human uterus at full term

**199. The brain-stem centers affected most strongly by barbiturates are the**

- (a) Respiratory centers  
(b) Vasomotor centers  
(c) Cardioinhibitory centers  
(d) Cardioacceleratory centers  
(e) None of the above

**200. Following statement is correct about criteria for neurotransmitter**

- (a) Must be shown to be present in the presynaptic terminals  
(b) Must be released from the presynaptic terminal concomitantly with presynaptic activity  
(c) When applied experimentally, effects must be identical to the effects of stimulating the presynaptic pathway  
(d) All of the above

**201. A drug that produces increased contraction of the sphincter iridis by local application is a**

- (a) Parasympathomimetic drug  
(b) Parasympatholytic drug  
(c) Sympathomimetic drug  
(d) Sympatholytic drug  
(e) None of the above



- 202. BAL (British Anti-Lewiside is used to counter the toxic effects of**
- (a) Atropine (b) Mercury  
(c) Morphine (d) Barbiturates  
(e) Digitalis
- 203. Which of the following should not be administered to a patient with myasthenia gravis?**
- (a) Prostigmine (b) Digitalis  
(c) Atropine (d) Curare  
(e) Insulin
- 204. The toxicity of methanol is due to its conversion in the body to**
- (a) Acetaldehyde  
(b) Formic acid and formaldehyde  
(c) Ethyl alcohol  
(d) Carbonic acid  
(e) Methane
- 205. One of epinephrine's actions on the heart is**
- (a) Acceleration due to depression of the vagus  
(b) Increase in refractory period  
(c) Depression of the SA node  
(d) Increase in the concentration of the enzyme phosphorylase A  
(e) None of the above
- 206. Epinephrine HCl has little or no effect on**
- (a) Unbroken skin  
(b) Conjunctiva  
(c) Precapillary sphincter  
(d) Nasal mucosa  
(e) Pupil
- 207. Epinephrine is often included in the administration of local anaesthetics because it**
- (a) Enhances analgesic effect  
(b) Neutralizes irritant action  
(c) Delays diffusion of the anesthetic from the site of injection  
(d) Increases diffusion of the anesthetic  
(e) Increases blood levels of the anesthetic
- 208. Paxipam (halazepam) is used primarily to treat**
- (a) Edema  
(b) Congestive heart failure  
(c) Symptoms of anxiety  
(d) Epilepsy  
(e) Muscle spasms
- 209. Isoetharine is a drug which stimulated primarily which of the following receptors?**
- (a) Alpha (b) Histamine  
(c) Beta 1 (d) Beta 2  
(e) None of the above
- 210. The mechanism explaining the clinical picture observed in carbon monoxide poisoning is**
- (a) Hemolysis of red blood cells  
(b) A chemical union of the carbon monoxide with the hemoglobin of the red blood cells  
(c) Transformation of the carbon monoxide to carbon dioxide in the blood  
(d) Arrest of oxidation in the tissues by enzyme interference  
(e) None of the above
- 211. Acetylcholine has both muscarinic and nicotinic actions. The muscarinic action can be blocked by**
- (a) Epinephrine (b) Atropine  
(c) Nicotine (d) Curare  
(e) Nicotine and curare
- 212. Which of the following is the fastest acting anticoagulant?**
- (a) Warfarin (Coumadin)  
(b) Heparin  
(c) Ouabain  
(d) Protamine sulfate  
(e) Vitamin K
- 213. Phencyclidine is a non-competitive antagonist of**
- (a) Kainate (b) AMPA  
(c) NMDA (d) All of the above
- 214. Which of the following would be the drug of choice for treatment of hypertensive crisis?**

- (a) Diazoxide (Hyperstat)  
(b) Clonidine (Catapres)  
(c) Propranolol (Inderal)  
(d) Guanethidine (Ismelin)  
(e) Proserpine (Serpasil)
- 215. Parkinsonism is probably due to**  
(a) Too little dopamine in the brain  
(b) Too little levodopa in the brain  
(c) Too little acetylcholine in the brain  
(d) Too much levodopa in the brain  
(e) Too much dopamine in the brain
- 216. A prominent toxic effect of local anaesthetics is**  
(a) CNS stimulation (b) CNS depression  
(c) Tachycardia (d) Local ischemia  
(e) None of the above
- 217. Which of the following could be used as an antidote for curare poisoning?**  
(a) Neostigmine (b) Atropine  
(c) Homatropine (d) Hexamethonium  
(e) None of the above
- 218. Cigarette smoking increases the side effects of**  
(a) Narcotic analgesics  
(b) Analeptics  
(c) Antidepressants  
(d) Oral contraceptives  
(e) Cardiac glycosides
- 219. Fluoxetine is a \_\_\_\_\_ transport blocker**  
(a) Serotonin (b) Norepinephrine  
(c) Dopamine (d) GABA
- 220. Vivactil (protriptyline) is used mainly as a (an)**  
(a) Analgesic (b) Muscle relaxant  
(c) Cardiotonic (d) Antidepressant  
(e) Antispasmodic
- 221. Which is the drug of choice for trigeminal neuralgia?**  
(a) Carbamazepine (b) Phenytoin  
(c) Flurazepam (d) Diazepam  
(e) Trimethadione
- 222. Which of the following may increase seizure activity in epileptic patients?**  
(a) Ethotoin (b) Phenobarbital  
(c) Trihexyphenidyl (d) Amantadine  
(e) L - Dopa
- 223. Trazodone (Desyrel) is used primarily as a (an)**  
(a) Analgesic (b) Cardiotonic  
(c) Tranquilizer (d) Antidepressant  
(e) Antihypertensive
- 224. In addition to their marked potency, the loop diuretics Lasix and Edecrin have an added advantage of**  
(a) Being completely free of side effects  
(b) Causing hypokalemia  
(c) Not causing any electrolyte imbalance  
(d) Requiring only once weekly dosing  
(e) Being effective when given orally
- 225. Neuronal death in response to high glutamate concentration is mediated by**  
(a) Kainate (b) AMPA  
(c) NMDA (d) All of the above
- 226. A common side effect of ephedrine is**  
(a) Rashes (b) Nervousness  
(c) Blood dyscrasia (d) Drowsiness  
(e) Ulcers
- 227. Thiazide diuretics may produce an increase in blood levels of uric acid and**  
(a) Potassium (b) BUN  
(c) Urea (d) Lithium  
(e) Glucose
- 228. A group of drugs used widely to treat mild hypertension is**  
(a) Synaptic blockers  
(b) Diuretics  
(c) Ganglionic blockers  
(d) MAO inhibitors  
(e) None of the above
- 229. What is the advantage of levodopa over dopamine in treating parkinsonism?**  
(a) It is more stable  
(b) It is less toxic  
(c) It is more readily available



- (d) It is considerably less expensive  
(e) It is more effective
- 230. In an anaesthetized dog, repeated intravenous injection of ephedrine shows the phenomenon of**
- (a) Anaphylaxis (b) Tachyphylaxis  
(c) Idiosyncrasy (d) Drug resistance
- 231. The cotransmitter may serve the following function/functions**
- (a) Regulate the release of the primary transmitter from the nerve ending  
(b) Alter postjunctional action of the primary transmitter  
(c) Itself act as an alternative transmitter  
(d) All of the above
- 232. Pseudocholinesterase differs from the cholinesterase in that**
- (a) It does not hydrolyse acetylcholine  
(b) It hydrolyses acetylcholine at a slower rate  
(c) It is more susceptible to inhibition by physostigmine  
(d) It is the only form of circulating cholinesterase
- 233. Acetylcholine has no therapeutic application because**
- (a) None of its actions are beneficial in any condition  
(b) Its effects are transient  
(c) It produces wide spread actions affecting many organs  
(d) Both 'B' and 'C' are correct
- 234. Pilocarpine is used in**
- (a) Glaucoma (b) Paralytic ileus  
(c) Urinary retention (d) All of the above
- 235. Which of the following inhibitors binds only to the anionic site of the cholinesterase enzyme ?**
- (a) Neostigmine (b) Physostigmine  
(c) Edrophonium (d) Dyflos
- 236. Neostigmine is preferred over physostigmine for treating myasthenia gravis because**
- (a) It is better absorbed orally  
(b) It has longer duration of action  
(c) It has additional direct agonistic action on nicotinic receptors at the muscle end plate  
(d) It penetrates blood-brain barrier
- 237. The mechanism by which neostigmine improves contraction of myasthenic muscle involves**
- (a) Repetitive binding of the acetylcholine molecules to the same receptors at the muscle end plate  
(b) Diffusion of acetylcholine released from motor nerve endings to a wider area activating neighbouring receptors  
(c) Activation of motor end-plate receptors by neostigmine molecules themselves  
(d) All of the above
- 238. Symptoms of schizophrenia are produced by following agents, except**
- (a) Amphetamine (b) Apomorphine  
(c) Bromocriptine (d) Reserpine
- 239. Select the anticholinesterase drug that is being used to afford symptomatic improvement in Alzheimer's disease**
- (a) Echothiophate (b) Tacrine  
(c) Demecarium (d) Ambenonium
- 240. Pilocarpine reduces intraocular tension in open angle glaucoma by**
- (a) Contracting sphincter pupillae  
(b) Increasing tone of ciliary muscle  
(c) Reducing aqueous formation  
(d) Enhancing uveo-scleral outflow
- 241. Timolol eye drops are preferred over pilocarpine eye drops by many glaucoma patients because**
- (a) Timolol is more effective than pilocarpine  
(b) Timolol acts by enhancing uveo-scleral outflow  
(c) Timolol produces less ocular side effects  
(d) There are no contraindications to timolol
- 242. Select the longer acting ocular beta blocker**
- (a) Timolol (b) Betaxolol  
(c) Carteolol (d) Levobunolol

- 243. Which of the following is a prodrug of adrenaline used topically in glaucoma ?**
- (a) Phenylephrine
  - (b) Dipivefrine
  - (c) Phenylpropanolamine
  - (d) Dorzolamide
- 244. Which of the following diuretics is most effective in acute congestive glaucoma ?**
- (a) Indapamide            (b) Amiloride
  - (c) Mannitol                (d) Furosemide
- 245. Neostigmine is beneficial in cobra envenomation because**
- (a) It binds to and inactivates cobra toxin
  - (b) It reverses coma due to cobra toxin
  - (c) It counteracts the cardio-depressant action of cobra toxin
  - (d) It antagonizes the paralyzing action of cobra toxin
- 246. Which is the most important drug in the treatment of organophosphate poisoning ?**
- (a) Atropine sulfate    (b) Pralidoxime
  - (c) Diazepam             (d) Adrenaline
- 247. Which of the following diseases is worsened by propranolol ?**
- (a) Glaucoma
  - (b) Raynaud's disease
  - (c) Benign prostatic hypertrophy
  - (d) Parkinsonism
- 248. Diazepam is used as a muscle relaxant for**
- (a) Deep intra-abdominal operation
  - (b) Tracheal intubation
  - (c) Tetanus
  - (d) Diagnosis of myasthenia gravis
- 249. The local anaesthetics having amide linkage differ from those having ester linkage in that the amide linked local anaesthetics**
- (a) Are not surface anaesthetics
  - (b) Have a shorter duration of action
  - (c) Are degraded in the plasma
  - (d) Do not show cross-sensitivity with ester linked local anaesthetics
- 250. Local anaesthetics block nerve conduction by**
- (a) Blocking all cation channels in the neuronal membrane
  - (b) Hyperpolarizing the neuronal membrane
  - (c) Interfering with depolarization of the neuronal membrane
  - (d) Both (b) and (c)
- 251. Sensitivity of a nerve fibre to blockade by lidocaine depends on**
- (a) Whether the fibre is sensory or motor
  - (b) Whether the fibre is myelinated or nonmyelinated
  - (c) Internodal distances in the fibre
  - (d) Both (b) and (c)
- 252. Which sensation is blocked first by low concentrations of a local anaesthetic ?**
- (a) Temperature            (b) Pain
  - (c) Touch                    (d) Deep pressure
- 253. Following are the MAO-inhibitors, except**
- (a) Tranylcypromine    (b) Nomifensine
  - (c) Moclobemide        (d) Isocarboxid
- 254. The local anaesthetic with the longest duration of action is**
- (a) Procaine                (b) Chlorprocaine
  - (c) Lidocaine               (d) Dibucaine
- 255. Which of the following is a poor surface anaesthetic ?**
- (a) Procaine                (b) Lidocaine
  - (c) Tetracaine              (d) Benoxinate
- 256. The local anaesthetic having high cardiotoxic and arrhythmogenic potential is**
- (a) Lidocaine                (b) Procaine
  - (c) Bupivacaine            (d) Chlorprocaine
- 257. Low concentration of bupivacaine is preferred for spinal/epidural obstetric analgesia because**
- (a) It has a longer duration of action
  - (b) It can produce sensory blockade without paralyzing abdominal muscles
  - (c) It distributes more in maternal tissues so that less reaches the foetus
  - (d) All of the above are correct

- 258. Which of the following local anaesthetics is poorly water soluble PABA derivative and primarily used for anorectal lesions, wounds and ulcers ?**
- (a) Benzocaine      (b) Dibucaine  
(c) Procaine      (d) Benoxinate
- 259. Oxethazaine is used for anaesthetizing gastric mucosa because**
- (a) It is not absorbed from the gastrointestinal tract  
(b) It remains largely unionized in acidic medium  
(c) It is highly ionized in acidic medium  
(d) It produces no systemic effects even at high doses
- 260. In which of the following techniques the concentration of the local anaesthetic required is the lowest ?**
- (a) Infiltration anaesthesia  
(b) Field block anaesthesia  
(c) Nerve block anaesthesia  
(d) Spinal anaesthesia
- 261. The segmental level of spinal anaesthesia depends on**
- (a) Volume of the local anaesthetic injected  
(b) Specific gravity of the local anaesthetic solution  
(c) Posture of the patient  
(d) All of the above
- 262. Spinal anaesthesia is not suitable for**
- (a) Vaginal delivery  
(b) Lower segment caesarian section  
(c) Prostatectomy  
(d) Operations on mentally ill patients
- 263. Epidural anaesthesia differs from spinal anaesthesia in that**
- (a) Epidural anaesthesia produces less cardiovascular complications  
(b) Headache is more common after epidural anaesthesia  
(c) Blood concentrations of the local anaesthetic are lower after epidural anaesthesia  
(d) Greater separation between sensory and motor blockade can be obtained with epidural anaesthesia
- 264. The calcium channel blocker used for prophylaxis of migraine but not for angina pectoris is**
- (a) Verapamil      (b) Diltiazem  
(c) Flunarizine      (d) Amlodipine
- 265. Select the nonapeptide which can be generated from plasma globulin by snake venom enzymes and causes fall in BP and intense pain when applied to blister base**
- (a) Kallidin      (b) Bradykinin  
(c) Angiotensin II      (d) Angiotensin III
- 266. Captopril produces greater fall in blood pressure in**
- (a) Diuretic treated patients  
(b) Patients having low plasma rennin activity  
(c) Sodium replete normotensive individuals  
(d) Untreated CHF patients
- 267. Enalapril differs from captopril in that**
- (a) It blocks angiotensin II receptors  
(b) It does not produce cough as a side effect  
(c) It is less liable to cause abrupt first dose hypotension  
(d) It has a shorter duration of action
- 268. Which of the following drugs increases cardiac output in congestive heart failure without having any direct myocardial action ?**
- (a) Digoxin      (b) Captopril  
(c) Amrinone      (d) Dobutamine
- 269. Which of the following statements most closely describes the current status of angiotensin converting enzyme inhibitors in congestive heart failure ?**
- (a) They are the first choice drugs unless contraindicated  
(b) They are used when diuretics alone fail  
(c) They are a substitute for digitalis  
(d) They are to be used as adjuncts only in resistant cases
- 270. Following is a MAO-inhibitor and also has anit-tubercular activity**
- (a) Iproniazid      (b) Phenelzine  
(c) Moclobemide      (d) Isocarboxid

- 271. Losartan is a**
- (a) Selective AT<sub>1</sub> receptor antagonist
  - (b) Selective AT<sub>2</sub> receptor antagonist
  - (c) Nonselective AT<sub>1</sub> + AT<sub>2</sub> receptor antagonist
  - (d) AT<sub>1</sub> receptor partial agonist
- 272. Losartan differs from analapril in the following respect**
- (a) It does not potentiate bradykinin
  - (b) It depresses cardiovascular reflexes
  - (c) It impairs carbohydrate tolerance
  - (d) It does not have fetopathic potential
- 273. Bisphosphonates are indicated in the following condition**
- (a) Organophosphate poisoning
  - (b) Dementia
  - (c) Steven's Johnson syndrome
  - (d) Postmenopausal osteoporosis
- 274. The most likely mechanism by which general anaesthetics produce their action is**
- (a) Affecting receptor operated ion channels in cerebral neurones
  - (b) Blocking voltage sensitive Na<sup>+</sup> channels in neuronal membrane
  - (c) Depressing metabolic activity of cerebral neurones
  - (d) Blocking production of high energy phosphates in the brain
- 275. Which of the following is a sign of deep anaesthesia ?**
- (a) Appearance of tears in eyes
  - (b) Resistance to passive inflation of lungs
  - (c) Fall in blood pressure
  - (d) Patient makes swallowing movements
- 276. Which inhalational general anaesthetic is metabolized in the body to a significant extent**
- (a) Sevoflurane
  - (b) Isoflurane
  - (c) Ether
  - (d) Halothane
- 277. Which of the following general anaesthetics has poor muscle relaxant action ?**
- (a) Ether
  - (b) Nitrous oxide
  - (c) Halothane
  - (d) Isoflurane
- 278. Which of the following is true of nitrous oxide ?**
- (a) It irritates the respiratory mucosa
  - (b) It has poor analgesic action
  - (c) It is primarily used as a carrier and adjuvant to other anaesthetics
  - (d) It frequently induces post anaesthetic nausea and retching
- 279. Ether is widely used as a general anaesthetic in India, specially in peripheral hospitals because**
- (a) It is nonexplosive
  - (b) It is pleasant smelling and nonirritating
  - (c) It induces anaesthesia rapidly
  - (d) It is cheap and can be administered without anaesthetic machine
- 280. The factor that effects rate of elimination of general anaesthetics is**
- (a) Pulmonary ventilation
  - (b) Blood flow
  - (c) Solubility in blood and tissue
  - (d) All of the above
- 281. Which of the following general anaesthetics has the most marked uterine relaxant action ?**
- (a) Propofol
  - (b) Halothane
  - (c) Nitrous oxide
  - (d) Ether
- 282. The distinguishing feature of enflurane compared to halothane is its**
- (a) Pleasant and nonirritating nature
  - (b) Propensity to precipitate seizures
  - (c) Propensity to cause hypotension
  - (d) Bronchodilator action
- 283. The drug/drugs used mainly for induction of general anaesthesia is/are**
- (a) Thiopentone sodium
  - (b) Fentanyl + droperidol
  - (c) Ketamine
  - (d) All of the above
- 284. The anaesthetic action of thiopentone sodium is characterized by**
- (a) Good muscle relaxation
  - (b) Poor analgesia

- (c) Sensitization of heart to adrenaline  
(d) No postoperative residual CNS depression
- 285. Dissociative anaesthesia is produced by**
- (a) Ketamine  
(b) Fentanyl + droperidol  
(c) Propofol  
(d) Both (a) and (b)
- 286. Use of morphine in preanaesthetic medication**
- (a) Is routine except in the presence of contraindications  
(b) Is restricted to patients being anaesthetized with ether  
(c) Should be made only in combination with atropine  
(d) Is restricted mostly to patients in pain preoperatively
- 287. Which of the following drugs is routinely used in preanaesthetic medication for prolonged operations**
- (a) Atropine                      (b) Morphine  
(c) Promethazine                (d) Ranitidine
- 288. Patients treated with the following drugs should be cautioned not to consume alcoholic beverages**
- (a) Mebendazole                (b) Metronidazole  
(c) Methimazole                (d) Metamizol
- 289. Consumption of alcoholic beverages, even in moderate amounts, is contraindicated for the following category of subjects except**
- (a) Epileptics  
(b) Patients with history of myocardial infarction  
(c) Gastroesophageal reflux patients  
(d) Pregnant women
- 290. What is considered to be the safe limit of daily alcohol consumption by an adult man in the absence of contraindications and interacting drugs**
- (a) 20 – 40 ml of whisky  
(b) 50 – 100 ml of whisky  
(c) 120 – 180 ml of whisky  
(d) 200 – 300 ml of whisky
- 291. Which of the following drugs has been found to reduce alcohol craving and chances of resumed heavy drinking by alcoholics after they have undergone a detoxification programme**
- (a) Chlordiazepoxide (b) Chlorpromazine  
(c) Methadone                (d) Naltrexone
- 292. Following agent potentiates actions of GABA**
- (a) Volatile anaesthetics  
(b) Barbiturates  
(c) Propofol  
(d) All of the above
- 293. Ethanol is used in methanol poisoning because it**
- (a) Antagonises the actions of methanol  
(b) Stimulates the metabolism of methanol and reduces its blood level  
(c) Inhibits the metabolism of methanol and generation of toxic metabolite  
(d) Replenishes the folate stores depleted by methanol
- 294. The mechanism of action of barbiturates differs from that of benzodiazepines in that they**
- (a) Do not affect the GABA–benzodiazepine receptor–chloride channel complex  
(b) Act as inverse agonists at the benzodiazepine receptor  
(c) Increase the frequency of chloride channel opening without affecting its life time  
(d) Have both GABA–facilitatory as well as GABA–mimetic actions
- 295. Which one of the following processes plays the major role in terminating the action of phenobarbitone**
- (a) Biliary excretion  
(b) Renal excretion  
(c) Hepatic metabolism  
(d) Redistribution
- 296. Currently barbiturates are primarily used as**
- (a) Hypnotic  
(b) Sedative

- (c) Antiepileptic  
(d) Preanaesthetic medicant
- 297. Hypnotic benzodiazepines increase the period of time spent in the following stage of sleep**
- (a) Stage II (b) Stage III  
(c) Stage IV (d) REM stage
- 298. The primary mechanism of action of benzodiazepines is**
- (a) Dopamine antagonism  
(b) Adenosine antagonism  
(c) Opening of neuronal chloride channels  
(d) Facilitation of GABA-mediated chloride influx
- 299. At a single hypnotic dose, the pharmacokinetics of diazepam is characterized by**
- (a) Slow elimination and little redistribution  
(b) Slow elimination with marked redistribution  
(c) Rapid elimination and marked redistribution  
(d) Ultra rapid elimination
- 300. The following drug is used to reverse the CNS depression produced by diazepam**
- (a) Nikethamide (b) Doxapram  
(c) Physostigmine (d) Flumazenil
- 301. Which of the following is not a CNS depressant but increases the tendency to fall asleep at night?**
- (a) Pyridoxine (b) Methaqualone  
(c) Melatonin (d) Ethanol
- 302. The barbiturate having higher anticonvulsant sedative activity ratio is**
- (a) Pentobarbitone (b) Phenobarbitone  
(c) Bultabarbitone (d) Thiopentone
- 303. The most probable mechanism of anticonvulsant action of phenytoin is**
- (a) Facilitation of GABA ergic inhibitory transmission  
(b) Hyperpolarization of neurones  
(c) Interaction with  $\text{Ca}^{2+}$  channels to promote  $\text{Ca}^{2+}$  influx  
(d) Prolongation of voltage sensitive neuronal  $\text{Na}^+$  channel inactivation
- 304. Phenytoin appears to derive its anticonvulsant action from**
- (a) Selective inhibition of high frequency neuronal discharges  
(b) Selective inhibition of epileptic focus  
(c) Selective inhibition T-type  $\text{Ca}^{2+}$  current in brain cells  
(d) Selective enhancement of inhibitory transmission in the brain
- 305. The characteristics feature of phenytoin pharmacokinetics is**
- (a) High first pass metabolism  
(b) Nonsaturation kinetics of metabolism  
(c) Capacity limited metabolism saturating at higher therapeutic concentration range  
(d) Extrahepatic metabolism
- 306. Which of the following drugs displaces plasma protein bound phenytoin as well as decreases its metabolism**
- (a) Carbamazepine (b) Sodium valproate  
(c) Cimetidine (d) Chloramphenicol
- 307. The following antiepileptic drug is also effective in manic-depressive illness**
- (a) Ethosuccimide (b) Primidone  
(c) Phenobarbitone (d) Carbamazepine
- 308. The drug of choice for trigeminal neuralgia is**
- (a) Aspirin (b) Imipramine  
(c) Carbamazepine (d) Valproic acid
- 309. Which of the following is a narrow spectrum antiepileptic drug effective only in absence seizures**
- (a) Phenacemide (b) Ethosuccimide  
(c) Sodium valproate (d) Primidone
- 310. Sodium valproate has been shown to**
- (a) Prolong neuronal  $\text{Na}^+$  channel inactivation  
(b) Attenuate 'T' type  $\text{Ca}^{2+}$  current in neurones  
(c) Inhibit degradation of GABA by GABA - transaminase  
(d) All of the above
- 311. Sodium valproate should be used with caution in young children because they**



- are particularly at risk of developing the following adverse effect
- (a) Hepatitis (b) Loss of hair  
(c) Anorexia (d) Tremor
- 312. 2-bromo-2-chloro-1,1,1 trifluoroethane is**
- (a) Halothane (b) Enflurane  
(c) Isoflurane (d) Desflurane
- 313. Clobazam is a benzodiazepine used as**
- (a) Hypnotic (b) Muscle relaxant  
(c) Anxiolytic (d) Antiepileptic
- 314. Which of the following is a recently developed antiepileptic drug used mainly as add-on therapy of refractory partial seizures ?**
- (a) Viloxazine (b) Lamotrigine  
(c) Bupropion (d) Clozapine
- 315. Gabapentin acts**
- (a) As GABA<sub>A</sub> agonist  
(b) As precursor of GABA  
(c) By enhancing GABA release  
(d) By GABA independent mechanism
- 316. Which of the following is a GABA - transaminase inhibitor ?**
- (a) Gabapentin (b) Vigabatrin  
(c) Lamotrigine (d) Clobazam
- 317. Which of the following factors indicates that withdrawal of the successfully used antiepileptic medication is likely to result in recurrence of seizures ?**
- (a) Childhood epilepsy  
(b) Partial seizures  
(c) Treatment started soon after seizure onset  
(d) Absence of EEG abnormality
- 318. An epileptic woman controlled by phenytoin therapy conceives. Which of the following measures is most appropriate ?**
- (a) Mecal termination of pregnancy  
(b) Withdraw phenytoin therapy  
(c) Gradually reduce phenytoin dose to the lowest effective level  
(d) Substitute phenytoin with a combination of carbamazepine and sodium valproate
- 319. Which of the following is the most suitable drug for a 6-year-old girl suffering from absence seizures with occasional generalized tonic-clonic seizures ?**
- (a) Ethosuccimide (b) Sodium valproate  
(c) Carbamazepine (d) Phenytoin
- 320. The preferred drug for status epilepticus is**
- (a) Intravenous diazepam  
(b) Intravenous phenytoin sodium  
(c) Intramuscular phenobarbitone  
(d) Rectal paraldehyde
- 321. The most effective single drug in parkinsonism is**
- (a) Bromocriptine (b) Selegiline  
(c) Levodopa (d) Biperiden
- 322. The dopamine D2 receptor has the following feature.**
- (a) It is excitatory in nature  
(b) It is negatively coupled to adenyl cyclase  
(c) It is selectively blocked by chlorpromazine  
(d) It is not blocked by metoclopramide
- 323. The usual cardiovascular effect of levodopa is**
- (a) Bradycardia due to increased vagal tone  
(b) Rise in blood pressure due to increased noradrenaline content of adrenergic nerve endings  
(c) Fall in blood pressure due to decrease in sympathetic tone  
(d) Both (a) and (b)
- 324. Which of the following adverse effects of levodopa has a delayed onset and increases in severity with continued therapy ?**
- (a) Nausea and vomiting  
(b) Postural hypotension  
(c) Cardiac arrhythmia  
(d) Abnormal movements
- 325. The drug which abolishes the therapeutic effect of levodopa in parkinsonism, but not that of levodopacarbidoa combination is**

- (a) Metoclopramide (b) Pyridoxine  
(c) Chlorpromazine (d) Isoniazid

**326. Use of carbidopa along with levodopa in the treatment of parkinsonism**

- (a) Inhibits development of involuntary movements  
(b) Minimises 'on-off' effect  
(c) Inhibits occurrence of behavioral abnormalities  
(d) Accentuates nausea and vomiting

**327. Which of the following adverse effects of levodopa is not minimized by combining it with carbidopa**

- (a) Involuntary movements  
(b) Nausea and vomiting  
(c) Cardiac arrhythmia  
(d) 'On-off' effect

**328. Though bromocriptine acts directly on dopamine receptors, it is used in parkinsonism only as a supplement to levodopa because**

- (a) It has low efficacy  
(b) It produces 'first dose hypotension'  
(c) Used alone, its effective doses produce intolerable side effects  
(d) Its therapeutic effect takes long time to develop

**329. Nitrous oxide is**

- (a) Non-flammable  
(b) Non-irritant  
(c) Potent analgesis  
(d) All of the above

**330. The antiparkinsonian drug which acts by inhibiting the degradation of dopamine in the brain is**

- (a) Carbidopa (b) Amantadine  
(c) Selegiline (d) Bromocriptine

**331. Tolerance to the antiparkinsonian action develops most rapidly in the case of**

- (a) Levodopa  
(b) Levodopa + carbidopa  
(c) Amantadine  
(d) Bromocriptine

**332. Which of the following drugs is added to levodopa therapy of parkinsonism to attenuate wearing off effect ?**

- (a) Selegiline (b) Trihexiphenidyl  
(c) Amantadine (d) Any of the above

**333. The following drug is effective in chlorpromazine induced parkinsonism.**

- (a) Trihexyphenidyl  
(b) Selegiline  
(c) Bromocriptine  
(d) Levodopa + carbidopa

**334. For majority of patients of parkinsonism the standard drug therapy is**

- (a) Levodopa  
(b) Levodopa + carbidopa  
(c) Levodopa + trihexiphenidyl  
(d) Bromocriptine

**335. Compared to other antipsychotic drugs, the distinctive feature of penfluridol is**

- (a) Very long duration of action  
(b) Weak dopamine D<sub>2</sub> blocking activity  
(c) Lack of extrapyramidal side effects  
(d) Additional 5-HT<sub>2</sub> receptor blocking activity

**336. Which of the following adverse effects of neuroleptic drugs is positively correlated to the antipsychotic potency of the different compounds ?**

- (a) Sedation  
(b) Extrapyramidal motor disturbances  
(c) Postural hypotension  
(d) Lowering of seizure threshold

**337. Chlorpromazine therapy increases the secretion of the following hormone.**

- (a) Prolactin (b) Gonadotropin  
(c) Corticotropin (d) Antidiuretic hormone

**338. What is true of risperidone ?**

- (a) It is an atypical neuroleptic which produces few extrapyramidal side effects  
(b) It has combined dopamine D<sub>2</sub> and 5-HT<sub>2</sub> receptor blocking activity  
(c) It is highly sedative  
(d) Both (a) and (b)



- 339. Which of the following is a high potency antipsychotic drug having minimal sedative and autonomic effects and no propensity to cause weight gain ?**  
 (a) Chlorpromazine (b) Triflupromazine  
 (c) Haloperidol (d) Reserpine
- 340. The psychotic symptoms most benefited by neuroleptic drugs are**  
 (a) Judgement and memory impairment  
 (b) Loss of insight and volition  
 (c) Hallucinations, delusions and aggressive  
 (d) Apathy and social withdrawl
- 341. A manic patient has been brought to the hospital with nonstop talking, singing, uncontrollable behavior and apparent loss of contact with reality. Which of the following is the most appropriate drug for rapid control of his symptoms ?**  
 (a) Lithium carbonate (b) Diazepam  
 (c) Haloperidol (d) Chloral hydrate
- 342. The drug which should not be used to treat neurotic anxiety and tension syndromes despite having antianxiety action is**  
 (a) Buspirone (b) Chlorpromazine  
 (c) Diazepam (d) Alprazolam
- 343. Which of the following is a nonsedative anxiolytic ?**  
 (a) Meprobamate (b) Buspirone  
 (c) Hydroxyzine (d) Alprazolam
- 344. Which of the following statements in correct about buspirone ?**  
 (a) It interacts with benzodiazepine receptor as an inverse agonist  
 (b) It is a rapidly acting anxiolytic, good for panic states  
 (c) It produces physical dependence and suppresses barbiturate withdrawl syndrome  
 (d) It has anxiolytic but no anticonvulsant or muscle relaxant property
- 345. Which of the following selective MAO-B inhibitor ?**  
 (a) Selegiline (b) Chlorgiline  
 (c) Moclobemide (d) Tranylcypromine
- 346. The most important reason for the unpopularity of nonselective MAO inhibitors as antidepressants is their**  
 (a) Low antidepressant efficacy  
 (b) Organ toxicity  
 (c) Potential to interact with many foods and drugs  
 (d) Propensity to precipitate hypomania in depressed patients
- 347. The antidepressant which selectively blocks 5-hydroxytryptamine uptake is**  
 (a) Desipramine (b) Amoxapine  
 (c) Fluoxetine (d) Dothiepin
- 348. Adaptive changes in brain monoamine turnover due to blockade of noradrenaline/5-HT reuptake is credited with the following effect.**  
 (a) Antipsychotic (b) Antianxiety  
 (c) Antiparkinsonian (d) Antidepressant
- 349. A 65-year-old man was brought to the hospital with complaints of pain in lower abdomen and not having passed urine for 16 hours. The bladder was found to be full. His son informed that he was depressed for the last 2 years and only the day before a doctor had given him some medicine. Which of the following drugs is he most likely to have received ?**  
 (a) Alprazolam (b) Haloperidol  
 (c) Imipramine (d) Trazodone
- 350. Following analgesics are frequently employed as supplemental drugs during general anesthesia.**  
 (a) Meperidine (b) Fentanyl  
 (c) Alfentanil (d) All of the above
- 351. Prolonged painful erection of penis has been noted particularly as a side effect of**  
 (a) Doxepin (b) Trimipramine  
 (c) Mianserin (d) Trazodone
- 352. A 30-year old woman suffering from endogenous depression improved after one month of treatment with amitriptyline. How long the drug should be continued**

- (a) Selegiline            (b) Chlorgiline  
(c) Moclobemide        (d) Tranylcypromine
- 353. Which of the following statements about lithium is not correct**
- (a) It has a sedative action in normal individuals  
(b) It controls mania, but takes 1–2 weeks to produce the effect  
(c) It has prophylactic effect in recurrent unipolar depression  
(d) It can be combined with tricyclic antidepressants for refractory cases of major depression
- 354. For therapeutic effect in manic depressive illness, steady-state serum lithium concentration should be maintained between**
- (a) 0.2–0.4 mEq/L    (b) 0.5–0.8 mEq/L  
(c) 1.0–1.3 mEq/L    (d) 1.5–2.5 mEq/L
- 355. Renal excretion of lithium is enhanced by**
- (a) Furosemide            (b) Mannitol  
(c) Indomethacin        (d) Both (a) and (b)
- 356. Which of the following drugs can be used as an alternative to lithium in mania and bipolar illness**
- (a) Diethyl carbamazepine  
(b) Haloperidol  
(c) Clomipramine  
(d) Carbamazepine
- 357. The constellation of side effects consisting of thirst, polyuria, looseness of stools and fine tremors is characteristically associated with the following psychotropic drug**
- (a) Amitriptyline        (b) Buspirone  
(c) Lorazepam            (d) Lithium carbonate
- 358. Prolonged lithium therapy can cause**
- (a) Diabetes mellitus    (b) Goiter  
(c) Parkinsonism        (d) Gout
- 359. Strychnine produces convulsions by**
- (a) Stimulating NMDA receptors  
(b) Facilitating the excitatory transmitter glutamate  
(c) Blocking the inhibitory transmitter GABA  
(d) Blocking the inhibitory transmitter glycine
- 360. The drug of choice for hyperkinetic children is**
- (a) Methylphenidate    (b) Nikethamide  
(c) Caffeine              (d) Clonazepam
- 361. The neurotransmitter system in the brain most affected in Alzheimer's disease is**
- (a) Glutamatergic        (b) GABAergic  
(c) Dopaminergic        (d) Cholinergic
- 362. Which of the following drugs is claimed to have a therapeutic effect in senile dementia and has adrenergic blocking activity**
- (a) Digoxin                (b) Furosemide  
(c) Enalapril              (d) Amrinone
- 363. Which of the following drugs improves some symptoms in Alzheimer's dementia by increasing brain acetylcholine levels**
- (a) Pemoline              (b) Tacrine  
(c) Nicergoline          (d) Piribedil
- 364. Pyritinol (pyrithioxine) is used as**
- (a) Analeptic drug        (b) Cerebroactive drug  
(c) Antiepileptic drug    (d) Antidepressant drug
- 365. Extract of the following plant has platelet activating factor antagonistic activity and is claimed to benefit cognitive disorders due to cerebral ischaemia**
- (a) Ginkgo biloba        (b) Claviceps purpurea  
(c) Amanita muscaria    (d) Artemisia annua
- 366. Digitalis increases the force of contraction of ventricles by**
- (a) Increasing the duration of systole  
(b) Increasing the rate of contraction without affecting the duration of systole  
(c) Increasing the rate of contraction, but reducing the duration of systole  
(d) Increasing both the rate of contraction as well as the duration of systole
- 367. Digitalis induced increase in refractory period of myocardial fibres is most consistent and pronounced in the**
- (a) Atria                    (b) Ventricles  
(c) A-V node                (d) Purkinje fibres

- 368. Following general anaesthetic is oil at room temperature**  
 (a) Propofol (b) Ketamine  
 (c) Droperidol (d) Diazepam
- 369. The most important channel of elimination of digoxin is**  
 (a) Glomerular filtration  
 (b) Tubular secretion  
 (c) Hepatic metabolism  
 (d) Excretion in bile
- 370. Digitalis is most suitable for treatment of CHF when it is due to**  
 (a) Digoxin (b) Furosemide  
 (c) Enalapril (d) Amrinone
- 371. The dose of digoxin in congestive heart failure is adjusted by monitoring**  
 (a) Electrocardiogram  
 (b) Heart rate and symptoms of CHF  
 (c) Blood pressure  
 (d) Plasma digoxin levels
- 372. Digoxin affords the following benefit/benefits in CHF**  
 (a) Restores cardiac compensation and relieves symptoms  
 (b) Reverses the pathological changes of CHF  
 (c) Prolongs survival of CHF patients  
 (d) Both (a) and (b)
- 373. A patient of CHF was treated with furosemide and digoxin. He became symptom-free and is stable for the last 3 months with resting heart rate 68/min in sinus rhythm but left ventricular ejection fraction is low. Which of the following lines of action is warranted.**  
 (a) Stop above medication and start an ACE inhibitor  
 (b) Continue all medication as before  
 (c) Continue the diuretic but stop digoxin  
 (d) Continue digoxin but stop the diuretic
- 374. Which of the following actions of digoxin is responsible for beneficial effect in auricular fibrillation ?**  
 (a) Increased myocardial contractility  
 (b) Suppression of SA node  
 (c) Depression of A-V conduction  
 (d) Enhanced Purkinje fibre automaticity
- 375. What is the usual response to digoxin in a patient of atrial fibrillation ?**  
 (a) Restoration of normal sinus rhythm  
 (b) Conversion of atrial fibrillation to atrial flutter  
 (c) Increase in atrial fibrillation frequency, but decrease in ventricular rate  
 (d) Decrease in atrial fibrillation frequency, but increase in ventricular rate
- 376. The preferred diuretic for mobilizing edema fluid in CHF is**  
 (a) Polythiazide (b) Furosemide  
 (c) Metolazone (d) Amiloride
- 377. Infusion of potassium chloride is indicated in digitalis toxicity when the manifestation(s) is/are**  
 (a) Vomiting, hyperapnoea and visual disturbance  
 (b) Pulsus bigeminus with heart rate 110/min in a patient on maintenance digoxin therapy  
 (c) Ventricular tachycardia in a child who has accidentally ingested 10 digoxin tablets  
 (d) 2:1 A-V block with occasional ventricular extrasystoles
- 378. Which of the following is the most suitable antiarrhythmic drug for counteracting ventricular extrasystoles due to digoxin toxicity ?**  
 (a) Lidocaine (b) Quinidine  
 (c) Verapamil (d) Amiodarone
- 379. The apparent stimulation of CNS by local anesthetic is due to**  
 (a) Direct excitatory action  
 (b) Depression of inhibitory neurons  
 (c) Non specific action  
 (d) All of the above
- 380. The following drug is used for short-term control of emergency heart failure but not for long-term treatment of congestive heart failure**  
 (a) Digoxin (b) Enalapril  
 (c) Dobutamine (d) Theophylline

- 381. Select the drug which is an 'inodilator' beneficial in refractory congestive heart failure**
- (a) Astemizole (b) Amiodarone  
(c) Amrinone (d) Amiloride
- 382. The principal action common to all class I antiarrhythmic drugs is**
- (a) Na<sup>+</sup> channel blockade  
(b) K<sup>+</sup> channel opening  
(c) Depression of impulse conduction  
(d) Prolongation of effective refractory period
- 383. Following is an amide linked local anaesthetic**
- (a) Bupivacaine (b) Procaine  
(c) Tetracaine (d) Proparacaine
- 384. Persistent dry cough may occur as a side effect of the following antihypertensive drug**
- (a) Enalapril (b) Atenolol  
(c) Diltiazem (d) Methyldopa
- 385. Loss of taste sensation can be a side effect of the following antihypertensive drug**
- (a) Clonidine (b) Captopril  
(c) Verapamil (d) Prazosin
- 386. Furosemide is to be preferred over hydrochlorothiazide when hypertension is accompanied by**
- (a) Asthma  
(b) Hyperuricaemia  
(c) Diabetes  
(d) Congestive heart failure
- 387. Thiazide diuretics are the preferred first line antihypertensives from the following category of patients**
- (a) Young hypertensives  
(b) Physically and sexually active male hypertensives  
(c) Elderly obese hypertensives  
(d) Diabetic hypertensives
- 388. Indapamide differs from other diuretics in that**
- (a) It has selective antihypertensive action at doses which cause little diuresis  
(b) It is a more efficacious antihypertensive  
(c) Its antihypertensive action develops more rapidly  
(d) All of the above
- 389. In the treatment of hypertension the beta adrenergic blockers have the following advantage**
- (a) They have minimal effect on work capacity, sleep quality and libido  
(b) They do not cause postural hypotension  
(c) Used alone, they have high ceiling antihypertensive efficacy  
(d) They can be used in combination with any other antihypertensive drug
- 390. The following antihypertensive drug has a favourable effect on plasma lipid profile**
- (a) Prazosin  
(b) Propranolol  
(c) Hydrochlorothiazide  
(d) Furosemide
- 391. The following drug has been found to improve urine flow in elderly males with benign prostatic hypertrophy**
- (a) Nifedipine (b) Prazosin  
(c) Disopyramide (d) Imipramine
- 392. Following is an ester linked local anaesthetic**
- (a) Mepivacaine (b) Ropivacaine  
(c) Benzocaine (d) Prilocaine
- 393. The following antihypertensive is used topically to treat alopecia areata**
- (a) Hydralazine (b) Prazosin  
(c) Minoxidil (d) Guanethidine
- 394. Diazoxide is an effective hypotensive, but it is not used in the long-term treatment of hypertension because**
- (a) It impairs glucose tolerance by inhibiting insulin release  
(b) It inhibits uric acid excretion  
(c) It causes marked Na<sup>+</sup> and water retention  
(d) All of the above

- 395. The following antihypertensive drug tends to lower plasma rennin activity**
- (a) Clonidine (b) Hydralazine  
(c) Nifedipine (d) Captopril
- 396. Methyldopa lowers BP by**
- (a) Inhibiting dopa decarboxylase in adrenergic nerve endings  
(b) Generating  $\alpha$ -methyl noradrenaline in brain which reduces sympathetic tone  
(c) Generating  $\alpha$ -methyl noradrenaline which acts as a false transmitter in peripheral adrenergic nerve endings  
(d) Activating vascular dopamine receptors
- 397. Injection of local anaesthetic directly into tissue without taking into consideration the course of cutaneous nerves is**
- (a) Infiltration anaesthesia  
(b) Field block anaesthesia  
(c) Nerve block anaesthesia  
(d) All of the above
- 398. Select the correct statement about combining antihypertensive drugs**
- (a) Antihypertensive combinations should always be preferred over single drugs  
(b) Combinations of antihypertensives with similar pattern of haemodynamic action are superior to those with dissimilar pattern  
(c) Only those antihypertensives which act on different regulatory systems maintaining blood pressure should be combined  
(d) A diuretic must be included whenever antihypertensives are combined
- 399. Angiotensin converting enzyme inhibitors are contraindicated in**
- (a) High rennin hypertensives  
(b) Diabetics  
(c) Congestive heart failure patients  
(d) Pregnant women
- 400. A woman in the 28<sup>th</sup> week of pregnancy has been found to have pregnancy induced hypertension with a blood pressure reading of 150/95 mm Hg. Select the most appropriate antihypertensive drug for her**
- (a) Furosemide (b) Methyldopa  
(c) Propranolol (d) Captopril
- 401. Secretion of K<sup>+</sup> in the late distal tubule and collecting ducts of kidney depends on**
- (a) Intracellular K<sup>+</sup> content  
(b) Unabsorbed Na<sup>+</sup> load presented to the distal segment  
(c) Aldosterone  
(d) All of the above
- 402. Which of the following diuretics is orally active, efficacious in acidosis as well as alkalosis, causes diuresis even in moderately severe renal failure and has additional carbonic anhydrase inhibitory action**
- (a) Mannitol  
(b) Bendroflumethiazide  
(c) Mersalyl  
(d) Furosemide
- 403. The following diuretic abolishes the corticomedullary osmotic gradient in the kidney**
- (a) Acetazolamide (b) Furosemide  
(c) Benzthiazide (d) Spironolactone
- 404. Intravenous furosemide promptly mitigates dyspnoea in acute left ventricular failure by**
- (a) Producing bronchodilatation  
(b) Causing rapid diuresis and reducing circulating blood volume  
(c) Increasing venous capacitance and reducing cardiac preload  
(d) Stimulating left ventricular contractility
- 405. Parenteral furosemide is an alternative diuretic to mannitol in the following condition**
- (a) Pulmonary edema (b) Cirrhotic edema  
(c) Cerebral edema (d) Cardiac edema
- 406. Though ethacrynic acid is also a high ceiling diuretic, it is rarely used compared to furosemide because**
- (a) It is more ototoxic  
(b) It causes diarrhoea and gut bleeding

- (c) Its response increases steeply over a narrow dose range  
 (d) All of the above
- 407. Thiazide diuretics enhance  $K^+$  elimination in urine primarily by**
- (a) Inhibiting proximal tubular  $K^+$  reabsorption  
 (b) Inhibiting  $Na^+ K^+ - 2Cl^-$  cotransport in the ascending limb of of loop of Henle  
 (c) Increasing the availability of  $Na^+$  in the distal tubular fluid to exchange with interstitial  $K^+$   
 (d) Potentiating the action of aldosterone
- 408. The primary site of action of thiazide diuretics is**
- (a) Proximal tubule  
 (b) Ascending limb of loop of Henle  
 (c) Cortical diluting segment  
 (d) Collecting ducts
- 409. The most important reason for the thiazides being only moderately efficacious diuretics is**
- (a) FSH + LH obtained from urine of menstruating women  
 (b) LH obtained from urine of pregnant women  
 (c) FSH + LH obtained from urine of menopausal women  
 (d) LH obtained from serum of pregnant mare
- 410. Combined tablets of thiazide or high ceiling diuretics with potassium chloride are not recommended because**
- (a) Potassium absorbed while diuresis is occurring is largely excreted out  
 (b) Potassium administered concurrently diminishes the diuretic action  
 (c) Potassium chloride in tablet formulation is likely to cause gut ulceration  
 (d) Both (a) and (c)
- 411. \_\_\_\_\_ technique relies on using the vasculature to bring the local anesthetic solution to the nerve trunks and endings**
- (a) Spinal anesthesia  
 (b) Nerve block anesthesia  
 (c) Intravenous regional anesthesia  
 (d) All of the above
- 412. A patient of congestive heart failure was being treated with furosemide and digoxin. He developed urinary tract infection. Which of the following antimicrobials should not be prescribed**
- (a) Ampicillin (b) Gentamicin  
 (c) Norfloxacin (d) Cotrimoxazole
- 413. Which of the following has a 'self limiting diuretic' (action of the drug itself causing changes which limit further diuresis) action ?**
- (a) Indapamide (b) Spironolactone  
 (c) Theophylline (d) Acetazolamide
- 414. The most important therapeutic indication of acetazolamide is**
- (a) Congestive heart failure  
 (b) Renal insufficiency  
 (c) Cirrhosis of liver  
 (d) Glaucoma
- 415. Aldosterone increases  $Na^+$  reabsorption and  $K^+$  excretion in the renal collecting duct cells by**
- (a) Inducing synthesis of  $Na^+ K^+$  ATP ase  
 (b) Inducing synthesis of amiloride sensitive  $Na^+$  channels  
 (c) Translocating  $Na^+$  channels from cytosolic site to luminal membrane  
 (d) All of the above
- 416. Select the diuretic that can cause gynecomastia, hirsutism and menstrual disturbance as a side effect on long-term use.**
- (a) Amiloride (b) Spironolactone  
 (c) Metolazone (d) Acetazolamide
- 417. Which of the following is a potassium retaining diuretic ?**
- (a) Trimethoprim (b) Triamterene  
 (c) Trimethaphan (d) Trimethadione
- 418. Triam**
- (a) It has greater natriuretic action  
 (b) Its  $K^+$  retaining action is not dependent on presence of aldosterone  
 (c) It acts from the luminal membrane side of the distal tubular cells  
 (d) Both (b) and (c)



- 419. Potassium sparing diuretics should not be coadministered with**
- Furosemide
  - Hydrochlorothiazide
  - Captopril
  - Verapamil
- 420. The primary mechanism by which antidiuretic hormone reduces urine volume is**
- Decrease in glomerular filtration rate
  - Decreased renal blood flow
  - Decreased water permeability of descending limb of loop of Henle
  - Increased water permeability of collecting duct cells
- 421. Which of the following tissues is most sensitive to vasopressin ?**
- Vascular smooth muscle
  - Intestinal smooth muscle
  - Renal collecting ducts
  - Uterus
- 422. Which of the following drugs reduces urine volume in both pituitary origin as well as renal diabetes insipidus and is orally active ?**
- Vasopressin
  - Hydrochlorothiazide
  - Chlorpropamide
  - Carbamazepine
- 423. Alpha methyl dopa**
- Is ineffective when given orally
  - Decreases serum prolactin levels
  - Is valuable in patients with compromised renal function
  - Causes troublesome postural hypotension
- 424. Fetal alcohol syndrome is characterized by**
- Normal CNS function
  - Characteristic cluster of facial abnormalities
  - Normal growth
  - All of the above
- 425. Prazosin**
- Is relatively ineffective in blocking presynaptic  $\alpha_2$  receptors
  - Produces reflex tachycardia
  - Is contraindicated in patients with renal insufficiency
  - Decreases plasma renin activity
- 426. Diazoxide**
- Causes marked sodium and water retention
  - Can be used in hypertensive emergencies
  - Can produce alopecia
  - Lowers blood sugar levels
- 427. Hydroxyethyl starches**
- Are allergenic
  - Do not cause coagulation disturbances
  - Can precipitate renal failure
  - Are hydrolysed by amylase
- 428. Normal saline**
- Has a long duration of action
  - Is commonly used as a vehicle for noradrenaline drip
  - Is 5% sodium chloride
  - Is a commonly used agent to raise effective blood volume in emergencies
- 429. The sympathomimetic amine preferred in shock due to myocardial infarction is**
- Dopamine
  - Isoprenaline
  - Epinephrine
  - Norepinephrine
- 430. Phenytoin sodium**
- Depresses ventricular automaticity
  - Decreases AV nodal conduction
  - Is given by constant intravenous infusion
  - Decreases the conduction velocity in the ventricular fibers
- 431. Dale's vasomotor reversal phenomenon is exhibited by**
- Adrenaline
  - Noradrenaline
  - Isoprenaline
  - Both (a) and (b)
- 432. Phenylephrine instilled in the eye can produce**
- Mydriasis but no cycloplegia
  - Mydriasis and cycloplegia
  - Miosis and cycloplegia
  - Miosis without cycloplegia

- 433. Synthesis of norepinephrine occurs from**  
 (a) Tyramine (b) Tyrtophan  
 (c) Tyrosine (d) Tetracaine
- 434. The drug of choice in anaphylactic shock is**  
 (a) Isoprenaline (b) Adrenaline  
 (c) Dobutamine (d) Noradrenaline
- 435. Phenoxybenzamine is less commonly used to treat chronic essential hypertension, because it**  
 (a) Has a transient action of 2 hours  
 (b) Has to be given parenterally  
 (c) Also blocks the vasodilatory  $\beta_2$  adrenergic receptors  
 (d) Causes tachycardia and postural hypotension
- 436. The anti-cholinesterase with the shortest duration of action is**  
 (a) Neostigmine (b) Physostigmine  
 (c) Edrophonium (d) Ambenonium
- 437. The agent that produces cycloplegia for a short time is**  
 (a) Cyclopentolate (b) Homatropine  
 (c) Tropicamide (d) Atropine
- 438. The drug of choice in the treatment of organophosphorus poisoning is**  
 (a) Neostigmine (b) Atropine  
 (c) Pralidoxime (d) Acetylcholine
- 439. The average rate of ethanol metabolism in one hour in normal adults is between**  
 (a) 1 to 2 ml (b) 8 to 12 ml  
 (c) 30 to 50 ml (d) 100 to 150 ml
- 440. Following barbiturate is significantly excreted as unchanged drug**  
 (a) Phenobarbital (b) Pentobarbital  
 (c) Secobarbital (d) All of the above
- 441. Acute opium poisoning is treated by intravenous administration of**  
 (a) Naloxone (b) Pethidine  
 (c) Nalbuphine (d) Noscapine
- 442. Ultrashort duration of effect of thiopentone sodium given intravenously is due to**  
 (a) Rapid hepatic metabolism  
 (b) Rapid renal clearance  
 (c) Extensive binding to plasma proteins  
 (d) Redistribution to body tissues outside the CNS
- 443. The drug of choice for myoclonic epilepsy**  
 (a) Carbamazepine (b) Phenobarbitone  
 (c) Phenytoin sodium (d) Valproic acid
- 444. Peripheral conversion of levodopa to dopamine is facilitated by**  
 (a) Thiamine (b) Riboflavin  
 (c) Pyridoxine (d) Cyanocobalamin
- 445. Which of the following does not produce hypertensive crisis when coadministered with levodopa?**  
 (a) Phenelzine (b) Selegiline  
 (c) Isocarboxazid (d) Pargyline
- 446. Nitrous oxide**  
 (a) Provides slow induction  
 (b) Produces adequate muscle relaxation  
 (c) By itself is not a potent anaesthetic  
 (d) Is a poor analgesic
- 447. Propofol**  
 (a) Enhances the neuromuscular blockade of d-tubocurarine  
 (b) Causes marked postoperative confusion  
 (c) Can produce involuntary movements during its use  
 (d) Has a delayed recovery after induction
- 448. Neurolept analgesia**  
 (a) Is used in patients with Parkinson's disease  
 (b) Precludes the use of succinylcholine  
 (c) Induces unconsciousness  
 (d) Is useful for minor surgical procedures
- 449. The local anaesthetic with a short duration of action is**  
 (a) Lignocaine (b) Procaine  
 (c) Tetracaine (d) Mepivacaine
- 450. The local anaesthetic with significant vasoconstriction effect is**  
 (a) Cocaine (b) Procaine  
 (c) Bupivacaine (d) Tetracaine



- 451. The local anaesthetic recommended as an antiarrhythmic is**
- (a) Lignocaine (b) Procaine  
(c) Medivacuene (d) Tetracaine
- 452. A H<sub>1</sub> receptor antagonist has limited beneficial effect in**
- (a) Combating motion sickness  
(b) Systemic anaphylaxis  
(c) Allergic conjunctivitis  
(d) Reversing extrapyramidal side effects caused by phenothazines
- 453. The H<sub>1</sub> receptor antagonist with high anticholinergic activity is**
- (a) Diphenhydramine (b) Terfenadine  
(c) Mepyramine (d) Clemastine
- 454. Magnesium sulfate**
- (a) Is used to control eclamptic seizures during pregnancy  
(b) Is not given in patients in whom b<sub>2</sub> adrenergic receptor  
(c) Is used to arrest post partum hemorrhage  
(d) Can arrest labor even when cervix is 7 cm dilated
- 455. Colchicine**
- (a) Is used for treatment and prevention of acute gouty arthritis  
(b) Causes cellular proliferation  
(c) Is an effective analgesic in osteoarthritis  
(d) Enhances uric acid excretion
- 456. Probenecid**
- (a) Increases excretion of uric acid by blocking its tubular reabsorption  
(b) Is used in combination with salicylates  
(c) Is useful in gouty patients with nephrolithiasis  
(d) Reduces the plasma concentrations of rifampicin
- 457. Salicylates and barbiturates are more readily absorbed from the stomach because**
- (a) They are weak bases and are ionized at gastric pH  
(b) They are weak acids and predominantly non-ionized in gastric pH  
(c) They are strong bases and are highly ionized at gastric pH  
(d) They are weak acids and are ionized at gastric pH
- 458. Zolpidem interacts with**
- (a) BZ1 receptors  
(b) BZ2 receptors  
(c) Both (a) and  
(d) None of the above
- 459. Phenobarbitone reduces the incidence of severe hyperbilirubinaemia in the neonates because**
- (a) It prevents the synthesis of bilirubin  
(b) It conjugates with the bilirubin  
(c) It stimulates hepatic glucuronyl transferase  
(d) None of the above mechanism
- 460. The methanol is toxic to optic nerve, it is because of**
- (a) Methanol itself  
(b) Oxidative metabolites of methanol  
(c) Conjugated product of methanol  
(d) Idiosyncratic reaction
- 461. A patient has resulted in acute hypertensive episode after ingestion of certain cheeses or wine. This interaction is because he is on**
- (a) Tetracyclines (b) Tranyleypromine  
(c) Aspirin (d) Digitalis
- 462. Which of the following drugs increases the metabolism of bishydroxycoumarin by induction of hepatic microsomal enzymes?**
- (a) Digoxin (b) Furosemide  
(c) Enalapril (d) Amrinone
- 463. Antihistamines, phenothiazines, tricyclic antidepressants and antiparkinsonian agents have a common property that**
- (a) All produces CNS stimulation  
(b) All have adrenergic action  
(c) All have some atropine like action  
(d) All have long plasma half-life

- 464. Regarding the cardiac and therapeutic effect of phenytoin, which of the following is true?**
- (a) It increases the action potential duration in Purkinje fibres
  - (b) It has a brief duration of action because of  $t^{1/2}$  of 2 hours
  - (c) It is probably the drug of choice in the treatment of arrhythmias caused by digitalis intoxication
  - (d) The drug markedly depresses conduction velocity in the A-v node and intraventricular conduction system
- 465. Phenytoin**
- (a) Is useful only in the treatment of epilepsy
  - (b) Has an antiarrhythmic action that is quite different from that of quinidine
  - (c) Has antiarrhythmic action against many types of arrhythmias
  - (d) Increases excitability of atrial or ventricular muscle
- 466. The drug of choice in the treatment of hypertensive emergency is**
- (a) Guanethidine      (b) Reserpine
  - (c) Diazoxide        (d) Furosemide
- 467. Which of the following statements concerning hypertension is true?**
- (a) It is easier to obtain salt depletion in hypertensive patients with thiazide diuretics than by limitation of salt intake
  - (b) I.V. guanethidine is very useful in controlling hypertensive emergencies
  - (c) In essential hypertension the excretion of catecholamine in the urine is abnormally high
  - (d) Aldosterone stimulates the secretion of angiotensin leading to certain types of hypertension
- 468. The duration of action of methacholine is longer than that of acetylcholine because**
- (a) Acetylcholine is inactivated by active transport into Schwann cell
  - (b) Acetylcholine is inactivated by active transport into nerve cell
  - (c) Acetylcholine is metabolized more rapidly
  - (d) Acetylcholine is excreted more rapidly
- 469. Hemicholinium modifies Ach metabolism by**
- (a) Interfering with destruction of Ach
  - (b) Interfering with release of Ach
  - (c) Interfering with synthesis of Ach
  - (d) Promoting release of Ach
- 470. Action of acetylcholine is terminated by**
- (a) Diffusion away from the site of action
  - (b) Deamination
  - (c) Hydrolysis
  - (d) Temporary adsorption on plasma proteins
- 471. Norepinephrine in the synaptic cleft can activate presynaptic alpha 2 receptors which results in**
- (a) Increased release of exocytotic norepinephrine
  - (b) Displacement of norepinephrine from the storage site
  - (c) Further inhibition of exocytotic release of norepinephrine
  - (d) Increased synthesis of norepinephrine
- 472. Which of the following barbiturates is preferred as sedative agent in a patient having liver disease?**
- (a) Allobarbitone      (b) Cyclobarbitone
  - (c) Phenobarbitone    (d) Pentobarbitone
- 473. One of the ways to classify regions of the cortex is**
- (a) By the modality of information processed
  - (b) By the physiological position
  - (c) By the chemical relationship between cell types in the major cortical layers
  - (d) All of the above
- 474. Peak serum level of orally administered lithium is usually achieved in**
- (a) 5 to 10 min        (b) 1 to 2 days
  - (c) 2 to 4 hours        (d) 8 to 12 hours
- 475. For induction of anaesthesia nitrous oxide is superior to ether because**
- (a) Nitrous oxide is not explosive, while ether vapours are flammable in air
  - (b) Induction with nitrous oxide is very rapid while with ether it is slow and unpleasant to patient

- (c) Ether is irritant to respiratory tract and may lead to coughing, laryngeal spasm and increased mucus secretion while nitrous oxide does not
- (d) All of the above
- 476. Succinylcholine is preferred over d-tubocurarine for endotracheal intubation, because of the following reasons except**
- (a) With succinylcholine total paralysis lasts upto 4 min. with 50% recovery at about 10 min
- (b) Allergic reactions due to release of histamine are not seen with succinylcholine
- (c) In addition to neuromuscular blocking effect succinylcholine blocks autonomic ganglia
- (d) Bronchospasm is less common with succinylcholine
- 477. The difference between autonomic and somatic nerves are all except**
- (a) Somatic nerves do not contain peripheral ganglia unlike autonomic nerves
- (b) Motor nerves to skeletal muscles are myelinated while postganglionic autonomic nerves are unmyelinated
- (c) The presynaptic transmitted in both the cases is different
- (d) None of the above
- 478. In endothelium nitric oxide is synthesized from**
- (a) Arginine (b) Valine
- (c) Tyrosine (d) All of the above
- 479. Ipratropium bromide is principally effective in**
- (a) Asthma (b) Bronchitis
- (c) COPD (d) All of the above
- 480. What are obidoxime and pralidoxime**
- (a) Acetylcholine reactivators
- (b) Choline esterase reactivators
- (c) Choline esterase inhibitors
- (d) Cellular poisons
- 481. Which of the following cholinergic drugs is used in Alzheimer's disease**
- (a) Neostigmine (b) Pyridostigmine
- (c) Tacrine (d) None of the above
- 482. Which of the following neuromuscular blocking agent has short duration of action**
- (a) Atracurium (b) Mivacurium
- (c) Pancuronium (d) Doxacurium
- 483. Botulinium toxin causes muscle palsy by blocking**
- (a) Nerve action potential
- (b) Acetylcholine release
- (c) Permeability to sodium and potassium
- (d) Muscle action potential
- 484. Dopamine is preferred over norepinephrine in cardiogenic and hypovolemic shock because**
- (a) Better cardiac stimulation
- (b) Potent renal vasodilator
- (c) Potent cerebral vasodilation
- (d) All of the above
- 485. What is the mechanism of action of clonidine**
- (a)  $\alpha_1$  antagonist (b)  $\alpha_2$  agonist
- (c)  $\alpha_1$  agonist (d)  $\beta_1$  agonist
- 486. What is true of methylphenidate**
- (a) Mild CNS stimulant
- (b) Abuse potential as of amphetamine
- (c) Effective in narcolepsy and attention deficit-disorder
- (d) All of the above
- 487. The longest half-life is of which of the following betablockers**
- (a) Esmolol (b) Nadolol
- (c) Pindolol (d) Acebutolol
- 488. Which of the following is both alpha and beta blocker**
- (a) Propranolol (b) Labetalol
- (c) Esmolol (d) Metoprolol
- 489. The rate limiting enzyme in synthesis of melatonin and serotonin is**
- (a) Tryptophan hydroxylase
- (b) 5 HT N-acetylase
- (c) Aldehyde dehydrogenase
- (d) Aldehyde reductase

- 490. Which of the following is a function of melatonin**  
(a) Darkening of skin colour  
(b) Suppression of ovarian function  
(c) Regulation of biorhythm  
(d) All of the above
- 491. Which neurotransmitter has maximum number of receptor subtypes**  
(a) GABA (b) Glutamate  
(c) Serotonin (d) Substance P
- 492. The cell bodies of 5HT neurons in CNS are principally located in**  
(a) Hypothalamus (b) Frontal lobe  
(c) Raphenuclei (d) Caudate nucleus
- 493. In GI tract enterochromaffin cells maximum in**  
(a) Stomach (b) Duodenum  
(c) Jejunum (d) Colol
- 494. Tryptophan is essential for synthesis of**  
(a) Niacin (b) Serotonin  
(c) Melatonin (d) All of the above
- 495. Which of the following is 5HT antagonists except**  
(a) Sumatriptan (b) Ondansetron  
(c) Ketanserine (d) None of the above
- 496. The rate at which inhalational anaesthetic passes into tissues depends on**  
(a) Tissue: Blood partition coefficient  
(b) The rate at which gas is delivered to the tissues  
(c) The partial pressure of the gas in the arterial blood  
(d) All of the above
- 497. General anaesthesia for surgery requires**  
(a) Unconsciousness  
(b) Analgesia  
(c) Suppression of visceral reflexes  
(d) Muscle relaxation  
(e) All of the above
- 498. The most ideal inhalation anaesthetic is**  
(a) Halothane (b) Enflurane  
(c) Isoflurane (d) Desflurane
- 499. The barbiturate of choice for induction of anaesthesia is**  
(a) Pentothal (b) Thiamylal  
(c) Methohexital (d) Etomidate
- 500. Ketamine injection produces**  
(a) Amnesia (b) Analgesia  
(c) Sedation (d) Immobility  
(e) All of the above
- 501. Local anaesthetics prevent or relieve pain by**  
(a) Inhibit substance P  
(b) Interrupt nerve conduction  
(c) Modify neuronal metabolism  
(d) All of the above
- 502. What is true about sensitivity of nerve fibres to local anaesthetics ?**  
(a) Small fibres are more sensitive  
(b) Large fibres are more sensitive  
(c) Both small and large fibres are equally sensitive  
(d) Small fibres are resistant
- 503. Which function is lost last after local anaesthetic injection**  
(a) Pain (b) Touch  
(c) Muscle tone (d) Deep pressure
- 504. A vasoconstrictor is added to local anaesthetic for**  
(a) Prolongation of anaesthetic action  
(b) Tackling anaphylaxis  
(c) To prevent bleeding  
(d) All of the above
- 505. The local anaesthetic of choice during labor is**  
(a) Procaine (b) Bupivacaine  
(c) Cocaine (d) Lignocaine
- 506. Bier's block refers to**  
(a) Field block anaesthesia  
(b) Nerve block anaesthesia  
(c) Intravenous regional anaesthesia  
(d) Infiltration anaesthesia

- 507. Which of the following is the most trouble shooter in spinal anaesthesia**
- (a) Sympathetic block  
(b) Parasympathetic block  
(c) Contracted intestines  
(d) Paralysed intercostals muscles
- 508. A local anaesthetic in its lowest concentration will block**
- (a) Somatic motor  
(b) Somatic sensory  
(c) Preganglionic sympathetic  
(d) All of the above
- 509. Benzodiazepines act on which receptors**
- (a) GABA<sub>A</sub> (b) GABA<sub>B</sub>  
(c) Both of the above (d) None of the above
- 510. Which of the following benzodiazepines has shortest half-life**
- (a) Alprazolam (b) Oxazepam  
(c) Clonazepam (d) Midazolam
- 511. Which of the following barbiturate has shortest half-life**
- (a) Secobarbital (b) Pentobarbital  
(c) Methohexital (d) Amobarbital
- 512. Barbiturate induced enzyme induction facilitates metabolism of**
- (a) Steroid (b) Ethanol  
(c) Vit K and D (d) All of the above
- 513. Most barbiturates loose biological action after oxidation of radicals at position**
- (a) Digoxin (b) Furosemide  
(c) Enalapril (d) Amrinone
- 514. The metabolism of ethanol is directly proportional to**
- (a) Digoxin (b) Furosemide  
(c) Enalapril (d) Amrinone
- 515. Disulfiram-ethanol interaction often produces hypertension due to**
- (a) Increased concentration of ethanol  
(b) Inhibition of sympathetic tone  
(c) Inhibition of dopamine hydroxylase  
(d) None of the above
- 516. Chemically the phenothiazines have**
- (a) One ring (b) Two rings  
(c) Three rings (d) Five rings
- 517. Following are examples of generalized seizures, except**
- (a) Tonic-clonic seizures  
(b) Infantile spasms  
(c) Simple partial seizures  
(d) Atonic seizures
- 518. The D3 receptors are preferentially present in**
- (a) Negative inotropy  
(b) QT prolongation  
(c) P-R prolongation  
(d) ST depression  
(e) All of the above
- 519. What is rabbit syndrome**
- (a) Tardive dyskinesia  
(b) Akathisia  
(c) Perioral tremor  
(d) None of the above
- 520. The maximum daily dose of Alprazolam is**
- (a) Anxiolytic (b) Sedative  
(c) Antidepressant (d) All of the above
- 521. Atypical antidepressant is**
- (a) Selegiline (b) Trazodone  
(c) Desipramine (d) Doxepan
- 522. Setraline belongs to which class of compounds**
- (a) MAO inhibitor  
(b) Serotonin reuptake inhibitor  
(c) Nor epinephrine reuptake inhibitor  
(d) None of the above
- 523. Following is an irreversible inhibitor of GABA amino transferase**
- (a) Pyrimidine (b) Vigabatrin  
(c) Lamotrigine (d) Gabapentin
- 524. Lithium has also been used for which of the following**
- (a) Gout (b) Salt substitute  
(c) Anticonvulsant (d) All of the above

- 525. Which lithium salt is used for manic-depressive disorders**  
(a) Carbonate (b) Chloride  
(c) Bromide (d) All of the above
- 526. MAO inhibitors in general raise the brain level of**  
(a) Dopamine (b) Serotonin  
(c) Nor adrenaline (d) All of the above
- 527. Which of the following is not MAO-A inhibitor**  
(a) Selegiline (b) Brofaromine  
(c) Clorgyline (d) Moclobemide
- 528. Which of the recently introduced antiepileptics is useful in absence seizure**  
(a) Absence attack  
(b) Partial seizure (simple)  
(c) Clonic tonic seizure  
(d) Complex partial seizure
- 529. Gabapentin acts by**  
(a) Binds to GABA<sub>A</sub> receptors  
(b) Binds to GABA<sub>B</sub> receptors  
(c) Inhibits GABA destruction  
(d) Promotes GABA release  
(e) All of the above
- 530. IV administration of phenytoin in status epilepticus carries the danger of**  
(a) Arrhythmia (b) Cerebellar atrophy  
(c) Renal failure (d) Jaundice  
(e) All of the above
- 531. For seizure control, therapeutic plasma phenobarbitone should be**  
(a) 2–5 µg/ml (b) 10–20 µg/ml  
(c) 50–60 µg/ml (d) 80–90 µg/ml
- 532. The drug of choice for status epilepticus is**  
(a) Clonazepam (b) Diazepam  
(c) Lorazepam (d) Alprazolam
- 533. The maximum dose of ergotamine per week in treatment of migraine is**  
(a) 5 mg (b) 10 mg  
(c) 20 mg (d) 40 mg
- 534. Which of the following is 5 HT receptor antagonist**  
(a) Methysergide (b) Plzotifen  
(c) Minaserin (d) All of the above
- 535. Fenton reaction refers to the formation of**  
(a) Free radical (b) Hydrogen peroxide  
(c) Nitric oxide (d) None of the above
- 536. How many types of dopamine receptors are present in brain**  
(a) 3 (b) 5  
(c) 7 (d) 9
- 537. The term endorphin refers to which of the following**  
(a) Enkephalins (b) Dynorphins  
(c) b endorphin (d) All of the above
- 538. How many types of opioid receptor are present in brain**  
(a) 3 (b) 4  
(c) 5 (d) 6
- 539. The agent that has strong affinity for  $\mu$ ,  $\delta$  and kappa receptor is**  
(a) Morphine (b) Etorphine  
(c) Fentanyl (d) Sufentanil
- 540. Anti-epileptic, chemically derived from the tricyclic antidepressant is**  
(a) Carbamazepine (b) Ethosuximide  
(c) Phenytoin (d) None of the above
- 541. The triad of coma, pinpoint pupil and decreased respiration points toward poisoning with**  
(a) Organophosphorus  
(b) Morphine  
(c) Mushroom  
(d) Belladonna
- 542. Which of the following is not a feature of alcohol withdrawal syndrome**  
(a) Seizure  
(b) Hypertension  
(c) Constricted pupils  
(d) Delirium tremens



- 543. Angel dust refers to**  
 (a) LSD (b) MDMA  
 (c) Phencyclidine (d) MDA
- 544. Acetazolamide inhibits which form of carbonic anhydrase**  
 (a) Membrane bound (b) Cytosolic  
 (c) Both of the above (d) None of the above
- 545. The site of action of loop diuretics is**  
 (a) Proximal convoluted tubule  
 (b) Proximal straight tubule  
 (c) Thick ascending limb  
 (d) Distal convoluted tubule
- 546. Which loop diuretic is more likely to have toto toxicity Ethacryhia**  
 (a) Furosemide (b) Bumetamide  
 (c) Ethacrynic acid (d) Torsemide
- 547. Among thiazide diuretics the relative potency is highest for**  
 (a) Hydrochlorthiazide  
 (b) Benzthiazide  
 (c) Polythiazide  
 (d) Indapamide
- 548. The anti diuretic action of vasopressin is mediated via**  
 (a)  $V_1$  receptor (b)  $V_2$  receptor  
 (c) Both of the above (d) None of the above
- 549. Hyoscine differs from atropine in that**  
 (a) Its duration of action is longer  
 (b) Anticholinergic action is more on heart  
 (c) Has depressant action on CNS in low doses  
 (d) Slowly absorbed from GI tract
- 550. All are side effects of bromocriptine except**  
 (a) Hallucination  
 (b) Tremor  
 (c) Suppression of lactation  
 (d) Postural hypotension
- 551. ETDA is useful in poisoning due to all except**  
 (a) Lead (b) Zinc  
 (c) Iron (d) Mercury
- 552. Quinidine is contraindicated in**  
 (a) Atrial flutter (b) Atrial fibrillation  
 (c) PSVT (d) Digoxin toxicity
- 553. Nalorphine is not used as antidote for**  
 (a) Morphine (b) Pethidine  
 (c) Pentazocine (d) Heroin
- 554. Carbonic anhydrase inhibitor is often useful in**  
 (a) Thyrotoxicosis (b) Petit mal epilepsy  
 (c) Myasthenia gravis (d) Bronchial asthma
- 555. Which of the following drug is contraindicated in myasthenia gravis ?**  
 (a) Neostigmine (b) Pyridostigmine  
 (c) Quinine (d) Ephedrine
- 556. Petit mal epilepsy is treated by**  
 (a) Phenobarbitone (b) Ethosuximide  
 (c) Diazepam (d) Phenytoin
- 557. Lithium toxicity may manifest as**  
 (a) Polyuria (b) Nephrotic syndrome  
 (c) Renal calculi (d) Acute renal failure
- 558. In Parkinsonism levodopa exerts following effects except**  
 (a) Improves tremor  
 (b) Improves akinesia  
 (c) Improves muscle power  
 (d) Improves dystonia
- 559. The primary mechanism of action of benzodiazepine is**  
 (a) Dopamine antagonism  
 (b) Adenosine antagonism  
 (c) Opening up of chloride channel  
 (d) Facilitation of GABA mediated chloride influx
- 560. Which of the following general anaesthetic has poor muscle relaxation ?**  
 (a) Ether (b) Nitrous oxide  
 (c) Halothane (d) Enflurane
- 561. Which of the following secretions is not stimulated by acetylcholine ?**  
 (a) Tear (b) Bile  
 (c) Sweat (d) Pancreatic juice



- 562. Which of the following drugs is not effective in acute congestive glaucoma**  
 (a) Acetazolamide (b) Pilocarpine  
 (c) Timolol (d) Mannitol
- 563. The anticholinergic used only as preanesthetic medication is**  
 (a) Atropine (b) Glycopyrrolate  
 (c) Isopropamide (d) Dicyclomine
- 564. Ephedrine is similar to adrenaline in respect to**  
 (a) Duration of action  
 (b) Potency  
 (c) Penetration of blood brain barrier  
 (d) Both  $\alpha$  and  $\beta$  adrenergic effects
- 565. The neurotransmitter released at the end of the sympathetic nerve fibre is**  
 (a) Epinephrine (b) Furosemide  
 (c) Enalapril (d) Amrinone
- 566. Valproic acid is shown to be effective against**  
 (a) Absence seizures  
 (b) Partial seizures  
 (c) Generalized seizures  
 (d) All of the above
- 567. In which of the following conditions centrally acting anticholinergic drugs cannot be used for treatment**  
 (a) Parkinsonian disease  
 (b) Akathisia  
 (c) Tardive dyskinesia  
 (d) All the above  
 (e) None of the above
- 568. Levodopa and carbidopa combination is used to treat parkinsonian disease because carbidopa**  
 (a) Selectively stimulates dopa decarboxylase  
 (b) Enters the CNS and increases the dopamine in the nigro-striatum  
 (c) Reduces levodopa – induced dyskinesias  
 (d) Reduces levodopa induced vomiting and nausea  
 (e) All of the above  
 (f) None of the above
- 569. Huntington's chorea is hereditary disorder where there is**  
 (a) Loss of GABA neurons in corpus striatum  
 (b) An over-activity in dopaminergic nigro-striatal pathway  
 (c) Loss of some cholinergic neurons in the corpus striatum  
 (d) All the above  
 (e) None of the above
- 570. Which of the following MAO inhibitors prevents the 1-methyl 4-Phenyl 1,2,3,6 tetrahydropyridine's (MPTP) selective action in destroying the dopaminergic nigro-striatal neurons**  
 (a) Tranylcypromine  
 (b) Phenelzine  
 (c) Selegiline  
 (d) All of the above  
 (e) None of the above
- 571. Concurrent use of which of the following drugs may reverse the antiparkinsonian effect of levodopa**  
 (a) Carbidopa (b) Selegiline  
 (c) Bromocriptine (d) Pyridoxine  
 (e) All of the above (f) None of the above
- 572. Selegiline is a**  
 (a) MAO – A inhibitor  
 (b) MAO – B inhibitor  
 (c) Drug that releases dopamine  
 (d) All of the above  
 (e) None of the above
- 573. Schizophrenia has following clinical feature**  
 (a) Delusions  
 (b) Hallucinations  
 (c) Thought disorders  
 (d) All of the above
- 574. Which of the following is an ergot derivative used in Parkinson's disease as a dopamine agonist**  
 (a) Levodopa (b) Carbidopa  
 (c) Bromocriptine (d) Selegiline  
 (e) Amantadine (f) All of the above  
 (g) None of the above

- 575. Which of the following drugs used in Parkinson's disease is a peripherally acting dopa decarboxylase inhibitor ?**
- (a) Levodopa (b) Carbidopa  
(c) Bromocriptine (d) Selegiline  
(e) Amantadine (f) All of the above  
(g) None of the above
- 576. Which of the following opioid antagonists is used as an adjunct to prevent relapse in addicts following detoxification because of its long half-life ?**
- (a) Nalorphine (b) Naloxone  
(c) Naltrexone (d) All of the above  
(e) None of the above
- 577. Which of the following opioid antagonists is not a derivative of oxymorphone ?**
- (a) Nalorphine (b) Naloxone  
(c) Naltrexone (d) All of the above  
(e) None of the above
- 578. Which of the following opioid antagonists is a competitive antagonist of all the effects of morphine at opioid receptor in a low dose and in higher dose mimics effects of morphine (such as analgesic effect) ?**
- (a) Nalorphine (b) Naloxone  
(c) Naltrexone (d) All of the above  
(e) None of the above
- 579. Morphine administration leads to**
- (a) Physical dependence  
(b) Psychological dependence  
(c) Physical as well as Psychological dependence  
(d) None of the above
- 580. Naloxone and naltrexone are**
- (a) Opioid agonists  
(b) Opioid agonists/antagonists  
(c) Opioid antagonists  
(d) None of the above
- 581. Opioid analgesics inhibit the release of which of the following hormones.**
- (a) Anti-diuretic hormone  
(b) Luteinizing hormone  
(c) Prolactin  
(d) Somatotropin
- 582. Droperidol, a neuroleptic, belongs to following class of drugs.**
- (a) Phenothiazines  
(b) Thioxanthines  
(c) Butyrophenone  
(d) Benzamides
- 583. Which of the following opioid analgesics is used as a preferred and rational antitussive agent ?**
- (a) Morphine (b) Codeine  
(c) Meperidine (d) Methadone
- 584. Which of the following opioid analgesics has very low protein binding ?**
- (a) Morphine (b) Codeine  
(c) Meperidine (d) Methadone  
(e) Propoxyphene (f) All of the above  
(g) None of the above
- 585. Which of the following group of analgesic drugs act on the CNS ?**
- (a) Morphine – like drugs  
(b) NSAIDS (Aspirin and related drugs)  
(c) Local Anaesthetic  
(d) All of the above  
(e) None of the above
- 586. Which of the following statements regarding lithium is not correct ?**
- (a) It is a monovalent cation  
(b) Salts of lithium share some chemical characteristics with salts of sodium and potassium  
(c) The half life of lithium is more in adult and adolescent patient of bipolar as compared to an elderly patient of bipolar disorder  
(d) Chances of neonatal goiter and congenital cardiovascular malformation if administered to a pregnant women  
(e) All of the above  
(f) None of the above
- 587. Which of the following anticonvulsant drugs is used for prophylactic treatment of mood swings (i.e. manic-depression illness) in patients unresponsive to lithium carbonate ?**
- (a) Phenobarbitone (b) Phenytoin

- (c) Ethosuximide (d) Carbamazepine  
(e) All of the above (f) None of the above
- 588. Which of the following thioxanthene derivatives may be used as an anti-emetic and sedative ?**  
(a) Chlorprothixene (b) Flupenthixol  
(c) Thiothixene (d) All of the above  
(e) None of the above
- 589. Haloperidol is used in Huntington's chorea as a**  
(a) Anti-psychotic drug  
(b) Anti-dyskinetic drug  
(c) Anti-emetic  
(d) None of the above
- 590. Chlorpromazine is a phenothiazine derivative having a**  
(a) Aliphatic side chain  
(b) Piperazine side chain  
(c) Peperazine side chain
- 591. Which of the following extra-pyramidal effects seen with antipsychotic agents is not due to dopamine receptor blockade, but due to super-sensitivity of dopamine receptors ?**  
(a) Acute dystonia reaction  
(b) Parkinsonian syndrome  
(c) Tardive dyskinesia  
(d) Akathisia  
(e) All the above  
(f) None of the above
- 592. Which of the following extra-pyramidal effects seen with antipsychotic agents is also known as "rabbit syndrome" ?**  
(a) Acute dystonia reaction  
(b) Parkinsonian syndrome  
(c) Tardive dyskinesia  
(d) Perioral tremor  
(e) Akathisia (f) None of the above
- 593. MAO is localized in**  
(a) Cell membrane  
(b) Plasma  
(c) Mitochondrial membrane  
(d) All of the above
- 594. Which of the following drugs is used in the childhood enuresis ?**  
(a) Imipramine hydrochloride  
(b) Imipramine pamoate  
(c) Both the above  
(d) None of the above
- 595. Which of the following tricyclic antidepressant drugs has the least anticholinergic effect and sedation ?**  
(a) Amitriptyline (b) Amoxapine  
(c) Clomipramine (d) Desipramine  
(e) All the above (f) None of the above
- 596. The tricyclic antidepressant drugs produce their effect by**  
(a) Increasing the synaptic concentration of noradrenaline in the CNS  
(b) Increasing the synaptic concentration of 5-HT in the CNS  
(c) By causing inhibition of noradrenaline and 5-HT re-uptake by the pre-synaptic neuronal membrane  
(d) All the above
- 597. Which of the following tricyclic antidepressant drugs is a preferred drug in the treatment of obsessive - compulsive disorder ?**  
(a) Amitriptyline (b) Amoxapine  
(c) Clomipramine (d) Doxepin  
(e) All the above (f) None of the above
- 598. MAO - A enzyme has no substrate preference for**  
(a) Noradrenaline (b) Dopamine  
(c) 5-HT (d) Phenylethylamine  
(e) All the above (f) None of the above
- 599. Risk with acute overdose is less with which of the following class of antidepressants**  
(a) Tricyclic antidepressants  
(b) MAO inhibitors  
(c) 5-HT uptake inhibitors  
(d) Atypical antidepressant drugs

- 600. Pergolide is.**
- Dopamine precursor
  - Dopamine agonist
  - Dopamine releasing agent
  - Dopamine antagonist
- 601. Phenezine and tranylcypromine belong to which one of the following group (class) of antidepressants**
- Tricyclic antidepressants
  - MAO inhibitors
  - 5-HT uptake inhibitors
  - Atypical antidepressant drugs
  - None of the above
- 602. Which one of the following drugs is not 5-HT uptake inhibitor but used as an antidepressant ?**
- Fluoxetine
  - Maprotiline
  - Paroxetine
  - Sertraline
  - All of the above
  - None of the above
- 603. Following endogenous opioid peptide is a pentapeptide**
- Enkephalin
  - Dynorphin A
  - Endorphin
  - Dynorphin B
- 604. Concurrent use of which of the following may lead to similar effects seen in patients who are administered disulfiram after the ingestion of alcohol**
- Oral hypoglycemic drug
  - Coumarin type anticoagulants
  - Salicylates
  - All of the above
  - None of the above
- 605. Wernicke's encephalopathy and Korsakoff's psychosis occur often in alcoholic's due to**
- Malnutrition
  - Vitamin deficiencies
  - Faulty gastrointestinal deficiencies
  - All of the above
  - None of the above
- 606. Phenobarbitone is beneficial in the treatment of which of the following generalized seizures**
- Tonic – clonic seizures
  - Absence seizures
  - Atonic seizures
  - All of the above
  - None of the above
- 607. Which of the following barbiturates is a long acting barbiturate (i.e. has a longer onset and duration of action)**
- Phenobarbital
  - Amobarbital
  - Secobarbital
  - All the above
  - None of the above
- 608. The half life of ethosuximide in adult is**
- 10–20 hours
  - 30–40 hours
  - 50–60 hours
  - 60–70 hours
  - None of the above
- 609. Concurrent use of carbamazepine and phenytoin will lead to**
- Increased metabolism of phenytoin
  - Decreased metabolism of phenytoin
  - No change in the metabolism of phenytoin
- 610. Zolpidem is used as**
- Anticonvulsant drug
  - Anti-anxiety drug
  - Sedative and hypnotic drug
  - myorelaxant drug
  - All the above
  - None of the above
- 611. Which of the benzodiazepines is used only as a sedative and hypnotic**
- Chlordiazepoxide
  - Clorazepam
  - Diazepam
  - Flurazepam
  - All of the above
  - None of the above
- 612. Which of the following benzodiazepines is not in active form and behaves as a prodrug or drug precursor**
- Chlordiazepoxide
  - Diazepam
  - Parzepam
  - Clorazepate
  - All of the above
  - None of the above
- 613. The dynorphins are endogenous ligands for**
- $\mu$
  - $\delta$
  - $\kappa$
  - $\sigma$

- 614. A drug that produces a mild degree of nonselective depression of the central nervous system by decreasing the response of an individual to all sensory modalities is known as**
- (a) Sedative (b) Hypnotic  
(c) None of the above
- 615. Lidocaine is used as**
- (a) Mucosal local anaesthetic  
(b) Parenteral local anaesthetic agent  
(c) Mucosal as well as parenteral local anaesthetic agent  
(d) None of the above
- 616. Prilocaine, a local anaesthetic is used as**
- (a) Dental anaesthesia  
(b) Low spinal anaesthesia for vaginal delivery  
(c) Abdominal surgical anaesthesia  
(d) Caudal anaesthesia  
(e) All the above  
(f) None of the above
- 617. Which of the following statements regarding procaine, a local anaesthetic agent is not correct.**
- (a) It has a very low lipid solubility at pH 7.4  
(b) It is least protein bound  
(c) it has a short duration of action  
(d) It is an amide – type local anaesthetic  
(e) All of the above
- 618. Which of the following parenteral local anaesthetics has a very high protein binding and may produce analgesia for more than 10 hours via its nerve block action**
- (a) Chlorprocaine (b) Bupivacaine  
(c) Lidocaine (d) Prilocaine  
(e) All of the above (f) None of the above
- 619. Which of the following parenteral local anaesthetics has a short duration of action (i.e. between 30 to 60 minutes)**
- (a) Chlorprocaine (b) Bupivacaine  
(c) Lidocaine (d) Prilocaine
- (e) All of the above (f) None of the above
- 620. In small intestine, morphine particularly affects**
- (a) Duodenum  
(b) Ileum  
(c) Both (a) and (b)  
(d) Does not affect small intestine
- 621. Local anaesthetics affect membrane excitability by inhibiting**
- (a) Sodium ( $\text{Na}^+$ ) Channel inactivation  
(b) Increased ( $\text{Na}^+$ ) conductance  
(c) Increased potassium ( $\text{K}^+$ ) conductance  
(d) All of the above  
(e) None of the above
- 622. The order of loss of sensory function when a local anaesthetic is used is**
- (a) Temperature, pain, touch and deep pressure  
(b) Pain, touch, deep pressure and temperature  
(c) Pain, temperature, touch and deep pressure  
(d) None of the above
- 623. Ester type local anaesthetics are hydrolyzed by**
- (a) True cholinesterase  
(b) Pseudo cholinesterase  
(c) Liver microsomal enzymes  
(d) All of the above  
(e) None of the above
- 624. When an amide is acted upon by an amidase**
- (a) Alcohol and acid is formed  
(b) Amine and acid is formed  
(c) Alcohol and amine is formed  
(d) None of the above
- 625. Which one of the following is not an ester local anaesthetic ?**
- (a) Cocaine (b) Procaine  
(c) Lidocaine (d) Benzocaine  
(e) All of the above (f) None of the above
- 626. Which of the following local anaesthetics cause arteriolar vasoconstriction ?**
- (a) Lidocaine (b) Procaine  
(c) Cocaine (d) Prilocaine

(e) All of the above

**627. Local anaesthetics are drugs that produce**

- (a) Irreversible loss of sensitivity to pain in the restricted area to which they are applied
- (b) Reversible loss of sensitivity to pain in the restricted area to which they are applied.
- (c) No loss of sensitivity to pain in the area to which they are applied
- (d) None of the above

**628. Local anaesthetic molecule consists of**

- (a) Lipophilic group linked by an ester or amide chain
- (b) Lipophilic group linked by an ester or amide chain to an amine substitute
- (c) Lipophilic group linked to an amine substitute
- (d) None of the above

**629. Ketamine, a general anaesthetic agent can be administered by**

- (a) Intravenous route
- (b) Intramuscular route
- (c) Intravenous or Intramuscular route
- (d) None of the above

**630. In the following benzodiazepines used as intravenous general anaesthetic which one has a more rapid onset and shorter half life**

- (a) Diazepam
- (b) Lorazepam
- (c) Midazolam

**631. Which of the following is a intravenous anaesthetic**

- (a) Thiopental
- (b) Ethomidate
- (c) Propofol
- (d) Ketamine
- (e) All of the above
- (f) None of the above

**632. Which of the following intravenous anaesthetic agents is useful to produce sedation prior to anaesthesia and is also helpful in reducing the amount of inhalation anaesthetic**

- (a) Ultra-short acting barbiturates
- (b) Benzodiazepines
- (c) Opioid analgesic anaesthesia
- (d) Propofol
- (e) All of the above
- (f) None of the above

**633. Post - anaesthesia emergency delirium is most frequent side effect of**

- (a) Enflurane
- (b) Halothane
- (c) Isoflurane
- (d) Methoxyflurane
- (e) Nitrous oxide
- (f) All the above
- (g) None of the above

**634. Which of the following anaesthetic agents is not indicated in low doses to provide analgesia for procedures not requiring loss of consciousness**

- (a) Enflurane
- (b) Halothane
- (c) Isoflurane
- (d) Methoxyflurane
- (e) Nitrous oxide
- (f) All the above
- (g) None of the above

**635. Blood pressure is thought to generally remain unchanged with which one of the following anaesthetic agent**

- (a) Enflurane
- (b) Halothane
- (c) Isoflurane
- (d) Nitrous oxide
- (e) All the above
- (f) None of the above

**636. Which of the following anaesthetic agents has the best (most) analgesic effect in low concentration**

- (a) Enflurane
- (b) Halothane
- (c) Isoflurane
- (d) Nitrous oxide
- (e) All the above
- (f) None of the above

**637. Opioid analgesics provide symptomatic relief of**

- (a) Pain
- (b) Cough
- (c) Diarrhea
- (d) All of the above

**638. Opioid receptors act via**

- (a) Opening of potassium channels
- (b) Inhibition of calcium channels
- (c) Both (a) and (b)
- (d) Opening of sodium channels

**639. The main factor that determines the speed and recovery from inhalation of anaesthetics is**

- (a) Blood : Gas partition coefficient
- (b) Oil : Gas partition coefficient
- (c) Minimum alveolar concentration
- (d) All of the above
- (e) None of the above



- 640. Which of the following inhalation general anaesthetic is not a volatile liquid**  
 (a) Enflurane (b) Methoxyflurane  
 (c) Ether (d) Isoflurane  
 (e) Nitrous oxide (f) All of the above  
 (g) None of the above
- 641. Which of the following general anaesthetics is not administered intravenously**  
 (a) Thiopental (b) Diazepam  
 (c) Ketamine (d) Halothane  
 (e) All of the above
- 642. The use of nitrous oxide to relieve the pain of surgery**  
 (a) Horace Wells (b) Humphry Davy  
 (c) William Morton (d) None of the above
- 643. Which of the following is designated as "The Vital Node"**  
 (a) Mid brain  
 (b) Pons  
 (c) Medulla oblongata  
 (d) All of the above  
 (e) None of the above
- 644. CNS stimulant agents belong to**  
 (a) Respiratory stimulants  
 (b) Psychomotor stimulants  
 (c) Psychomimetic agents  
 (d) All of the above
- 645. Acetylcholine action at the nicotinic receptor in the motoneuron – Renshaw cell synapse is**  
 (a) Excitatory causing decrease in potassium conductance  
 (b) Inhibitory causing decrease in potassium conductance  
 (c) Excitatory causing increase in cation conductance  
 (d) All of the above  
 (e) None of the above
- 646. Which of the following CNS Neurotransmitters is excitatory on the individual neurons and causes decrease in potassium conductance**  
 (a) Dopamine (b) Acetylcholine  
 (c) GABA (d) Glycine  
 (e) All of the above
- 647. Which of the following amino acids is an inhibitory transmitter and increases the membrane permeability to chloride ions, and thus causing inhibitory post synaptic potential (IPSP) in the CNS**  
 (a) Glycine (b) Glutamate  
 (c) Aspartate (d) All of the above  
 (e) None of the above
- 648. Which of the following is a neurotransmitter in the central nervous system (CNS)**  
 (a) Acetylcholine  
 (b) Noradrenaline  
 (c) Dopamine  
 (d) 5-Hydroxytryptamine  
 (e) All of the above

**ANSWERS**

- |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 1. d  | 2. a  | 3. a  | 4. e  | 5. a  | 6. c  |
| 7. e  | 8. b  | 9. b  | 10. d | 11. a | 12. b |
| 13. a | 14. e | 15. d | 16. a | 17. d | 18. d |
| 19. a | 20. c | 21. b | 22. c | 23. c | 24. e |
| 25. a | 26. e | 27. a | 28. a | 29. c | 30. d |
| 31. e | 32. c | 33. d | 34. d | 35. e | 36. c |
| 37. b | 38. a | 39. e | 40. a | 41. b | 42. b |
| 43. e | 44. d | 45. d | 46. c | 47. d | 48. d |



49. d      50. c      51. c      52. d      53. b      54. c  
55. c      56. e      57. b      58. d      59. d      60. c  
61. a      62. d      63. e      64. d      65. b      66. c  
67. c      68. c      69. a      70. c      71. a      72. e  
73. b      74. d      75. c      76. d      77. e      78. b  
79. c      80. d      81. e      82. b      83. b      84. d  
85. c      86. a      87. c      88. b      89. d      90. a  
91. e      92. b      93. d      94. b      95. c      96. c  
97. b      98. e      99. d      100. e      101. c      102. b  
103. c      104. a      105. c      106. b      107. c      108. c  
109. c      110. e      111. e      112. c      113. d      114. d  
115. e      116. d      117. c      118. d      119. c      120. d  
121. d      122. e      123. b      124. a      125. b      126. c  
127. d      128. d      129. b      130. d      131. e      132. c  
133. d      134. d      135. c      136. d      137. d      138. a  
139. c      140. b      141. d      142. e      143. c      144. a  
145. c      146. d      147. b      148. e      149. b      150. e  
151. e      152. a      153. d      154. e      155. d      156. a  
157. e      158. c      159. d      160. e      161. c      162. c  
163. e      164. d      165. c      166. c      167. e      168. b  
169. 1. c, 2. e3. a, 4. b      170. 1. e, 2. b3. a, 4. d5. c      171. d      172. d  
173. b      174. c      175. e      176. d      177. d      178. d  
179. a      180. c      181. a      182. b      183. c      184. a  
185. d      186. d      187. c      188. c      189. a      190. b  
191. d      192. a      193. b      194. b      195. 1. a, 2. c3. b  
196. c      197. b      198. b      199. a      200. d      201. a  
202. b      203. d      204. b      205. d      206. d      207. c  
208. c      209. d      210. b      211. b      212. b      213. c  
214. a      215. a      216. a      217. a      218. d      219. a  
220. d      221. a      222. d      223. d      224. e      225. c  
226. b      227. e      228. b      229. e      230. b      231. d  
232. b      233. d      234. a      235. c      236. c      237. d  
238. d      239. b      240. b      241. c      242. d      243. b  
244. c      245. d      246. a      247. b      248. c      249. d  
250. c      251. d      252. b      253. b      254. d      255. a  
256. c      257. d      258. a      259. b      260. a      261. d  
262. d      263. d      264. c      265. b      266. a      267. c  
268. b      269. a      270. a      271. a      272. a      273. d  
274. a      275. c      276. d      277. b      278. c      279. d  
280. d      281. b      282. b      283. a      284. b      285. a  
286. d      287. d      288. c      289. b      290. b      291. d  
292. b      293. c      294. d      295. b      296. c      297. a  
298. d      299. b      300. d      301. c      302. b      303. d

304. a	305. c	306. b	307. d	308. c	309. b
310. d	311. a	312. a	313. d	314. b	315. c
316. b	317. b	318. c	319. b	320. a	321. c
322. b	323. c	324. d	325. b	326. b	327. a
328. c	329. d	330. c	331. c	332. a	333. a
334. b	335. a	336. b	337. a	338. d	339. c
340. c	341. c	342. b	343. b	344. d	345. a
346. c	347. c	348. d	249. c	350. d	351. d
352. b	353. a	354. b	355. b	356. d	357. d
358. b	359. d	360. a	361. d	362. c	363. b
364. b	365. a	366. c	367. c	368. a	369. a
370. d	371. b	372. a	373. a	374. c	375. c
376. b	377. b	378. a	379. b	380. c	381. c
382. a	383. a	384. a	385. b	386. d	387. c
388. a	389. b	390. a	391. b	392. c	393. c
394. d	395. a	396. b	397. a	398. c	399. d
400. b	401. d	402. d	403. b	404. c	405. c
406. d	407. c	408. c	409. a	410. d	411. c
412. b	413. d	414. d	415. d	416. b	417. b
418. d	419. c	420. d	421. c	422. b	423. c
424. b	425. a	426. b	427. b	428. d	429. a
430. a	431. a	432. a	433. c	434. b	435. d
436. c	437. c	438. b	439. b	440. a	441. a
442. d	443. d	444. c	445. b	446. c	447. c
448. d	449. b	450. a	451. a	452. b	453. a
454. a	455. a	456. a	457. b	458. a	459. c
460. b	461. b	462. a	463. b	464. c	465. b
466. c	467. a	468. c	469. c	470. c	471. c
472. b	473. a	474. c	475. d	476. c	477. c
478. a	479. c	480. b	481. c	482. b	483. b
484. b	485. a	486. d	487. b	488. b	489. a
490. d	491. c	492. c	493. b	494. d	495. b
496. d	497. e	498. c	499. b	500. e	501. b
502. a	503. c	504. a	505. b	506. c	507. a
508. c	509. a	510. d	511. c	512. d	513. b
514. c	515. c	516. c	517. c	518. c	519. c
520. b	521. b	522. b	523. b	524. d	525. a
526. d	527. a	528. b	529. d	530. e	531. b
532. b	533. b	534. d	535. a	536. b	537. d
538. a	539. b	540. a	541. b	542. c	543. c
544. c	545. c	546. c	547. c	548. b	549. d
550. b	551. d	552. d	553. c	554. b	555. c
556. b	557. a	558. c	559. d	560. b	561. b
562. c	563. b	564. b	565. a	566. d	567. c

568. d	569. d	570. c	571. d	572. b	573. d
574. c	575. b	576. c	577. a	578. a	579. c
580. c	581. b	582. c	583. b	584. b	585. a
586. c	587. d	588. a	589. b	590. a	591. c
592. d	593. c	594. a	595. d	596. d	597. c
598. d	599. d	600. b	601. b	602. b	603. a
604. a	605. d	606. a	607. a	608. c	609. a
610. c	611. d	612. d	613. c	614. a	615. c
616. a	617. d	618. b	619. a	620. a	621. a
622. d	623. b	624. b	625. c	626. c	627. b
628. b	629. c	630. c	631. d	632. b	633. b
634. b	635. d	636. d	637. d	638. c	639. a
640. e	641. d	642. b	643. c	644. d	645. c
646. b	647. a	648. e			

## EXPLANATIONS FOR ANSWERS

- 3.a Neurotransmitter is a substance present in neuron and is secreted by neurons to transmit signals to its postsynaptic targets.
8. b An example of neuromodulator is cAMP. It acts as a second messenger of synaptic transmission.
16. a Suramin is an antagonist of purinergic receptors, specifically P<sub>2x</sub> and P<sub>2y</sub>.
20. c NMDA receptors are closely associated with the induction of synaptic plasticity. AMPA and kainite receptors are involved in mediation of fast depolarization.
28. a Muscimol is GABA<sub>A</sub> agonist.  
Baclofen is a GABA<sub>B</sub> agonist.  
Bicuculline is a GABA<sub>A</sub> antagonist.
32. c Strychnine is an antagonist of glycine receptors. Taurine and  $\alpha$ -analine are agonists of glycine receptors. Quisqualate is an agonist of AMPA receptors.
41. b Baclofen is an agonist of GABA<sub>B</sub> receptor. Muscimol is an agonist of GABA<sub>A</sub> receptor. Picrotoxin and bicuculline are antagonists of GABA<sub>A</sub> receptors.
50. c In CNS, acetylcholine was the first neurotransmitter to be identified pharmacologically. In 1950s Eccles showed that excitation of Renshaw cells by motor axon collaterals was blocked by nicotinic antagonists.
58. d Metabotropic receptors of glutamate are coupled with G-proteins. AMPA, kainate and NMDA receptors are coupled with ion channels.
61. a Phencyclidine blocks NMDA receptors and thus antagonizes effects of glutamate, an excitatory amino acid neurotransmitter.
75. c Picrotoxin is an antagonist of GABA<sub>B</sub> receptors and blocks chloride channels associated with it. Muscimol is GABA<sub>A</sub> selective agonist. Bicuculline is GABA<sub>A</sub> antagonist. Baclofen is GABA<sub>B</sub> agonist.
80. d In the brain, GABA is the main inhibitory neurotransmitter, whereas glycine plays an important inhibitory role in brain stem and spinal cord.
90. a A direct interaction is believed to exist between GABA<sub>A</sub> receptors and various drugs e.g. alcohol, volatile anaesthetics etc. Hence, GABA<sub>A</sub> antagonists attenuate some of the action of alcohol.

108. c As ethanol competes for alcohol dehydrogenase, a 10% ethanol solution is generally used in methanol poisoning.
109. c Alcohol is teratogenic and is associated with fetal alcohol syndrome.
123. b Diethyl ether has high solubility in blood and has slow onset of central action and hence all the four stages of general anesthesia can be observed with this drug.
141. d Metabolism is not an important route of elimination of inhalational anaesthetics. However, except nitrous oxide, other anaesthetics such as halothane, ether and isoflurane do undergo some degree of metabolism.
155. d An ideal anesthetic should possess wide margin of safety with no adverse effect. But no single anaesthetic can achieve all the desirable effects of general anaesthetics without some adverse effects.
156. a An action common to most general anaesthetics is to increase the cellular threshold of firing and thus decreasing neuronal activity.
168. b  $\beta$ -Carbolines are inverse agonists of benzodiazepines.
174. c Zolpidem is a nonbenzodiazepine sedative-hypnotic agent and belongs to imidazopyridine class of drugs.
193. b Ethinamate is a sedative-hypnotic agent and is a urethane derivative. Ethinamate has rapid onset and short duration of action.
200. d For substance to be classified as neuro-transmitter, it has to fulfill all the criteria as stated in A, B and C.
213. c Phencyclidine, also called as angel-dust, is a non-competitive antagonist of NMDA receptors and it produces various psychotic symptoms e.g. hallucinations, thought disorders etc.
219. a Fluoxetine is a serotonin transport blocker and it is an antidepressant agent.
225. c Neuronal death in response to high glutamate concentration is mediated by excessive activation of NMDA receptors and is associated with influx of calcium.
238. d Drugs that increases dopaminergic activity in CNS can produce or aggravate symptoms of schizophrenia
253. b Tranylcypromine, moclobemide and isocarboxid are MAO inhibitors. Nomifensine is a dopamine transport blocker.
270. a Iproniazid is an antitubercular agent, an inhibitor of MAO and has antidepressant effect.
280. d The major factors, which affect elimination of a general anesthetic are, pulmonary ventilation, blood flow and solubility in blood and tissues.
292. b Barbiturates bind to GABA receptors ( $GABA_A$ ) but on a different site than benzodiazepines and enhance the action of GABA.
312. a Chemical name of halothane is 2-bromo-2-chloro-1,1,1-trifluoroethane.
329. d Nitric oxide is a colorless gas without significant odor or taste and is non-flammable, non-irritant and potent analgesic.
350. d Surgical pain is often severe and hence opioid analgesics such as meperidine, fentanyl, alfentanil, sufentanil and morphine are generally used as supplemental agents during general anaesthesia.
368. a Propofol is an intravenous anesthetic agent. It is an oil at room temperature and is supplied as 1% emulsion.
379. b Local anaesthetics produce stimulation of CNS, restlessness and tremors, which may proceed to convulsions. Selective depression of inhibitory neurons is responsible for the CNS excitation.
383. a Bupivacaine is an amide-linked local anaesthetic. Procaine, tetracaine and proparacaine have ester linkage in their structure.
392. c Benzocaine has ester linkage in its structure. Mepivacaine, ropivacaine and prilocaine have amide linkage in their structure.
397. a In infiltration anesthesia, local anaesthetic is directly injected into tissue without taking into consideration the course of cutaneous nerves.
411. c Intravenous regional anesthesia or Bier's block relies on using the vasculature to bring the local anaesthetic to the nerve trunks and endings.
424. b Fetal alcohol syndrome is characterized by cluster of facial abnormalities viz. short nose, hypoplastic upper lip and short palpebral fissures. In addition, it is associated with CNS dysfunction and slow growth.
440. a Except Phenobarbital, only insignificant quantities of the barbiturates are excreted unchanged.
458. a Zolpidem is a nonbenzodiazepine sedative-hypnotic that interacts with benzodiazepine  $BZ_1$  receptors to produce its effects.

473. a Regions of the cortex can be classified in three different ways:
- (i) By the modality of the information processed.
  - (ii) By the cytoarchitectonic classification i.e. the geometrical relationship between cell types in the major cortical layers.
  - (iii) By the anatomical position.
496. d The rate at which inhalational anaesthetics passes into tissues depends on various factors; tissue-blood partition coefficient i.e. solubility of anaesthetics in tissues and blood, the rate of delivery of anesthetic to the tissue.
517. c Generalized seizure can be of various types – tonic-clonic seizures, absence seizures, tonic seizures, atonic seizures, clonic and myoclonic seizures and infantile spasms.
523. b Vigabatrin is an irreversible inhibitor of GABA aminotransferase, the enzyme responsible for the degradation of GABA and thus increases GABA at synaptic sites.
540. a Carbamazepine is a derivative of iminostilbene and is chemically related to tricyclic antidepressants.
566. d Although valproic acid has been widely used for the treatment of absence seizures, it is also effective against wide variety of partial and generalized seizures.
573. d Schizophrenia is an idiopathic psychoses characterized by disordered thinking, delusions, auditory hallucinations and emotional withdrawal.
582. c Droperidol like haloperidol belongs to butyrophenone neuroleptic class of drug.
593. c MAO is a flavin-containing enzyme, which is localized in mitochondrial membranes in nerve terminals, liver and other organs.
600. b Pergolide, an ergot derivative, is a dopamine agonist and it interacts with both D1 and D2 receptors.
603. a Enkephalin is a pentapeptide i.e. it has 5 amino acids in its structure.
613. c Dynorphin, specifically dynorphin A, is the endogenous ligand for  $\delta_1$  receptors that are responsible for spinal analgesia.
620. a In small intestine, morphine particularly affects upper part of small intestine, especially the duodenum compared to ileum.
637. d Opioid analgesics provide symptomatic relief of pain, cough and diarrhea but the disease remains unaffected.
638. c All the opioid receptors are coupled to pertussis toxin-sensitive GTP binding proteins. These receptors produce opening of potassium channels and inactivation of calcium channels.
644. d CNS stimulants belong to all three categories.

# CHAPTER 3

## DRUGS ACTING ON AUTONOMOUS NERVOUS SYSTEM

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- 1. In the autonomic regulation of blood pressure**
  - Cardiac output is maintained constant at the expense of other hemodynamic variables
  - Elevation of blood pressure results in elevated aldosterone secretion
  - Baroreceptor nerve fibers decrease firing rate when arterial pressure increases
  - Stroke volume and mean arterial blood pressure are the primary direct determinants of cardiac output
  - A condition that reduces the sensitivity of the sensory baroreceptor nerve endings might cause an increase in sympathetic discharge
- 2. The autonomic nervous system is also known as**
  - Visceral
  - Vegetative
  - Involuntary nervous system
  - All of the above
- 3. Full activation of the sympathetic nervous system, as in maximal exercise, can produce all of the following responses except**
  - Bronchial relaxation
  - Decreases intestinal motility
  - Increased renal blood flow
  - Mydriasis
  - Increased heart rate (tachycardia)
- 4. Several children at a summer camp were hospitalized with symptoms thought to be due to ingestion of food containing botulinum toxins. The effects of botulinum toxin are likely to include**
  - Bronchospasm
  - Cycloplegia
  - Diarrhea
  - Skeletal muscle spasms
  - Hyperventilation
- 5. The neurotransmitter agent that is normally released in the sinoatrial node of the heart in response to a blood pressure increase is**
  - Acetylcholine
  - Dopamine
  - Epinephrine
  - Glutamate
  - Norepinephrine
- 6. A direct-acting cholinomimetic that is lipid-soluble and often used in the treatment of glaucoma is**
  - Acetylcholine
  - Bethanechol
  - Physostigmine
  - Pilocarpine
  - Neostigmine
- 7. Which of the following agents is a pro-drug that is much less toxic in mammals than in insects?**
  - Acetylcholine
  - Bethanechol
  - Physostigmine
  - Pilocarpine
  - Neostigmine

- 8. Atropine overdose may cause which one of the following**
- Gastrointestinal smooth muscle crampine
  - Increased cardiac rate
  - Increased gastric secretion
  - Pupillary constriction
  - Urinary frequency
- 9. The synaptic pre-ganglionic neurons have their cell bodies in the lateral horn of the grey matter of the**
- Thoracic segment only
  - Lumbar segment only
  - Both (a) and (b)
  - None of the above
- 10. Which one of the following can be blocked by atropine?**
- Decreased blood pressure caused by hexamethonium
  - Increased blood pressure caused by nicotine
  - Increased skeleton muscle strength caused by neostigmine
  - Tachycardia caused by exercise
  - Tachycardia caused by infusion of acetylcholine
- 11. Which of the following best describes the mechanism of action of scopolamine ?**
- Irreversible antagonist at nicotinic receptors
  - Irreversible antagonist at muscarinic receptors
  - Physiologic antagonist at muscarinic receptors
  - Reversible antagonist at muscarinic receptors
  - Reversible antagonist at nicotinic receptors
- 12. Accepted therapeutic indications for the use of antimuscarinic drugs include all of the following except**
- Hypertension
  - Motion sickness
  - Parkinson's disease
  - Postoperative bladder spasm
  - Traveler's diarrhea
- 13. In male sex organs \_\_\_\_\_ system is responsible for erection.**
- Sympathetic
  - Parasympathetic
  - Norepinephrine
  - None of the above
- 14. A 7-years-old boy has a significant bed-wetting problem. A long-acting indirect sympathomimetic agent sometimes used by the oral route for this and other indications is**
- Dobutamine
  - Ephedrine
  - Epinephrine
  - Isoproterenol
  - Phenylephrine
- 15. When pupillary dilation-but not cycloplegia-is desired, a good choice is**
- Homatropine
  - Isoproterenol
  - Phenylephrine
  - Pilocarpine
  - Tropicamide
- 16. 'Fight or flight' state can be described as**
- Sympathetic active; para-sympathetic quiescent
  - Sympathetic active; para-sympathetic active
  - Sympathetic quiescent; para-sympathetic active
- 17. Your patient is to receive a selective  $\beta_2$  stimulant drug  $\beta_2$  selective stimulant are often effective in**
- Angina due to coronary insufficiency
  - Asthma
  - Chronic heart failure
  - Delayed or insufficiently strong labor
  - All of the above
- 18. Which of the following drugs is the drug of choice in anaphylaxis associated with bronchospasm and hypotension ?**
- Cortisone
  - Epinephrine
  - Isoproterenol
  - Norepinephrine
  - Phenylephrine
- 19. Which of the following effects of epinephrine would be blocked by phentolamine but not by metoprolol ?**
- Cardiac stimulation
  - Contraction of radial smooth muscle in the iris
  - Increase of cAMP in fat
  - Relaxation of bronchial smooth muscle
  - Relaxation of the uterus



- 20. Propranolol is useful in all of the following except**
- (a) Angina
  - (b) Familial tremor
  - (c) Hypertension
  - (d) Idiopathic hypertrophic subaortic cardiomyopathy
  - (e) Partial atrioventricular heart block
- 21. 'Rest and digest' state can be described as**
- (a) Sympathetic active; para-sympathetic quiescent
  - (b) Sympathetic active; para-sympathetic active
  - (c) Sympathetic quiescent; para-sympathetic active
- 22. A friend has very severe hypertension and asks about a drug her doctor wishes to prescribe. Her physician has explained that this drug is associated with tachycardia and fluid retention (which may be marked) and increased hair growth. Which of the following is most likely to produce the effects that your friend has described?**
- (a) Captopril
  - (b) Guanethidine
  - (c) Minoxidil
  - (d) Prazosin
  - (e) Propranolol
- 23. Which one of the following is characteristic of captopril and enalapril ?**
- (a) Competitively blocks angiotensin II at its receptor
  - (b) Decreases angiotensin II concentration in the blood
  - (c) Decreases rennin concentration in the blood
  - (d) Increases sodium and decreases potassium in the blood
  - (e) Decreases sodium and increases potassium in the urine
- 24. Postural hypotension is a common adverse effect of which one of the following types of drugs ?**
- (a) ACE inhibitors
  - (b) Alpha-receptor blockers
  - (c) Arteriolar dilators
  - (d)  $\beta_1$  – selective receptor blockers
  - (e) Nonselective  $\beta$  - blockers
- 25. A visitor from another city comes to your office complaining of incessant cough. He has diabetes and hypertension and has recently started taking a different antihypertensive medication. The most likely cause of his cough is**
- (a) Enalapril
  - (b) Losartan
  - (c) Minoxidil
  - (d) Propranolol
  - (e) Verapamil
- 26. Reserpine, an alkaloid derived from the root of *Rauwolfia serpentina***
- (a) Can be used to control hyperglycemia
  - (b) Can cause severe depression of mood
  - (c) Can decrease gastrointestinal secretion and motility
  - (d) Has no cardiac effects
  - (e) A spare receptor agonist
- 27. Nitroglycerin, either directly or through reflexes, results in which one of the following effects**
- (a) Decreased heart rate
  - (b) Decreased venous capacitance
  - (c) Increased afterload
  - (d) Increased cardiac force
  - (e) Increased diastolic intramyocardial fiber tension
- 28. The antianginal effect of propranolol may be attributed to which one of the following**
- (a) Block of exercise – induced tachycardia
  - (b) Decreased end – diastolic ventricular volume
  - (c) Dilation of constricted coronary vessels
  - (d) Increased cardiac force
  - (e) Increased resting heart rate
- 29. The major common determinant of myocardial oxygen consumption is**
- (a) Blood volume
  - (b) Cardiac output
  - (c) Diastolic blood pressure
  - (d) Heart rate
  - (e) Myocardial fiber tension

- 30. Choose the incorrect statement from the following**
- Sympathetic system increases rate of SA node
  - Sympathetic system causes constriction of coronary arteries
  - Sympathetic system causes increased motility of GIT smooth muscles
  - Sympathetic system causes constriction of sphincter in GIT
- 31. Denervation super-sensitivity includes**
- Proliferation of receptors
  - Loss of mechanism for transmitter removal
  - Increased post-junctional responsiveness
  - All of the above
- 32. Which of the following is approved for the treatment of hemorrhagic stroke ?**
- Amyl nitrite
  - Hydralazine
  - Isosorbide mononitrate
  - Nifedipine
  - Nimodipine
- 33. Which of the following drugs used for the treatment of angina by inhalation has a very rapid onset and a brief duration of effect ?**
- Amyl nitrite
  - Hydralazine
  - Isosorbide mononitrate
  - Nifedipine
  - Nimodipine
- 34. Which of the following is a vasodilator drug used for hypertension that lacks a direct effect on autonomic receptors but may provoke anginal attacks?**
- Amyl nitrite
  - Hydralazine
  - Isosorbide mononitrate
  - Nifedipine
  - Nimodipine
- 35. The biochemical mechanism of action of digitalis is associated with**
- A decrease in calcium uptake by the sarcoplasmic reticulum
  - An increase in ATP synthesis
  - A modification of the actin molecule
  - An increase in systolic intracellular calcium levels
  - A block of sodium/calcium exchange
- 36. A patient has been taking digoxin for several years for chronic heart failure is about to receive atropine for another condition. A common effect of digoxin (at therapeutic blood levels) that can be almost entirely blocked by atropine is**
- Decreased appetite
  - Increased atrial contractility
  - Increased PR interval on the ECG
  - Headaches
  - Tachycardia
- 37. In a patient given a cardiac glycoside, important effects of the drug on the heart include which of the following?**
- Decreased atrioventricular conduction velocity
  - Decreased ejection time
  - Increased ectopic automaticity
  - Increased ectopic automaticity
  - All of the above
- 38. Which of the following situations constitutes an added risk of digoxin toxicity ?**
- Starting administration of captopril
  - Starting administration of quinidine
  - Hyperkalemia
  - Hypermagnesemia
  - Hypocalcemia
- 39. At rest, the interior of the typical mammalian neuronal axon potential is approximately \_\_\_\_\_ mV**
- |          |         |
|----------|---------|
| (a) 0    | (b) -70 |
| (c) -100 | (d) -20 |
- 40. Following enzyme is involved in the synthesis of acetylcholine**
- Choline acetyl transferase
  - Acetyl cholinesterase
  - Both (a) and (b)
  - None of the above

- 41. Which of the following has been shown to prolong life in patient with chronic congestive failure but has a negative inotropic effect on cardiac contractility?**
- (a) Carvedilol (b) Digitoxin  
(c) Digoxin (d) Dobutamine  
(e) Enalapril
- 42. Which of the following is the drug of choice in treating suicidal overdose of digitoxin ?**
- (a) Digoxin antibodies  
(b) Lidocaine  
(c) Magnesium  
(d) Potassium  
(e) Quinidine
- 43. When used as an antiarrhythmic drug, Lidocaine typically**
- (a) Increases action potential duration  
(b) Increases contractility  
(c) Increases PR interval  
(d) Reduces abnormal automaticity  
(e) Reduces resting potential
- 44. A 16-year-old-girl is found to have paroxysmal attacks of rapid heart rate. The antiarrhythmic of choice in most cases of acute AV nodal tachycardia is**
- (a) Adenosine (b) Amiodarone  
(c) Flecainide (d) Propranolol  
(e) Quinidine
- 45. Recognized adverse effects of quinidine include which one of the following?**
- (a) Cinchonism  
(b) Constipation  
(c) Lupus erythematosus  
(d) Increase in digoxin clearance  
(e) Precipitation of hyperthyroidism
- 46. Following is an antagonist of ganglion type nicotinic receptors**
- (a) Tubercularine (b)  $\alpha$ -bungarotoxin  
(c) Trimethaphan (d) All of the above
- 47. Which of the following is an orally active drug that blocks sodium channels and decreases action potential duration?**
- (a) Adenosine (b) Amiodarone  
(c) Disopyramide (d) Esmolol  
(e) Mexiletine
- 48. Which of the following has the longest half-life of all antiarrhythmic drugs?**
- (a) Adenosine (b) Amiodarone  
(c) Disopyramide (d) Esmolol  
(e) Flecainide
- 49. Which of the following diuretics would be most useful in a patient with cerebral edema?**
- (a) Acetazolamide (b) Amiloride  
(c) Ethacrynic acid (d) Furosemide  
(e) Mannitol
- 50. Which of the following therapies would be most useful in the management of severe hypercalcemia?**
- (a) Amiloride plus saline infusion  
(b) Furosemide plus saline infusion  
(c) Hydrochlorothiazide plus saline infusion  
(d) Mannitol plus saline infusion  
(e) Spironolactone plus saline infusion
- 51. A 55-year-old patient with severe post-hepatitis cirrhosis is started on a diuretic for another condition. Two days later he is found in a coma. The drug most likely to cause coma in a patient with cirrhosis is**
- (a) Acetazolamide  
(b) Amiloride  
(c) Furosemide  
(d) Hydrochlorothiazide  
(e) Spironolactone
- 52. Oxytremorine is a selective agonist of muscarinic \_\_\_\_\_ receptors**
- (a) M1 (b) M2  
(c) M3 (d) M4
- 53. A drug that is useful in glaucoma and high-altitude sickness is**
- (a) Acetazolamide (b) Amiloride  
(c) Demeclocycline (d) Desmopressin  
(e) Ethacrynic acid

**54. Cromolyn has as its major action**

- (a) Block of calcium channels in lymphocytes
- (b) Block of mediator release from mast cells
- (c) Block of phosphodiesterase in mast cells and basophils
- (d) Smooth muscle relaxation in the bronchi
- (e) Stimulation of cortisol release by the adrenals

**55. Following events occur in the cytoplasm and not inside storage vesicles, except**

- (a) Conversion of tyrosine to dopa
- (b) Conversion of dopa to dopamine
- (c) Conversion of dopamine to norepinephrine
- (d) Conversion of dopamine to 3,4 dihydroxy phenyl acetic acid

**56. Which one of the following is least likely to be useful in the therapy of hypercalcemia?**

- (a) Calcitonin
- (b) Glucocorticoids
- (c) Plicamycin
- (d) Parenteral infusion of phosphate
- (e) Thiazide diuretics

**57. Characteristics of Vitamin D and its metabolites include which one of the following?**

- (a) Act to decrease serum levels of calcium
- (b) Activation of their Vitamin D receptors increases cellular CAMP
- (c) Calcitriol is the major derivative responsible for increasing intestinal absorption of phosphate
- (d) Metabolites of Vitamin D increase renal excretion of calcium
- (e) Vitamin D deficiency results in Payer's disease

**58. Which of the following conditions is an indication for the use of calcitonin?**

- (a) Chronic renal failure
- (b) Hypoparathyroidism
- (c) Intestinal osteodystrophy
- (d) Payer's disease
- (e) Rickets

**59. Clinical uses of Vitamin D do not include**

- (a) Chronic renal failure
- (b) Hyperparathyroidism
- (c) Intestinal osteodystrophy
- (d) Nutritional rickets
- (e) Osteoporosis

**60. Which one of the following drugs, when used chronically, is associated with the development of bone pain and mineralization defects such as osteomalacia?**

- (a) Calcitonin
- (b) Dihydroxycholesterol
- (c) Ergocalciferol
- (d) Etidronate
- (e) Norgestrel

**61. A 70-year-old man has severe urinary hesitancy associated with benign prostatic hyperplasia. He has tried alpha blockers with little relief. His physician recommends a drug that blocks 5 $\alpha$  - reductase in the prostate and writes a prescription for**

- (a) Atropine
- (b) Clonidine
- (c) Hydralazine
- (d) Neostigmine
- (e) Propranolol

**62. Action of norepinephrine and epinephrine are terminated by**

- (a) Reuptake into nerve terminal
- (b) Dilution by diffusion and uptake at extra-neuronal site
- (c) Metabolic transformation
- (d) All of the above

**63. Typical results of beta-receptor activation include which one of the following?**

- (a) Hypoglycemia
- (b) Lipolysis
- (c) Glycogen synthesis
- (d) Decreased skeletal muscle tremor
- (e) Decreased rennin secretion

**64. A patient is admitted to the emergency room with orthostatic hypotension and evidence of marked GI bleeding. Which of the following most accurately describes the probable autonomic response to this bleeding?**



- 79. Select the correct statement from the following about  $\alpha_1$  - adrenergic receptor agonists**
- Isoproterenol > epinephrine  $\geq$  norepinephrine
  - Epinephrine > isoproterenol > norepinephrine
  - Isoproterenol = epinephrine  $\geq$  norepinephrine
  - Epinephrine  $\geq$  norepinephrine > isoproterenol
- 80. The most efficacious inhibitor of catecholamine synthesis in the body is**
- $\alpha$  - methyl - p - tyrosine
  - $\alpha$  - methyl dopa
  - $\alpha$  - methyl - norepinephrine
  - Pyrogallol
- 81. Tyramine induces release of noradrenaline from adrenergic nerve endings**
- By depolarizing the axonal membrane
  - By mobilizing  $\text{Ca}^{2+}$
  - By a nonexocytotic process
  - Only in the presence of MAO inhibitors
- 82. Choose the correct statement from the following about  $\alpha_1$  - adrenergic receptor agonists**
- Norepinephrine > isoproterenol > epinephrine
  - Norepinephrine < epinephrine > isoproterenol
  - Epinephrine  $\geq$  norepinephrine  $\gg$  isoproterenol
  - Epinephrine > isoproterenol > norepinephrine
- 83. A sympathomimetic amine that acts almost exclusively by releasing noradrenaline from the nerve endings is**
- Ephedrine
  - Dopamine
  - Isoprenaline
  - Tyramine
- 84. Low doses of adrenaline dilate the following vascular bed**
- Cutaneous
  - Mucosal
  - Renal
  - Skeletal muscle
- 85.  $\alpha_2$ -adrenergic receptors are associated with following except**
- Increase in phospholipase C activity
  - Increase in potassium channel conductance
  - Decrease in calcium channel conductance
  - Increase in adenylyl cyclase activity
- 86. Adrenaline raises blood glucose level by the following actions except**
- Inducing hepatic glycogenolysis
  - Inhibiting insulin secretion from pancreatic  $\beta$  cells
  - Augmenting glucagons secretion from pancreatic  $\alpha$  cells
  - Inhibiting peripheral glucose utilization
- 87. Noradrenaline is administered by**
- Subcutaneous injection
  - Intramuscular injection
  - Slow intravenous infusion
  - All of the above routes
- 88. Dobutamine differs from dopamine in that**
- It does not activate peripheral dopaminergic receptors
  - It does not activate adrenergic  $\beta$  receptors
  - It causes pronounced tachycardia
  - It has good blood-brain barrier penetrability
- 89. Ephedrine is similar to adrenaline in the following feature**
- Potency
  - Inability to penetrate blood-brain barrier
  - Duration of action
  - Producing both  $\alpha$  and  $\beta$  adrenergic effects
- 90. Continuous exposure of catecholamine-sensitive cells and tissues to adrenergic agonists causes a progressive diminution in their capacity to respond, this phenomenon is called as**
- Refractoriness
  - Desensitization
  - Tachyphylaxis
  - All of the above
- 91. While undergoing a surgical procedure a patient develops hypotension. Which of the following drugs can be injected intramuscularly to raise his BP**
- Noradrenaline
  - Isoprenaline
  - Mephentermine
  - Isoxsuprine
- 92. Vasoconstrictors should not be used in**
- Neurogenic shock
  - Haemorrhagic shock
  - Secondary shock
  - Hypotension due to spinal anaesthesia



**93. Guanethidine inhibits**

- (a) Synthesis of transmitter
- (b) Metabolism of transmitter
- (c) Release of transmitter
- (d) Displacement of transmitter from axonal terminal

**94. The drug which produces vasoconstriction despite being an  $\alpha$  adrenergic blocker is**

- (a) Phenoxybenzamine
- (b) Ergotamine
- (c) Dihydroergotoxine
- (d) Tolazoline

**95. Prazosin is an effective antihypertensive while nonselective  $\alpha$  adrenergic blockers are not because**

- (a) It is the only orally active  $\alpha$  blocker
- (b) It improves plasma lipid profile
- (c) It does not concurrently enhance noradrenaline release
- (d) It improves urine flow in males with prostatic hypertrophy

**96. Which of the following is true of sildenafil**

- (a) It enhances sexual enjoyment in normal men
- (b) It delays ejaculation
- (c) It is indicated only for treatment of erectile dysfunction in men
- (d) It blocks cavernosal  $\alpha_2$  adrenoceptors

**97. The  $\beta$ -adrenergic blocker which possesses both  $\beta_1$  selectivity as well as intrinsic sympathomimetic activity is**

- (a) Alprenolol                      (b) Atenolol
- (c) Acebutolol                      (d) Metoprolol

**98. Propranolol can be used to allay anxiety associated with**

- (a) Chronic neurotic disorder
- (b) Schizophrenia
- (c) Short-term stressful situation
- (d) Endogenous depression

**99. Propranolol does not block the following action of adrenaline**

- (a) Bronchodilation                      (b) Lipolysis
- (c) Muscle tremor                      (d) Mydriasis

**100. Phenylephrine**

- (a) Mimics the transmitter at post-synaptic receptors
- (b) Displaces transmitter from axonal terminal
- (c) Inhibits synthesis of transmitter
- (d) None of the above

**101. A  $\beta$  adrenergic blocker that is primarily eliminated unchanged by renal excretion is**

- (a) Propranolol
- (b) Metoprolol
- (c) Alprenolol
- (d) Atenolol

**102. In a patient of myocardial infarction,  $\beta$  adrenergic blockers are used with the following aim/aims:**

- (a) To reduce the incidence of reinfarction
- (b) To prevent cardiac arrhythmias
- (c) Myocardial salvage
- (d) All of the above

**103. Congenital dopamine- $\beta$ -hydroxylase deficiency is characterized by**

- (a) Absence of norepinephrine and epinephrine
- (b) Increased concentration of dopamine
- (c) Intact cholinergic innervation
- (d) All of the above

**104. The site of action of d-tubocurarine is**

- (a) Spinal internuncial neurone
- (b) Motor nerve ending
- (c) Muscle end-plate
- (d) Sodium channels in the muscle fiber

**105. The fall in blood pressure caused by d-tubocurarine is due to**

- (a) Reduced venous return.
- (b) Ganglionic blockade
- (c) Histamine release
- (d) All of the above

**106. The neuromuscular blocker having prominent antivagal action is**

- (a) Pancuronium
- (b) Vecuronium
- (c) Atracurium
- (d) Gallamine triethiodide



- 107. Neuromuscular blocking drugs do not produce central actions because**
- Nicotinic receptors are not present in the brain
  - They do not cross the blood-brain barrier
  - They are sequestered in the periphery by tight binding to the skeletal muscles
  - They do not ionize at the brain pH
- 108. Pancuronium differs from tubocurarine in that**
- It is a depolarizing blocker
  - Its action is not reversed by neostigmine
  - It can cause rise in BP on rapid I.V. injection
  - It causes marked histamine release
- 109. Muscarinic receptors are G-protein coupled receptors, causing**
- Inactivation of phospholipase C
  - Activation of adenylyl cyclase
  - Activation of potassium or inhibition of calcium channels
  - All of the above
- 110. Postoperative muscle soreness may be side effect of the following neuromuscular blocker**
- d-tubocurarine
  - Succinylcholine
  - Pancuronium
  - Atracurium
- 111. Following drug enhances the evoked release of acetylcholine**
- 4-aminopyridine
  - Vesamicol
  - Magnesium ion
  - None of the above
- 112. Which of the following muscle relaxants can be used to control spasticity associated with upper motor neurone paralysis ?**
- d-tubocurarine
  - Succinylcholine
  - Mephenesin
  - Baclofen
- 113. Following muscarinic agonist is susceptible to hydrolysis by cholinesterase**
- Carbachol
  - Methacholine
  - Bethanechol
  - Muscarine
- 114. Dihydroergotamine differs from ergotamine in the following respect**
- It is a more potent oxytocic
  - It has antiemetic property
  - It is a less potent a adrenergic blocker but more potent vasoconstrictor
  - It is a more potent a adrenergic blocker and less potent vasoconstrictor
- 115. Select the ergot compound which is primarily used for dementia**
- Bromocriptine
  - Ergotamine
  - Codergocrine
  - Methysergide
- 116. The 'amine' ergot alkaloid differs from 'amino acid' ergot alkaloids in that it has**
- High oral bioavailability
  - Better CNS penetrability
  - Weaker oxytocic action
  - Strong anti - 5 - HT action
- 117. Select the correct statement in relation to drug therapy of migraine**
- Simple analgesics like paracetamol are ineffective in migraine
  - Ergot alkaloids are used for the prophylaxis as well as treatment of migraine attacks
  - Use of ergot alkaloids is restricted to severe or resistant cases
  - Ergot alkaloids should be given till 24 hours after an attack has subsided
- 118. Ergotamine relieves migraine by**
- Blocking vascular a adrenergic receptors
  - Blocking vascular 5-HT<sub>2</sub> receptors
  - Dilating cranial arterio-venous shunt channels
  - Constricting cranial vessels and reducing perivascular neurogenic inflammation
- 119. Which of the following drugs is most commonly used for prophylaxis of migraine ?**
- Ergotamine
  - Propranolol
  - Methysergide
  - Sumatriptan
- 120. Stimulation of exocrine glands by muscarinic agonist leads to**
- Sweating
  - Salivation
  - Bronchial secretions
  - All of the above

- 121. *Datura stramonium* (thorn apple) mainly contains following muscarinic antagonist**
- (a) Atropine (b) Hyoscine  
(c) Homatropine (d) Dicyclomine
- 122.  $\beta$ -blockers are contraindicated in**
- (a) Prophylaxis of anxiety states  
(b) Hyperthyroidism  
(c) Hypertrophic obstructive cardiomyopathy  
(d) Peripheral vascular disease
- 123.  $\beta$ -blockers are better avoided in**
- (a) Bronchial asthma  
(b) Pheochromocytoma  
(c) Myocardial infarction  
(d) Migraine
- 124. Preferential  $\beta_1$  adrenergic blocking agent is**
- (a) Propranolol (b) Atenolol  
(c) Penbutolol (d) Oxprenolol
- 125. Prazosin**
- (a) Produces preferential  $\alpha_1$  adrenergic receptor blockade  
(b) Has a half-life of 24 hours  
(c) Can worsen lipid profile in hypertensive patients  
(d) Does not depress the baroreceptor function
- 126. The organ extremely sensitive to the action of atropine is**
- (a) Gastric glands  
(b) Salivary glands  
(c) Urinary bladder muscle  
(d) Heart
- 127. The antimuscarinic agent preferred in the management of motion sickness is**
- (a) Atropine methonitrate  
(b) Scopolamine  
(c) Homatropine methyl bromide  
(d) Ipratropium bromide
- 128. Belladonna poisoning is best treated with**
- (a) Neostigmine (b) Physostigmine  
(c) Acetylcholine (d) Adrenaline
- 129. The drug that produces neuromuscular blockade by persistent depolarization is**
- (a) D-tubocurarine (b) Gallamine  
(c) Pancuronium (d) Decamethonium
- 130. Agents that block neuromuscular transmission of acetyl choline acts via**
- (a) Inhibiting acetyl choline synthesis  
(b) Inhibiting acetyl choline release  
(c) Inhibiting post-synaptic action of acetyl choline  
(d) All of the above
- 131. The skeletal muscle relaxant causing significant release of histamine is**
- (a) Pancuronium (b) Atracurium  
(c) Gallamine (d) D-tubocurarine
- 132. The antibiotic that may accentuate the neuromuscular blockade produced by d-tubocurarine is**
- (a) Pencillin G (b) Erythromycin  
(c) Streptomycin (d) Chloramphenicol
- 133. Centrally acting skeletal muscle relaxant is**
- (a) Carisoprodol (b) Dantrolene  
(c) Gallamine (d) Succinylcholine
- 134.  $\beta$ -blockers**
- (a) Relieve symptoms of thyrotoxicosis  
(b) Should not be used along with carbimazole  
(c) Reduce the synthesis of hormones in the gland  
(d) Should not be given before thyroid surgery
- 135. Which of the following alpha adrenoceptor blockers is powerful and also has longer duration of action ?**
- (a) Tolazoline (b) Phenoxybenzamine  
(c) Phentolamine (d) Chlorpromazine
- 136. Heart has beta as sympathetic and vagus as parasympathetic drive. If simultaneously both are blocked by beta blocker and stropine, the heart will**
- (a) Stop  
(b) Beat with very slow rate  
(c) Beat with very fast rate  
(d) Beat at its intrinsic rate, about 100/min

- 137. Side effect which is observed only with the use of  $\beta$  blockers and not with other sympathetic blocking agents**
- (a) Sedation and drowsiness  
 (b) Congestive heart failure  
 (c) Bronchoconstriction  
 (d) Reflex tachycardia
- 138. Following agent inhibits the release of acetyl choline**
- (a) Magnesium ion (b) Triethylcholine  
 (c) Vesamicol (d) All of the above
- 139. What is composition of vagus nerve ?**
- (a) Entirely sensory  
 (b) Purely motor  
 (c)  $\frac{3}{4}$  sensory  $\frac{1}{4}$  motor  
 (d)  $\frac{1}{4}$  sensory  $\frac{3}{4}$  motor
- 140. The ciliary muscle of iris has predominant**
- (a) Sympathetic innervation  
 (b) Parasympathetic innervation  
 (c) Somatic innervation  
 (d) Mixture of all the above
- 141. Following is a short-acting anti-cholinesterase**
- (a) Neostigmine (b) Pyridostigmine  
 (c) Edrophonium (d) Physostigmine
- 142. Catecholamine D methyl transferase is found in all except**
- (a) Adrenergic neurone  
 (b) Brain  
 (c) Kidney  
 (d) None of the above
- 143.  $\beta_3$  receptor is present in**
- (a) Adipose tissue (b) Smooth muscle  
 (c) Heart (d) All of the above
- 144.  $\beta_1$  receptors are present in**
- (a) Liver (b) Kidney  
 (c) Brain (d) None of the above
- 145. Activity of which adrenergic receptor is linked to activation of G proteins**
- (a)  $\beta_1$  (b)  $\beta$   
 (c)  $\alpha_1$  (d)  $\alpha_2$   
 (e) All of the above
- 146. Which of the following drugs has highest alfa agonist activity ?**
- (a) Epinephrine (b) Norepinephrine  
 (c) Ephedrine (d) Amphetamine
- 147. Atropine is antagonist to which type of muscarinic**
- (a)  $M_1$  (b)  $M_2$   
 (c)  $M_3$  (d)  $M_4$
- 148. Following are irreversible anti-cholinesterases, except**
- (a) Parathion (b) Pyridostigmine  
 (c) Dyflos (d) Ecothiopate
- 149. The order of paralysis with d-tubocurarine is**
- (a) Fingers, Neck, Eyes, Limbs, Trunk Respiratory  
 (b) Neck, Limbs, Face, Eyes, Pharynx, Trunk Respiratory  
 (c) Fingers, Eyes, Limbs, Neck, Trunk Respiratory  
 (d) Face, Eyes, Fingers, Neck, Limbs, Trunk Respiratory  
 (e) None of the above
- 150. Following is a naturally occurring tertiary amine anti-cholinesterase**
- (a) Edrophonium (b) Neostigmine  
 (c) Pyridostigmine (d) Physostigmine
- 151. Which of the following sympathomimetic drugs is a non -catecholamine ?**
- (a) Adrenaline (b) Noradrenaline  
 (c) Isoprenaline (d) Ephedrine  
 (e) All of the above (f) None of the above
- 152. Which of the following  $\beta$  - adrenoceptor blocker is the least lipid soluble ?**
- (a) Propanolol (b) Atenolol  
 (c) Oxprenolol (d) Metoprolol  
 (e) All of the above (f) None of the above
- 153. Propanolol is contraindicated / not beneficial in**
- (a) Parkinsonism tremors

- (b) Bronchial asthma  
 (c) Insulin – treated diabetes  
 (d) All of the above  
 (e) None of the above
- 154. Which of the following adrenoceptor antagonists has partial agonist activity and also membrane stabilizing activity**
- (a) Propranolol (b) Atenolol  
 (c) Oxprenolol (d) Metoprolol  
 (e) All of the above (f) None of the above
- 155. Which of the following indirectly acting sympathomimetics is an uptake-1 inhibitor ?**
- (a) Tyramine (b) Amphetamine  
 (c) Ephedrine (d) All of the above  
 (e) None of the above
- 156. Which of the following drugs is used in cardiogenic shock ?**
- (a) Noradrenaline (b) Adrenaline  
 (c) Isoprenaline (d) Dobutamine  
 (e) Salbutamol
- 157. Pseudo-cholinesterase is present in**
- (a) Membrane (b) Vesicles  
 (c) Synaptic cleft (d) Plasma and tissue
- 158. Which of the following drugs is used as inhalation as a bronchodilator and may be used when cough is a pronounced symptom in asthmatic patient ?**
- (a) Atropine (b) Homtropicine  
 (c) Ipratropium (d) Tropicamide  
 (e) All of the above (f) None of the above
- 159. Activation of sympathetic system leads to \_\_\_\_\_ except**
- (a) Contraction of bronchial smooth muscles  
 (b) Gluconeogenesis  
 (c) Glycogenolysis  
 (d) Contraction of radial smooth muscle of iris
- 160. Which of the following antimuscarinic drugs is short acting mydriatic ?**
- (a) Atropine (b) Homatropicine  
 (c) Ipratropium (d) Tropicamide
- (e) All of the above (f) None of the above
- 161. Following agent reduces the transmitter release by blocking nerve terminal calcium channels**
- (a) Botulinum toxin (b)  $\beta$ -bungarotoxin  
 (c)  $\omega$ -conotoxin (d) All of the above
- 162. Atropine in doses of 2.0mg to 5.0mg may cause**
- (a) Increased heart rate  
 (b) dryness of mouth  
 (c) Dilated pupils  
 (d) Difficulty in micturition  
 (e) Reduced intestinal peristalsis  
 (f) All of the above  
 (g) None of the above
- 163. Chemically following anti-cholinesterase is an alcohol**
- (a) Ambenonium (b) Edrophonium  
 (c) Ecothiophate (d) None of the above
- 164. Which of the following  $\alpha$ -adrenoceptor blockers has the minimal hepatic biotransformation ?**
- (a) Atenolol (b) Labetalol  
 (c) Metoprolol (d) Propranolol  
 (e) Sotalol
- 165. Which of the following  $\beta$  –adrenoceptor blockers is the drug of choice for treatment of essential tremors ?**
- (a) Propranolol (b) Nadolol  
 (c) Timolol (d) Atenolol  
 (e) All of the above (f) None of the above
- 166. Which of the following  $\alpha$ -adrenoceptor blockers is used as anti-glaucoma agent**
- (a) Propranolol (b) Nadolol  
 (c) Timolol (d) Atenolol  
 (e) All of the above (f) None of the above
- 167. Concurrent use of atropine will interfere with the anti-glaucoma action of**
- (a) Pilocarpine (b) Physostigmine  
 (c) Carbachol (d) All of the above  
 (e) None of the above

- 168. To reduce the muscarinic side effects of oral forms of cholinesterase inhibitors they should be administered**
- On empty stomach
  - With food
  - With milk
  - One hour after food
  - With food or milk
- 169. Which of the following cholinesterase inhibitors is said to produce more severe muscarinic side effects**
- Pyridostigmine
  - Neostigmine
  - Ambenonium
  - All of the above
  - None of the above
- 170. Which of the following cholinesterase inhibitors is preferred in patients hypersensitive to the bromide ion ?**
- Pyridostigmine
  - Neostigmine
  - Ambenonium
  - All of the above
  - None of the above
- 171. Following is a synthetic analogue of atropine, used as an inhalational drug in asthma**
- Benztropine
  - Pirenzepine
  - Ipratropium
  - All of the above
- 172. All the cholinomimetic alkaloids except one which is a choline ester**
- Pilocarpine
  - Carbachol
  - Muscarine
  - Arecoline
- 173. Which one of the following  $\beta$  - blockers has reduced risk of bronchospasm ?**
- Propranolol
  - Atenolol
  - Pindolol
  - None of the above
- 174. Metoprolol is a cardioselective beta blocker (relatively selective  $\beta_1$  - blocker)**
- With membrane stabilizing effect and with partial agonist effect
  - Without membrane stabilizing effect and with partial agonist effect
  - Without membrane stabilizing effect and without partial agonist effect
  - With membrane stabilizing effect, partial agonist effect and direct vasodilator activity
- 175. Phenylephrine is useful as**
- Mydriatic to facilitate examination of retina
  - Decongestant for minor allergic hyperemia of conjunctival membranes
  - A drug in localizing the lesion in Horner's Syndrome
  - All of the above
  - None of the above
- 176. d-Amphetamine is not used in**
- Narcolepsy
  - Hyperkinetic child (specilly attention deficit disorder)
  - Migraine
  - Child appetite suppressant
- 177. Following is a tertiary amine anti-muscarinic drug used for Parkinson's disease**
- Benztropine
  - Dicyclomine
  - Pirenzepine
  - Tropicamide
- 178. d-Amphetamine has most prominent**
- $\beta_1$  effects
  - $\beta_2$  effects
  - Metabolic effects
  - CNS excitatory effects
  - None of the above
- 179. Phenylephrine has most prominent**
- $\alpha_1$  effects
  - $\beta_1$  effects
  - $\beta_2$  effects
  - Metabolic effects
  - CNS excitatory effects
- 180. Following is a tertiary amine anti-muscarinic drug mainly used for mydriatic or cycloplegic action**
- Benztropine
  - Dicyclomine
  - Pirenzepine
  - Trpicamide

**ANSWERS**

1. d	2. c	3. c	4. b	5. a	6. d
7. c	8. b	9. c	10. e	11. d	12. a
13. b	14. b	15. c	16. a	17. b	18. b
19. b	20. e	21. c	22. c	23. b	24. b
25. a	26. b	27. d	28. a	29. e	30. c
31. d	32. e	33. a	34. b	35. d	36. c
37. e	38. b	39. b	40. a	41. a	42. a
43. d	44. a	45. a	46. c	47. e	48. b
49. e	50. b	51. a	52. a	53. a	54. b
55. c	56. e	57. c	58. d	59. b	60. d
61. b	62. d	63. b	64. b	65. b	66. b
67. b	68. c	69. b	70. d	71. c	72. a
73. a	74. d	75. c	76. a	77. b	78. d
79. a	80. a	81. c	82. c	83. d	84. d
85. d	86. d	87. c	88. a	89. d	90. d
91. c	92. c	93. c	94. b	95. c	96. c
97. c	98. c	99. d	100. a	101. d	102. d
103. d	104. c	105. d	106. d	107. b	108. c
109. c	110. b	111. a	112. d	113. b	114. d
115. c	116. a	117. c	118. d	119. b	120. d
121. b	122. d	123. a	124. b	125. a	126. b
127. b	128. b	129. d	130. d	131. d	132. c
133. a	134. a	135. b	136. d	137. a	138. a
139. c	140. b	141. c	142. a	143. a	144. b
145. e	146. a	147. a	148. b	149. c	150. d
151. d	152. b	153. d	154. c	155. b	156. d
157. d	158. c	159. a	160. d	161. c	162. f
163. b	164. a	165. a	166. c	167. d	168. e
169. b	170. c	171. c	172. b	173. b	174. c
175. d	176. c	177. a	178. d	179. a	180. d

## EXPLANATIONS FOR THE ANSWERS

2. d The autonomic nervous system consists of sympathetic, parasympathetic and enteric nervous systems. Hence, the ANS is also called as visceral, vegetative or involuntary nervous system.
9. c The sympathetic preganglionic neurons have their cell bodies in the lateral horn of the grey matter of thoracic and lumbar segments of the spinal cord. The fibers leave the spinal cord in the spinal nerve as thoracolumbar sympathetic outflow.
13. b In male reproductive system, the sympathetic nervous system is responsible for ejaculation ( $\alpha$ -receptors), and parasympathetic nervous system is responsible for erection via. Muscarinic receptors.
16. a Sympathetic system is active and parasympathetic system is quiescent in 'fight or flight' response i.e. stress.  
Parasympathetic system predominates during satiation and repose i.e. 'rest and digest' response.
21. c See explanation of Q. 16
30. c Sympathetic system increases rate of SA node, cause contraction of coronary arteries and constriction of sphincters in GIT.  
Sympathetic system relaxes the smooth muscles of GIT, thus decreases the motility.
31. d If a nerve is cut and its terminal are allowed to degenerate, the organ or tissue supplied by it becomes supersensitive to the neurotransmitter released by the nerve terminal. This is called as denervation super-sensitivity and it involves various mechanisms such as proliferation of receptors, loss of mechanism of transmitter removal and increased post-junctional responsiveness.
39. b At rest, the interior of the typical mammalian neuronal axon potential is approximately  $-70$  mV. It is essentially a diffusion potential based on high potassium inside and high sodium and chloride outside the axon. Axonal membrane is relatively more permeable to potassium than sodium and chloride ions.
40. a Acetylcholine is synthesized from acetyl-CoA and choline through the catalytic action of cholineacetyltransferase.  
Acetylcholinesterase splits the acetylcholine into choline and acetate.
46. c There are three types of nicotinic receptors – muscle type, ganglion type and CNS type.  
Trimethaphan is an antagonist of ganglion type nicotinic receptors.  
Tubocurarine is an antagonist of muscle type and  $\alpha$ -bungarotoxin is an antagonist of CNS type nicotinic receptor.
52. a Oxytremorine is a selective agonist of M1 muscarinic receptors present in autonomic ganglia.  
Pirenzepine is an antagonist of these receptors.
55. c Conversion of tyrosine to dopa, dopa to dopamine and dopamine to 3, 4 dihydroxyphenyl acetic acid occurs in the cytoplasm.  
Dopamine  $\alpha$  hydroxylase, which converts dopamine to norepinephrine, is present in storage vesicles. Hence conversion of dopamine to norepinephrine occurs in storage vesicles and not cytoplasm.
62. d Actions of norepinephrine and epinephrine are terminated by:
  - Reuptake into nerve terminals.
  - Dilution by diffusion out of the junctional cleft and uptake by extraneuronal sites.
  - Metabolic transformation by monoamine oxidase and catechol-O-methyltransferase.
66. b Yohimbine is an antagonist of  $\alpha_2$ -receptors present in nerve terminals, platelets and pancreatic  $\beta$ -cells. Clonidine is an agonist of these receptors.
71. c  $\alpha_1$  – Receptors are coupled with  $G_q$  G- proteins and the biochemical effect is increased in either phospholipase C, D or  $A_2$  activity and/or opening of calcium channels.
79. a The affinity of  $\beta_1$  – adrenergic receptors can be shown as :  
Isoproterenol > Epinephrine = Norepinephrine  
The specific agonist of this receptor is dobutamine and specific antagonist is metoprolol.
82. c The affinity of  $\alpha_1$  – adrenergic receptors can be shown as:



- Epinephrine  $\geq$  Norepinephrine  $\gg$  Isoproterenol  
Phenylephrine is a specific agonist and prazosin is a specific antagonist of this receptor.
85. d Activation of  $\alpha_2$  – adrenergic receptors is associated with:
- Increase in phospholipase activity.
  - Increase in potassium channel conductance.
  - Decrease in calcium channel conductance
  - Decrease (and not increase in adenylyl cyclase activity).
90. d Refractoriness, desensitization or tachyphylaxis describes the same phenomenon. Because of this, the duration of action and therapeutic efficacy of catecholamines and other agents is significantly limited.
93. c Guanethidine inhibits the release of transmitter. Another agent, which also inhibits the release of transmitter, is bretylium.  
Synthesis of transmitter is inhibited by  $\alpha$ -methyl tyrosine.  
Metabolism of transmitter is inhibited by pargyline and tranlycypromine. Amphetamine and tyramine cause displacement of transmitter from axon terminals.
100. a Phenylephrine is an agonist of  $\alpha_1$ -adrenergic receptor and it mimics the transmitter at post-synaptic receptors, producing sympathomimetic effect.
103. d Congenital dopamine  $\beta$  hydroxylase deficiency is characterized by absence of norepinephrine and epinephrine, increased concentration of dopamine and intact cholinergic innervation. These patients suffer from severe postural hypotension and other symptoms.
109. c Muscarinic receptors are G protein coupled receptors, causing:
- Activation of potassium or inhibition of calcium channels.
  - Activation of phospholipase C
  - Inhibition of adenylyl cyclase
111. a 4-Aminopyridine enhances the evoked release of acetylcholine.  
Vesamicol blocks the transport of acetylcholine into storage vesicles.  
Magnesium ions block the calcium entry and thus inhibit the release of acetylcholine.
113. b Methacholine, although three times more resistant than acetylcholine, is susceptible to hydrolysis by cholinesterase.  
Carbachol and bethanechol are completely resistant to hydrolysis by cholinesterase.  
Muscarine is not metabolized by cholinesterase.
120. d Muscarinic agonists stimulate the secretory activity of sweat, lacrimal, salivary and nasopharyngeal glands and hence lead to increased sweating, salivation and bronchial secretions.
121. b *Datura stramonium* mainly contains atropine. Hyoscine (scopolamine) is mainly found in *Hyoscyamus niger*.  
Homatropine is a semisynthetic derivative.  
Dicyclomine is a synthetic derivative.
130. d Blockers of neuromuscular transmission of acetylcholine act via various mechanisms:
- Inhibition of acetylcholine synthesis.
  - Inhibition of acetylcholine release.
  - Inhibition of postsynaptic action of acetylcholine.
138. a Magnesium inhibits the entry of calcium into the nerve terminal and thus inhibits the exocytosis and hence release of acetylcholine. Triethylcholine inhibits the transport of choline into the nerve terminal.  
Vesamicol inhibits the transport of acetylcholine into synaptic vesicles.
141. c Edrophonium is a short-acting anticholinesterase. It is mainly used in the diagnosis of myasthenia gravis.  
Neostigmine, pyridostigmine and physostigmine are medium duration anticholinesterase.
148. b Pyridostigmine is a medium duration anticholinesterase. Parathion, dyflos and ecothiopate are irreversible anticholinesterase.
150. d Physostigmine is a naturally occurring tertiary amine anticholinesterase.  
Edrophonium, neostigmine and pyridostigmine are quaternary ammonium compounds.
157. d Pseudocholinesterase (or butyrylcholinesterase) is widely distributed in tissues e.g. liver, skin, brain and gastrointestinal smooth muscles. It is also present in soluble form in plasma. However, it is not present in synaptic cleft, vesicles or membrane.
159. a Activation of sympathetic system lead to:
- Relaxation (and not contraction) of bronchial smooth muscles.

- Gluconeogenesis.
  - Glycogenolysis
  - Contraction of radial smooth muscle of iris.
161. c  $\omega$ -Conotoxin is an inhibitor of nerve terminal calcium channels and thus reduces the transmitter release.  
Botulinum toxin and  $\beta$ -bungarotoxin reduce transmitter release by cleaving specific proteins involved in the exocytosis.
163. b Edrophonium is an anticholinesterase and is chemically an alcohol. It has - OH group attached to a benzene ring. Ambenonium is a bis-quaternary compound and ecothiophate is an organophosphate anti-cholinesterase.
171. c Ipratropium is a synthetic analogue of atropine and is used as an inhalational drug in the treatment of asthma.  
Benzotropine is efficacious in preventing dystonia or parkinsonian symptoms.  
Pirenzepine is used as an antitussive agent.
177. a Benzotropine is the only antimuscarinic drug with profound CNS effects and hence it is used for the treatment of the Parkinson's disease.
180. d Tropicamide is mainly used for mydriatic or cycloplegic action.  
Dicyclomine is antispasmodic.  
Pirenzepine is antitussive agent.  
Benzotropine is used in the treatment of Parkinson's disease.

# CHAPTER 4

## VITAMINS & MINERALS

**1. Thiamine is vitamin**

- (a) B1
- (b) B2
- (c) B6
- (d) B12

**2. The iron stored in intestinal mucosal cells is complexed to**

- (a) Ferritin
- (b) Intrinsic factor
- (c) Oprelvekin
- (d) Transcobalamin II
- (e) Transferrin

**3. Which of the following is most likely to be required by a 5-year-old boy with chronic renal insufficiency?**

- (a) Erythropoietin
- (b) G-CSF
- (c) Interleukin - 11
- (d) Stem cell factor
- (e) Thrombopoietin

**4. In adults, approximately \_\_\_\_\_ mg of thiamine per day is completely degraded by the tissue**

- (a) 0.01
- (b) 0.1
- (c) 1
- (d) 10

**5. The drug of choice for the management of osteoporosis caused by high-dose use of glucocorticoids is**

- (a) Alendronate
- (b) Calcitonin
- (c) Mestranol
- (d) Oxandrolone
- (e) Vitamin D

**6. Which of the following drugs is correctly associated with its clinical application?**

- (a) Erythropoietin : Macrocytic anemia
- (b) Filgrastim : Thrombocytopenia due to myelocytic leukemia
- (c) Iron dextran : Severe macrocytic anemia
- (d) Ferrous sulfate : Microcytic anemia of pregnancy
- (e) Folic acid : Hemochromatosis

**7. Conversion of methionine to cysteine depends on vitamin**

- (a) B1
- (b) B2
- (c) B6
- (d) B12

**8. Avidin, a protein found in egg white is an antagonist of**

- (a) Biotin
- (b) Pantothenic acid
- (c) Choline
- (d) Pyridoxal

**9. All of the following are important functions of magnesium (Mg) except**

- (a) Nerve conduction
- (b) Phospholipid synthesis
- (c) Muscle contractility
- (d) Carbohydrate, fat, and electrolyte metabolism

**10. Factors likely to cause an increase in the blood urea nitrogen (BUN) level include**

- (a) Intramuscular (IM) injection of diazepam (Valium)
- (b) Severe liver disease
- (c) Chronic kidney disease

- 11. Physiologically carnitine plays following role**
- Important for oxidation of fatty acids
  - Decreases aerobic metabolism of carbohydrates
  - Decreases rate of oxidative phosphorylation
  - All of the above
- 12. Patients receiving iron therapy should be warned about**
- Dizziness
  - Ringing in the ears
  - Danger of sunlight
  - Blackening of the stool
  - Paresthesia
- 13. Therapeutically vitamin B1 has been employed most successfully in the treatment of**
- Microcytic anemia
  - Pellagra
  - Scurvy
  - Beriberi
  - Macrocytic anemia
- 14. Magnesium ion is necessary in**
- Stimulating enzyme systems
  - Muscular contraction
  - Nerve conduction
  - All of the above
  - None of the above
- 15. The following derivatives of retinal shows the greatest biological potency than others**
- 9-Cis-retinoic acid
  - All-trans-retinoic acid
  - All-trans-retinol
  - 11-Cis-retinal
- 16. The drug used for controlling tetany is**
- Intravenous diazepam
  - Intramuscular vitamin D
  - Intravenous calcium gluconate
  - Intravenous calcitonin
- 17. Absorption of oral iron preparations can be facilitated by coadministering**
- Antacids
  - Tetracyclines
  - Phosphates
  - Ascorbic acid
- 18. The gut controls the entry of ingested iron in the body of**
- Regulating the availability of apoferritin which acts as the carrier of iron across the mucosal cell
  - Regulating the turnover of apoferritin-ferritin interconversion in the mucosal cell
  - Complexing excess iron to form ferritin which remains stored in the mucosal cell and is shed off
  - Regulating the number of transferring receptors on the mucosal cell
- 19. The percentage of elemental iron hydrated ferrous sulfate is**
- 5%
  - 10%
  - 20%
  - 33%
- 20. In isolated fibroblast or epithelial cells, retinoids enhance the synthesis of following protein**
- Fibronectin
  - Collagenase
  - Certain species of keratin
  - All of the above
- 21. The side effect which primarily limits acceptability of oral iron therapy is**
- Epigastric pain and bowel upset
  - Black stools
  - Staining of teeth
  - Metallic taste
- 22. Iron sorbitol-citric acid differs from iron dextran in that**
- It cannot be injected i.v.
  - It is not excreted in urine
  - It is not bound to transferritin in plasma
  - It produces fewer side effects
- 23. Which of the following is true about iron therapy ?**
- Haemoglobin response to intramuscular iron is faster than with oral iron therapy
  - Iron must be given orally except in pernicious anaemia
  - Prophylactic iron therapy must be given during pregnancy

- (d) Infants on breast feeding do not require medicinal iron
- 24. Concentrations of retinal in plasma in excess of \_\_\_\_\_  $\mu\text{g}/\text{dl}$  usually are diagnostic of hypervitaminosis A**
- (a) 10 (b) 50  
(c) 100 (d) 200
- 25. Megaloblastic anaemia occurs in**
- (a) Vitamin B<sub>12</sub> but not folic acid deficiency  
(b) Folic acid but not Vitamin B<sub>12</sub> deficiency  
(c) Either Vitamin B<sub>12</sub> or folic acid deficiency  
(d) Only combined Vitamin B<sub>12</sub> + folic acid deficiency
- 26. The daily dietary requirement of Vitamin B<sub>12</sub> by an adult is**
- (a) 1–3  $\mu\text{g}$  (b) 50–100  $\mu\text{g}$   
(c) 0.1–0.5  $\mu\text{g}$  (d) 1–3  $\mu\text{g}$
- 27. Which of the following factor(s) is/are required for the absorption of Vitamin B<sub>12</sub> ingested in physiological amounts ?**
- (a) Gastric acid  
(b) Gastric intrinsic factor  
(c) Transcobalamine  
(d) Both (a) and (b)
- 28. Hydroxocobalamine differs from cyanocobalamine in that**
- (a) It is more protein bound and better retained  
(b) It is beneficial in tobacco amblyopia  
(c) It benefits haematological but not neurological manifestations of Vit B<sub>12</sub> deficiency  
(d) Both (a) and (b)
- 29. Megaloblastic anemia is caused by deficiency of**
- (a) Iron (b) Vitamin B<sub>12</sub>  
(c) Vitamin C (d) All of the above
- 30. Vitamin B12 is a required co-factor for the following reaction**
- (a) Conversion of methylmalonyl-CoA to succinyl-CoA  
(b) Conversion of 5-CH<sub>3</sub>-H<sub>4</sub>-folate to H<sub>4</sub>-folate  
(c) Conversion of homocysteine to methionine  
(d) All of the above
- 31. Vitamin K is indicated for the treatment of bleeding occurring in patients**
- (a) Being treated with heparin  
(b) Being treated with streptokinase  
(c) Of obstructive jaundice  
(d) Of peptic ulcer
- 32. Menadione (Vitamin K<sub>3</sub>)**
- (a) Can cause hemolysis in patients with G-6-PD deficiency  
(b) Is given in large doses in patients with severe liver disease  
(c) Is useful to prevent haemorrhagic disease of the newborn  
(d) Is the preparation of choice to antagonize the effect of warfarin overdose
- 33. Vitamin K promotes the hepatic biosynthesis of following blood clotting factor**
- (a) Factor I (b) Factor II  
(c) Factor VIII (d) All of the above
- 34. folic acid is principally used**
- (a) In pernicious anaemia  
(b) In megaloblastic anaemia secondary to Vitamin B<sub>12</sub>  
(c) Along with methotrexate therapy  
(d) In treatment of folic acid deficiency
- 35. Penicillamine**
- (a) Is effective orally  
(b) Can cause anaphylactic reactions in patients allergic to penicillin  
(c) Is safe in pregnancy  
(d) Is not effective in lead poisoning
- 36. Succimer**
- (a) Can significantly mobilize essential metals  
(b) Produces less toxicity than Dimercaprol  
(c) Is ineffective orally  
(d) Is contraindicated in children

## Answer

1. c	2. a	3. a	4. c	5. a	6. d
7. c	8. a	9. b	10. c	11. a	12. d
13. d	14. d	15. c	16. c	17. d	18. c
19. c	20. a	21. a	22. a	23. c	24. c
25. c	26. a	27. d	28. d	29. b	30. d
31. c	32. a	33. b	34. c	35. a	36. b

## EXPLANATIONS FOR THE ANSWERS

1. a Thiamine is vitamin B<sub>1</sub> and was the first member of vitamin B complex to be identified. Vitamin B<sub>6</sub> – Pyridoxine, pyridoxal and pyridoxamine. Medically used vitamin B<sub>12</sub> is hydroxycobalamine. Vitamin B<sub>2</sub> is riboflavin
4. c In adults, approximately 1 mg of thiamine per day is completely degraded by the tissues and 1 mg is roughly the minimal daily requirement of thiamine.
7. c Conversion of methionine to cysteine depends on vitamin B<sub>6</sub>. Vitamin B<sub>1</sub>, B<sub>2</sub> and B<sub>12</sub> do not play any role in this conversion. Vitamin B<sub>6</sub> is also involved in various metabolic transformations of amino acids e.g. decarboxylation, transamination and racemization.
8. a Avidin, a protein found in egg white, is an antagonist of biotin. Avidin is a glycoprotein and it binds with biotin with great affinity and thus prevents its absorption.
11. a Carnitine has several physiological roles:
- It is important for oxidation of fatty acids.
  - It increases aerobic metabolism of carbohydrates.
  - It increases rate of oxidative phosphorylation.
  - It enhances the excretion of certain organic acids.
15. c Of all known derivatives of retinal, *all-trans*-retinol (and its aldehyde, retinal) has the greatest biological potency.
20. a In isolated fibroblasts and epithelial cells, retinoids enhance the synthesis of fibronectin and reduce the synthesis of collagen and certain species of keratin. These effects are mediated by change in the nuclear transcription. Retinoic acid is more potent than retinal in mediating these effects.
24. c Concentrations of retinal in plasma in excess of 100µg/dl. usually are diagnostic of hypervitaminosis A. Such hypervitaminosis is generally seen during the therapeutic use of retinoids in the treatment of skin disorders.
29. b Megaloblastic anemia is caused by deficiency of vitamin B<sub>12</sub>. It is characterized by macrocytic anemia, mild to moderate leukopenia and/or thrombocytopenia, hypercellular bone marrow with megaloblastic maturation or erythroid and other precursor cells.
30. d Vitamin B<sub>12</sub> is a cofactor for various biochemical reactions:
- Conversion of methylmalonyl CoA to succinyl CoA. This reaction requires deoxyadenosylcobolamin as a cofactor.
  - Conversion of 5-methyl tetrahydrofolate to tetrahydro-olate and conversion of homocysteine to methionine. These two reactions use methylcobolamine as a cofactor.
33. b Vitamin K promotes the hepatic biosynthesis of factor II (prothrombin) and also factors VII, IX and X. Vitamin K does not play important role in the biosynthesis of factors I and VIII.

# CHAPTER 5

## ANALGESICS & ANTIPYRETICS

**1.  $\alpha$ -Aminoethylimidazole is?**

- (a) 2-methyl histamine
- (b) Histamine
- (c) 2-pyridyl ethylamine
- (d) 4-methyl histamine

**2. Agents that often cause vasoconstriction include all of the following except**

- (a) Angiotensin II
- (b) Methysergide
- (c)  $\text{PGF}_{2\alpha}$
- (d) Prostacyclin
- (e) Thromboxane

**3. Inflammation is a complex tissue reaction that includes the release of cytokines, leukotrienes, prostaglandins, and peptides. Prostaglandins involved in inflammatory processes are produced from arachidonic acid by**

- (a) Cyclooxygenase 1
- (b) Cyclooxygenase 2
- (c) Glutathione – S – transferase
- (d) Lipoxygenase
- (e) Phospholipase  $A_2$

**4. A 60-year-old woman has glaucoma following cataract surgery. Which of the following can be used to reduce intraocular pressure?**

- (a) Leukotriene  $\text{LTD}_4$  or its analogs
- (b) Prostaglandin  $E_2$  or its analogs
- (c) Prostaglandin  $F_{2\alpha}$  or its analogs

- (d) Slow-reacting substance of anaphylaxis (SRS-A)
- (e) Thromboxane  $A_2$  or its analogs

**5. Which of the following is a reversible inhibitor of platelet cyclooxygenase?**

- (a) Alprostadil
- (b) Aspirin
- (c) Ibuprofen
- (d)  $\text{LTC}_4$
- (e) Misoprostol

**6. Vasodilation by prostaglandins involves**

- (a) Arterioles
- (b) Precapillary sphincters
- (c) Postcapillary venules
- (d) All of the above

**7. Fentanyl transdermal patches have been used postoperatively to provide transdermal analgesia. The most dangerous adverse effect of this mode of administration is**

- (a) Cutaneous reactions
- (b) Diarrhea
- (c) Hypertension
- (d) Relaxation of skeletal muscle
- (e) Respiratory depression

**8. Opioid analgesics are either contraindicated or must be used with extreme caution in several clinical situations. For morphine, such situations do not include**

- (a) Aqueous diffusion



- (b) Aqueous hydrolysis  
 (c) Lipid diffusion  
 (d) Pinocytosis or endocytosis  
 (e) Special carrier transport
- 9. Following is an example of paraaminophenol NSAID**
- (a) Diclofenac                      (b) Acetaminophen  
 (c) Piroxicam                        (d) Celecoxib
- 10. This drug, which does not activate opioid receptors, has been proposed as a maintenance drug in treatment programs for opioid addicts; a singly oral dose will block the effects of injected heroin for up to 48 hours**
- (a) Amphetamine                    (b) Buprenorphine  
 (c) Naloxone                         (d) Naltrexone  
 (e) Propoxyphene
- 11. Which one of the following statements about dextromethorphan is accurate?**
- (a) Activates kappa receptors  
 (b) Analgesia equivalent to pentazocine  
 (c) Highly effective antiemetic  
 (d) Less constipation than codeine  
 (e) Use requires a prescription
- 12. Which one of the following effects does not occur in salicylate intoxication?**
- (a) Hyperventilation  
 (b) Hypothermia  
 (c) Metabolic acidosis  
 (d) Respiratory alkalosis  
 (e) Tinnitus
- 13. Which one of the following drugs is not useful in dysmenorrhea?**
- (a) Aspirin                            (b) Colchicine  
 (c) Ibuprofen                        (d) Rofecoxib  
 (e) Naproxen
- 14. Following gold compound is generally administered orally**
- (a) Aurothioglucose  
 (b) Aurofin  
 (c) Gold sodium thiomalate  
 (d) All of the above
- 15. The main advantage of ketorolac over aspirin is that ketorolac**
- (a) Can be combined more safely with an opioid such as codeine  
 (b) Can be obtained as an over-the-counter agent  
 (c) Does not prolong the bleeding time  
 (d) Is available in a parenteral formulation that can be injected intramuscularly or intravenously  
 (e) Is less likely to cause acute renal failure in patients with some preexisting degree of renal impairment
- 16. A 45-year-old surgeon has developed symmetric early morning stiffness in her hands. She wishes to take a nonsteroidal anti-inflammatory drug to relieve these symptoms and wants to avoid gastrointestinal side effects. Which one of the following drugs is most appropriate?**
- (a) Aspirin                            (b) Celecoxib  
 (c) Ibuprofen                        (d) Indomethacin  
 (e) Piroxicam
- 17. Following is an example of preformed and not lipid derived mast cell mediator of inflammatory process**
- (a) LTC<sub>4</sub>                                (b) PGD<sub>2</sub>  
 (c) PAF                                 (d) Histamine
- 18. The toxicity spectrum of aspirin does not include**
- (a) Increased risk of encephalopathy in children with viral infections  
 (b) Increased risk of peptic ulcers  
 (c) Hyperprothrombinemia  
 (d) Metabolic acidosis  
 (e) Respiratory alkalosis
- 19. Accidental poisonings are common with both aspirin and ibuprofen, two OC drugs available in tasty chewable tablets. In cases of overdose, aspirin is more likely than ibuprofen to cause**
- (a) Autonomic Instability  
 (b) Hepatic necrosis  
 (c) Metabolic acidosis  
 (d) Thrombocytopenia  
 (e) Ventricular arrhythmias

- 20. A drug that decreases blood pressure and has analgesic and spasmolytic effects when given intrathecally is**
- (a) Atenolol (b) Clonidine  
(c) Morphine (d) Nitroprusside  
(e) Prazosin
- 21. Cyclooxygenase-1 and -2 are responsible for**
- (a) The synthesis of prostaglandins from arachidonate  
(b) The synthesis of leukotrienes from arachidonate  
(c) The conversion of ATP to cAMP  
(d) The metabolic degradation of cAMP  
(e) The conversion of GTP to cGMP
- 22. Following agent is generally used in allergic rhinitis**
- (a) Beclomethasone (b) Fluticasone  
(c) Triamcinolone (d) All of the above
- 23. The primary objective for designing drugs that selectively inhibit COX - 2 is to**
- (a) Decrease the risk of nephrotoxicity  
(b) Improve anti-inflammatory effectiveness  
(c) Lower the risk of gastrointestinal toxicity  
(d) Reduce the cost of treatment of rheumatoid arthritis  
(e) Selectively decrease thromboxane  $A_2$  without effects on other eicosanoids
- 24. A newborn was diagnosed as having a congenital abnormality that resulted in transposition of her great arteries. While preparing the infant for surgery, the medical team needed to keep the ductus arteriosus open. They did this by infusing**
- (a) Cortisol (b) Indomethacin  
(c) Ketorolac (d) Misoprostol  
(e) Tacrolimus
- 25. Acetyl salicylic acid is soluble in**
- (a) An aqueous base (b) Water  
(c) An aqueous acid
- 26. Decomposition of the acetyl salicylic acid at room temperature most likely would occur by**
- (a) Oxidation of the ester  
(b) Reduction of the carboxylic acid  
(c) Hydrolysis of the ester
- 27. Diamprit is an agonist of \_\_\_\_\_ receptors, except**
- (a)  $H_1$  (b)  $H_2$   
(c)  $H_3$  (d) All of the above
- 28. Which of the following enzymes is ultimately responsible for the production of prostaglandins associated with inflammatory reactions?**
- (a) Phospholipase  
(b) Lipoxygenase  
(c) Cyclooxygenase-I  
(d) Cyclooxygenase II  
(e) Xanthine oxidase
- 29. Which of the following prostaglandin analogs is used specifically for the treatment of NSAID induced gastrointestinal ulceration?**
- (a) Alprostadil (b) Misoprostol  
(c) Carboprost (d) Dinoprostone  
(e) Epoprostenol
- 30. Which of the following compounds is most likely to lower circulating levels of leukotrienes?**
- (a) Zileuton (b) Montelukast  
(c) Carprofen (d) Aspirin  
(e) Allopurinol
- 31. The action of aspirin that results in its greater efficacy as an antithrombotic (anti-platelet) drug is its ability to**
- (a) Inhibit lipoxygenase as well as cyclooxygenase  
(b) Selectively inhibit cyclooxygenase I  
(c) Inhibit leukocyte migration  
(d) Promote uric acid excretion  
(e) Acetylate cyclooxygenase
- 32. Which of the following drugs may be effective in the treatment of gouty arthritis by acting by two separate and distinct mechanisms?**
- (a) Allopurinol (b) Probenecid  
(c) Colchicine (d) Indomethacin  
(e) Sulfipyrazone

- 33. Acute or chronic colchicine toxicity may be identified by which of the following signs/symptoms?**
- (a) Alopecia
  - (b) Blood dyscrasias
  - (c) Severe gastrointestinal upset
  - (d) All of the above
  - (e) None of the above
- 34. Patients taking chronic doses of non-selective nonsteroidal anti-inflammatory drugs (NSAIDs) should periodically be screened for which of the following toxicities?**
- (a) Nephrotoxicity
  - (b) Peripheral neuropathy
  - (c) Cardiotoxicity
  - (d) All of the above
  - (e) None of the above
- 35. Which of the following medications would represent arthritis therapy that is least likely to cause gastric ulceration?**
- (a) Aspirin
  - (b) Acetaminophen
  - (c) Piroxicam
  - (d) Meclofenamate
  - (e) Rofecoxib
- 36. In addition to their ability to decrease inflammatory prostaglandin synthesis, some non-steroidal anti-inflammatory drugs (NSAIDs) may owe part of their effects to their ability to**
- (a) Inhibit leukocyte migration
  - (b) Inhibit leukotriene synthesis
  - (c) Stabilize lysosomal membranes
  - (d) All of the above
  - (e) None of the above
- 37. The termination of heparin activity by protamine sulfate is due to**
- (a) A chelating action
  - (b) The inhibition of gastrointestinal absorption of heparin
  - (c) The displacement of heparin-plasma protein binding
  - (d) An acid-base interaction
  - (e) The prothrombin-like activity of protamine
- 38. In gastrointestinal tract, serotonin causes**
- (a) Contraction of gastrointestinal muscles
  - (b) Decreased muscle tone
  - (c) Decreased peristalsis
  - (d) All of the above
- 39. A FDA - approved ingredient for protection against painful sensitivity of the teeth due to cold, heat, acids, sweets or contact is**
- (a) Dicalcium phosphate
  - (b) Sodium lauryl sulfate
  - (c) 5% potassium nitrate
  - (d) Zinc chloride
  - (e) Calcium carbonate
- 40. Which local anesthetic should be used to treat symptoms of pain, itching, burning, and discomfort in patients with an established lidocaine allergy?**
- (a) Tetracaine
  - (b) Dibucaine
  - (c) Pramoxine
  - (d) Benzocaine
- 41. What is the most common sign/symptom of hemorrhoids?**
- (a) Bleeding
  - (b) Pain
  - (c) Seepage
  - (d) Pruritus
- 42. Which of the following agents is designated as a safe and effective analgesic, anesthetic and antipruritic by the Food and Drug Administration?**
- (a) Witch hazel
  - (b) Juniper tar
  - (c) Hydrocortisone
  - (d) Phenylephrine
- 43. A 65-year-old is interested in taking ginkgo. Which of the following statements is correct regarding ginkgo?**
- (a) Ginkgo is contraindicated in diabetes and pregnancy
  - (b) There is a drug-herb interaction between ginkgo and aspirin
  - (c) Toxic effects include hypertension and cardiac arrest
  - (d) There is a drug-herb interaction between ginkgo and phenelzine
  - (e) Ginkgo is contraindicated in patients with gallstone pain
- 44. All of the following medications should not be used routinely in pregnant patients during the third trimester except**

- (a) Acetaminophen
- (b) Nonsteroidal anti-inflammatory drugs
- (c) Warfarin
- (d) Lithium
- (e) Aspirin

**45. Which of the following statements best describes the usual course of rheumatoid arthritis?**

- (a) It is an acute exacerbation of joint pain treated with short-term anti-inflammatory therapy
- (b) It is a chronic disease characterized by acute changes within nonsynovial joints
- (c) It is an acute disease that is characterized by rapid synovial changes due to inflammation
- (d) It is a chronic disease characterized by acute exacerbations followed by remissions with consequences associated with chronic inflammatory changes
- (e) It is a joint disease characterized by a marked loss of calcium from the bones and a resultant thinning of the bones

**46. Match the drug characteristic with the appropriate agent.**

- |                     |   |
|---------------------|---|
| (a) Corticosteroids | (1) Persistent platelet function effect |
| (b) Ibuprofen       | (2) Oral form of gold                   |
| (c) Aspirin         | (3) Given on an empty stomach           |
| (d) Auracfin        | (4) May be used intra-articularly       |
| (e) Penicillamine   | (5) May cause drowsiness                |

**47. Match the phrase below with the appropriate agent used to treat rheumatoid arthritis.**

- (a) Indomethacin
  - (b) Aspirin
  - (c) Hydroxychloroquine
  - (d) Methotrexate
  - (e) Cyclophosphamide
- (1) May cause hemorrhagic cystitis
  - (2) May cause more severe central nervous system (CNS) adverse effects than other nonsteroidal anti-inflammatory drugs (NSAIDs)
  - (3) Enteric – coated form may be useful in treating some patients

- (4) Aspirin may slow this drug's rate of excretion
- (5) Vision should be monitored every 3–6 months

**48. All of the following statements concerning an acute gouty arthritis attack are correct except**

- (a) The diagnosis of gout is assured by a good therapeutic response to colchicines because no other form of arthritis responds to this drug
- (b) To be assured of the diagnosis, monosodium urate crystals must be identified in the synovial fluid of the affected joint
- (c) Attacks frequently occur in the middle of the night
- (d) An untreated attack may last up to 2 weeks
- (e) The first attack usually involves only one joint, most frequently the big toe (first metatarsophalangeal joint)

**49. TNF- $\alpha$  is an example of eicosanoids**

- (a) Interleukins
- (b) Cytotoxic factors
- (c) Interferons
- (d) Colony stimulating factors

**50. Potential adverse effects associated with aspirin include all of the following except**

- (a) Gastrointestinal ulceration
- (b) Renal dysfunction
- (c) Enhanced methotrexate toxicity
- (d) Cardiac arrhythmias
- (e) Hypersensitivity asthma

**51. All of the following facts are true about non-steroidal anti-inflammatory drugs (NSAIDs) except**

- (a) They are antipyretic
- (b) There is a ceiling effect to their analgesia
- (c) They can cause tolerance
- (d) They do not cause dependence
- (e) They are anti-inflammatory

**52. Which of the following narcotics has the longest duration of effect?**

- (a) Methadone
- (b) Controlled-release morphine
- (c) Levorphanol
- (d) Transdermal fentanyl
- (e) Dihydromorphone

- 53. Cyclooxygenase-II specific inhibitors block the following**
- (a) Production of cytoprotective prostaglandins
  - (b) Tumor necrosis factor -  $\alpha$
  - (c) Production of prostaglandins responsible for pain and inflammation
- 54. The emetic action of morphine is due to**
- (a) Irritation of gastrointestinal tract
  - (b) Stimulation of cerebral cortex
  - (c) Stimulation of medullary vomiting center
  - (d) Stimulation of emetic chemoreceptor trigger zone
  - (e) None of the above
- 55. Colchicine is used mainly to treat**
- (a) Gout
  - (b) Arthritis
  - (c) Diabetes
  - (d) Carcinomas
  - (e) High blood pressure
- 56. Which type of patient is most likely to hypersensitive to aspirin?**
- (a) Intrinsic asthmatic
  - (b) Extrinsic asthmatic
  - (c) Chronic bronchitic
  - (d) Patient with viral infection
  - (e) Both (c) and (d)
- 57. Codeine acts as a cough sedative by**
- (a) Producing mild nausea
  - (b) Depressing bronchiolar secretions
  - (c) Depressing pulmonary action
  - (d) Depressing cough center
  - (e) Paralyzing sensory nerves of bronchi
- 58. The greatest threat from morphine poisoning is**
- (a) Renal shutdown
  - (b) Paralysis of spinal cord
  - (c) Respiratory depression
  - (d) Cardiovascular collapse
  - (e) None of the above
- 59. A very common side effect of morphine is**
- (a) Allergic response
  - (b) Blood dyscrasias
  - (c) Constipation
  - (d) Liver damage
  - (e) Visceral pain
- 60. Eicosanoids are a group of \_\_\_\_\_ carbon unsaturated fatty acids**
- (a) 20
  - (b) 10
  - (c) 25
  - (d) 35
- 61. Which of the following drugs is a monamine oxidase inhibitor, but is used to treat hypertension?**
- (a) Tranylcypromine (Parnate)
  - (b) Reserpine
  - (c) Propranolol (Inderal)
  - (d) Pargyline (Eutonyl)
  - (e) Imipramine (Tofranil)
- 62. Autacoids differ from hormones in that**
- (a) Autacoids are involved only in the causation of pathological states
  - (b) Autacoids do not have a specific cell/ tissue of origin
  - (c) Autacoids generally act locally at the site of generation and release
  - (d) Both (b) and (c)
- 63. Which of the following eicosanoids is generated through the lipoxygenase pathway ?**
- (a) Prostaglandin  $E_2$
  - (b) Thromboxane  $A_2$
  - (c) Prostacyclin
  - (d) Leukotriene  $C_4$
- 64. The cyclooxygenase isoenzymes COX-1 and COX-2 differ from each other in that**
- (a) They catalyse different pathways in prostanoid biosynthesis
  - (b) COX-1 is inhibited by aspirin but not COX-2
  - (c) COX-2 is inhibited by ibuprofen but not COX-1
  - (d) COX-1 is constitutive while COX-2 is inducible
- 65. Which of the following is an irreversible inhibitor of cyclooxygenase ?**
- (a) Aspirin
  - (b) Phenylbutazone
  - (c) Indomethacin
  - (d) Piroxicam
- 66. The prostanoid that consistently constricts blood vessels is**
- (a) Prostaglandin  $E_2$
  - (b) Prostaglandin  $F_{2\alpha}$
  - (c) Thromboxane  $A_2$
  - (d) Prostacyclin

- 67. The following prostanoid is a potent inducer of platelet aggregation**
- (a) Prostacyclin (b) Prostaglandin E<sub>2</sub>  
(c) Prostaglandin D<sub>2</sub> (d) Thromboxane A<sub>2</sub>
- 68. Aspirin in low doses produces longlasting inhibition**
- (a) Platelets contain low quantity of COX  
(b) Platelets cannot synthesize fresh COX molecules  
(c) Platelets bind aspirin with high affinity  
(d) Platelet COX is inducible
- 69. The early pregnancy uterus is sensitive to the following oxytocic**
- (a) Oxytocin  
(b) Methylergometrine  
(c) Prostaglandin F<sub>2α</sub>  
(d) Both (a) and (b)
- 70. Cervical priming with prostaglandin results in**
- (a) Facilitation of sperm movement through cervical canal  
(b) Increased cervical tone  
(c) Softening of cervix  
(d) Increased cervical secretions
- 71. Corticosteroids exert anti-inflammatory action by inhibiting the following enzyme**
- (a) Cyclooxygenase  
(b) Lipoxygenase  
(c) Phospholipase - A  
(d) Phosphodiesterase
- 72. Main effect of sulphinpyrazone in hyperuricaemia is**
- (a) Suppress the symptoms  
(b) Promote the elimination of urate  
(c) prevent urate synthesis  
(d) All of the above
- 73. Which of the following glucocorticoids has significant mineralocorticoid activity also ?**
- (a) Hydrocortisone  
(b) Triamcinolone  
(c) Dexamethasone  
(d) Betamethasone
- 74. Corticosteroid therapy is practically mandatory in the following condition.**
- (a) Septic shock  
(b) Renal transplant  
(c) Rheumatoid arthritis  
(d) Ulcerative colitis
- 75. For limiting cerebral edema due to brain tumour, the preferred corticosteroids are betamethasone/dexamethasone because**
- (a) They do not cause Na<sup>+</sup> and water retention  
(b) They are more potent  
(c) They can be administered intravenously  
(d) They inhibit brain tumours
- 76. Systemic corticosteroid therapy is not used routinely and is reserved only for severe cases of**
- (a) Exfoliative dermatitis  
(b) Posterior uveitis  
(c) Acute rheumatic fever  
(d) Hodgkin's disease
- 77. The following adverse effect of corticosteroids is due to their mineralocorticoid action**
- (a) Osteoporosis  
(b) Rise in blood pressure  
(c) Moon face  
(d) Increased susceptibility to infection
- 78. Which of the following bones is affected more by glucocorticoid induced osteoporosis ?**
- (a) Femur (b) Humerus  
(c) Radius (d) Lumber vertebra
- 79. Morphine produces analgesia by acting at**
- (a) Peripheral pain receptors  
(b) A spinal site  
(c) Suspraspinal sites  
(d) Both (b) and (c)
- 80. In man sedation caused by morphine is characterized by**
- (a) Initial excitement  
(b) Little or no motor incoordination  
(c) Rise in seizure threshold  
(d) All of the above



- 81. Instead of depressing, morphine stimulates**
- Vasomotor centre
  - Edinger westphal nucleus
  - Temperature regulating centre
  - Cough centre
- 82. In a comatose patient suspected of poisoning, which of the following findings would be against the drug being morphine**
- Selegiline
  - Chlorgiline
  - Moclobemide
  - Tranlycypromine
- 83. Instead of being effective in hyperuricaemia following drug is contradicted in the treatment of gout**
- Indomethacin
  - Diclofenac
  - Piroxicam
  - Aspirin
- 84. Morphine dependence is characterized by**
- Marked drug seeking behavior
  - Physical dependence without psychic dependence
  - Physical as well as psychic dependence
  - Both (a) and (c)
- 85. Morphine is contraindicated in head injury because**
- It does not relieve the pain of head injury
  - It can raise intracranial tension
  - It can cause constipation
  - It is liable to cause addiction
- 86. Which of the following opioids is more potent than morphine ?**
- Pethidine
  - Fentanyl
  - Dextropropoxyphene
  - Tramadol
- 87. Which of the following opioid analgesics is similar to codeine in pharmacological profile but is less constipating ?**
- Methadone
  - Buprenorphine
  - Butorphanol
  - Dextropropoxyphene
- 88. Select the analgesic which acts through opioids as well as additional spinal monoaminergic mechanisms.**
- Tramadol
  - Ethoheptazine
  - Dextropropoxyphene
  - Alfentanil
- 89. An opioid analgesic is preferred over aspirin like analgesic in the following condition.**
- Acute gout
  - Burn
  - Toothache
  - Neuralgia
- 90. Morphine has high affinity for the following opioid receptor(s).**
- $\mu$  (Mu)
  - $\kappa$  (Kappa)
  - $\delta$  (Delta)
  - All of the above
- 91. Which of the following is an agonist-antagonist type of opioid analgesic**
- Pethidine
  - Pentazocine
  - Fentanyl
  - Buprenorphine
- 92. Pentazocine differs from morphine in that**
- It is inactive by the oral route
  - It does not produce physical dependence
  - It has a lower ceiling of analgesic effect
  - Its action is not blocked by naloxone
- 93. Which action of morphine is incompletely reversed by naloxone ?**
- Analgesia
  - Respiratory depression
  - Sedation
  - Miosis
- 94. Lower dose of naloxone is required to**
- Antagonise the actions of nalorphine
  - Antagonise the actions of pentazocine
  - Precipitate withdrawal in mildly morphine dependent subjects
  - Precipitate withdrawal in highly morphine dependent subjects
- 95. Following mediators are involved in acute inflammation except**
- Histamine
  - Leukotrienes
  - Interferons
  - Bradykinin
- 96. The distinctive feature of the isoenzyme cyclooxygenase-2 is**
- It is not inhibited by indomethacin



- (b) It is inducible
- (c) It generates cytoprotective prostaglandins in gastric mucosa
- (d) It is found only in foetal tissues

**97. Aspirin produces analgesia by**

- (a) Preventing sensitization of peripheral pain receptors
- (b) Affecting gating of pain impulses at spinal level
- (c) Raising pain threshold at subcortical level
- (d) Both (a) and (b)

**98. Aspirin reduces fever by**

- (a) Decreasing heat production in the body
- (b) Enhancing cutaneous blood flow
- (c) Inducing sweating
- (d) Both (b) and (c)

**99. In the treatment of chronic inflammatory diseases, the most important limitation of aspirin is**

- (a) Acid – base and electrolyte disturbances
- (b) Hypersensitivity and idiosyncratic reactions
- (c) Gastric mucosal damage
- (d) Salicylism

**100. Generally the earliest manifestation of salicylism is**

- (a) Visual disturbance (b) Excitement
- (c) Hyperventilation (d) Tinnitus

**101. Aspirin is contraindicated in children suffering from influenza or similar viral infection because of increased risk of**

- (a) Gastric bleeding
- (b) Thrombocytopenia
- (c) Fanconi syndrome
- (d) Reye's syndrome

**102. Aspirin is contraindicated in pregnant women near term because**

- (a) Labour may be delayed and prolonged
- (b) Blood loss during delivery may be more
- (c) Foetus may suffer premature closure of ductus arteriosus
- (d) All of the above risks

**103. Phenylbutazone should be used only in patients not responding to other nonste-**

**roidal anti-inflammatory drugs (NSAIDs) because**

- (a) It has lower anti-inflammatory efficacy than other NSAIDs
- (b) It has potential to cause agranulocytosis
- (c) It has weak analgesic action
- (d) It alters the protein binding and metabolism of many drugs

**104. The non-steroidal anti-inflammatory drug which is contraindicated in drivers and machine operators is**

- (a) Phenylbutazone (b) Indomethacin
- (c) Naproxen (d) Diclofenac sodium

**105. In overall assessment, which non-steroidal anti-inflammatory drug has been considered to be the safest**

- (a) Aspirin (b) Naproxen
- (c) Ibuprofen (d) Piroxicam

**106. The constellation of adverse effects associated with non-steroidal anti-inflammatory drugs does not include the following**

- (a) Sedation (b) Gastric irritation
- (c) Fluid retention (d) Rashes

**107. Histamine induced edema results from the action on \_\_\_\_\_ receptors**

- (a) H<sub>3</sub> (b) H<sub>2</sub>
- (c) H<sub>1</sub> (d) All of the above

**108. The following nonsteroidal anti-inflammatory drug is a relatively selective cyclooxygenase-2 inhibitor**

- (a) Tenoxicam (b) Meloxicam
- (c) Diclofenac sod (d) Ketoprofen

**109. What is the true of nimesulide**

- (a) It exerts anti-inflammatory action by several mechanisms in addition to cyclooxygenase inhibition
- (b) It is preferred for long-term use in rheumatoid arthritis
- (c) It is contraindicated in aspirin intolerant asthma patients
- (d) All of the above

- 110. The distinctive feature of nimesulide is**
- It does not inhibit prostaglandin synthesis
  - It does not cause gastric irritation
  - It is well tolerated by aspirin intolerant asthama patients
  - It is not bound to plasma proteins
- 111. 5-HT produces contraction of smooth muscle and platelet aggregation via \_\_\_\_\_ receptors**
- 5-HT<sub>1</sub>
  - 5-HT<sub>2</sub>
  - 5-HT<sub>3</sub>
  - 5-HT<sub>4</sub>
- 112. N-acetyl cysteine is beneficial in acute paracetamol poisoning because**
- It reacts with paracetamol to form a nontoxic complex
  - It inhibits the generation of the toxic metabosite of paracetamol
  - It is a free readical scavenger
  - It replenishes hepatic glutathione which in turn binds the toxic metabolite of paracetamol
- 113. For a patient of peptic ulcer, the safest nonopioid analgesic is**
- Ketorolac
  - Diclofenac sodium
  - Paracetamol
  - Ibuprofen
- 114. Which of the following anti-inflammatory analgesics has been cleared for pediatric use**
- Indomethacin
  - Ibuprofen
  - Ketorolac
  - Piroxicam
- 115. Which of the following statements is correct about gold therapy of rheumatoid arthritis**
- It is indicated only in rapidly progressing disease, not controlled by nonsteroidal anti-inflammatory drugs
  - It is indicated only in severe cases after both nonsteroidal anti-inflammatory drugs and corticosteroids have failed
  - When gold therapy is started, nonsteroidal anti-inflammatory drugs should be discontinued
  - Intramuscular gold is the most rapidly acting drug in severe rheumatoid arthritis
- 116. Sulfasalazine is used in the following disease(s)**
- Bacillary dysentery
  - Ulcerative colitis
  - Rheumatoid arthritis
  - Both (b) and (c)
- 117. Which component of sulfasalazine is responsible for the therapeutic effect in rheumatoid arthritis ?**
- Sulfapyridine
  - 5-aminosalicylic acid
  - Both (a) and (b)
  - Intact sulfasalazine molecule
- 118. Among the rheumatoid arthritis disease modifying drugs, fastest symptom relief is obtained with**
- Auranofin
  - Penicillamine
  - Sulfasalazine
  - Methotrexate
- 119. Strong nonsteroidal anti-inflammatory drugs are more commonly used than colchicines in acute gout because**
- They are more effective
  - They act more rapidly
  - They have additional uricosutic action
  - They are better tolerated
- 120. Select the drug which is neither analgesic, nor antiinflammatroy nor uricosuric, but is highly efficacious in acute gout**
- Prednisolone
  - Colchicine
  - Naproxen
  - Sulfinpyrazone
- 121. The most important dose-limiting adverse effect of colchicines is**
- Sedation
  - Kidney damage
  - Diarrhoea
  - Muscle paralysis
- 122. Probenecid has the following action(s)**
- Uricosuric
  - Analgesic
  - Antiinflammatory
  - Both (a) and (c)
- 123. Vasodilation mediated by 5-HT<sub>1</sub> receptors involve following mechanism**
- Direct relaxant effect on smooth muscle
  - Inhibition of norepinephrine
  - Nitric oxide release from endothelial cells
  - All of the above

- 124. Allopurinol decreases the plasma concentration of**  
 (a) Hypoxanthine (b) Xanthine  
 (c) Uric acid (d) All of the above
- 125. Allopurinol is indicated in the following category of chronic gout patients**  
 (a) Over producers of uric acid  
 (b) Under excretors of uric acid  
 (c) Those with tophi and/or renal urate stones  
 (d) All of the above
- 126. Nonsteroidal anti-inflammatory drugs reduce the diuretic action of furosemide by**  
 (a) Preventing prostaglandin mediated intrarenal haemodynamic actions  
 (b) Blocking the action in ascending limb of loop of Henle  
 (c) Enhancing salt and water reabsorption in distal tubule  
 (d) Increasing aldosterone secretion
- 127. The glucocorticoid described as highly potent anti-inflammatory agent is**  
 (a) Methyl prednisolone  
 (b) Cortisone  
 (c) Triamcinolone  
 (d) Dexamethasone
- 128. The corticosteroid with a longer duration of action is**  
 (a) Cortisone (b) Prednisone  
 (c) Betamethasone (d) Fludrocortisone
- 129. Gold in rheumatoid arthritis**  
 (a) Can cause regression of degenerative lesions of this disease  
 (b) Can reduce the concentrations of rheumatoid factor  
 (c) Does not halt the progress of the disease  
 (d) Is employed as first line therapy
- 130. Use of gold compounds in rheumatoid arthritis is beneficial in**  
 (a) Early active disease not responding to NSAIDs  
 (b) Mild disease  
 (c) Advanced disease  
 (d) As first line therapy
- 131. Following 5-HT receptors is a ligand gated ion channel**  
 (a) 5-HT<sub>1A</sub> (b) 5-HT<sub>2A</sub>  
 (c) 5-HT<sub>3</sub> (d) 5-HT<sub>4</sub>
- 132. In a person suffering from hepatic disease, the dose of pethidine should be**  
 (a) Reduced because it shows idiosyncratic reaction  
 (b) Reduced because the clearance is reduced  
 (c) Increased because the clearance is increased  
 (d) Increased because patient becomes resistant to pethidine
- 133. Kinins play a role in which of the following**  
 (a) Pain (b) Inflammation  
 (c) Asthma (d) Vasodilatation  
 (e) All of the above
- 134. The term eicosanoid refers to which of the following compounds**  
 (a) Prostaglandins (b) Leukotrienes  
 (c) Interleukins (d) A + B
- 135. Which of the following is a side effect of NSAID ?**  
 (a) GI ulceration  
 (b) Blockade of platelet aggregation  
 (c) Inhibition of uterine motility  
 (d) Renal vasoconstriction  
 (e) All of the above
- 136. Which of the following has minimal anti-inflammatory action ?**  
 (a) Piroxicam (b) Oxaprozin  
 (c) Enalapril (d) Amrinone
- 137. Probenecid increases excretion of**  
 (a) Digoxin (b) Furosemide  
 (c) Enalapril (d) Amrinone
- 138. Which of the following is involved in pathobiology of inflammatory process ?**  
 (a) Cytokines  
 (b) Cell adhesion molecules  
 (c) Phospholipase A<sub>2</sub>  
 (d) All of the above

**139. Following is the effect of histamine on small vessels**

- (a) Outward passage of plasma protein and fluid into the extracellular spaces
- (b) Increase in the flow of lymph and its protein content
- (c) Formation of edema

(d) All of the above

**140. Earliest sign of aspirin toxicity is**

- (a) Tinnitus
- (b) Metabolic acidosis
- (c) Reye syndrome
- (d) Respiratory depression

**ANSWERS**

- |                             |        |                             |        |        |        |
|-----------------------------|--------|-----------------------------|--------|--------|--------|
| 1. b                        | 2. d   | 3. b                        | 4. c   | 5. c   | 6. d   |
| 7. e                        | 8. e   | 9. b                        | 10. d  | 11. d  | 12. b  |
| 13. b                       | 14. b  | 15. d                       | 16. b  | 17. d  | 18. c  |
| 19. c                       | 20. b  | 21. a                       | 22. d  | 23. c  | 24. d  |
| 25. a                       | 26. c  | 27. a                       | 28. d  | 29. b  | 30. a  |
| 31. e                       | 32. d  | 33. d                       | 34. a  | 35. e  | 36. d  |
| 37. d                       | 38. a  | 39. c                       | 40. c  | 41. a  | 42. b  |
| 43. b                       | 44. a  | 45. d                       |        |        |        |
| 46. 1.c, 2.d, 3.c, 4.a, 5.b |        | 47. 1.e, 2.a, 3.b, 4.d, 5.c |        | 48. a  | 49. b  |
| 50. e                       | 51. c  | 52. d                       | 53. c  | 54. d  | 55. a  |
| 56. a                       | 57. d  | 58. c                       | 59. c  | 60. a  | 61. d  |
| 62. d                       | 63. d  | 64. d                       | 65. a  | 66. c  | 67. d  |
| 68. b                       | 69. c  | 70. c                       | 71. c  | 72. b  | 73. a  |
| 74. b                       | 75. a  | 76. c                       | 77. b  | 78. d  | 79. b  |
| 80. b                       | 81. b  | 82. a                       | 83. d  | 84. d  | 85. b  |
| 86. b                       | 87. d  | 88. a                       | 89. b  | 90. a  | 91. b  |
| 92. c                       | 93. c  | 94. d                       | 95. c  | 96. b  | 97. d  |
| 98. d                       | 99. c  | 100. d                      | 101. d | 102. d | 103. b |
| 104. b                      | 105. c | 106. a                      | 107. c | 108. b | 109. a |
| 110. c                      | 111. b | 112. d                      | 113. c | 114. d | 115. a |
| 116. d                      | 117. a | 118. d                      | 119. d | 120. b | 121. c |
| 122. a                      | 123. d | 124. c                      | 125. d | 126. a | 127. d |
| 128. c                      | 129. b | 130. a                      | 131. c | 132. b | 133. e |
| 134. d                      | 135. e | 136. c                      | 137. c | 138. d | 139. d |
| 140. a                      |        |                             |        |        |        |

## EXPLANATIONS FOR THE ANSWERS

1. b  $\beta$ -Aminoethylimidazole is a chemical name of histamine
6. d Prostaglandins are potent vasodilators and this action involves arterioles, precapillary sphincters and postcapillary venules. Prostaglandins have no effect on large veins.
9. b Acetaminophen or paracetamol is a para-aminophenol derivative.  
Diclofenac is a phenylacetic acid derivative.  
Piroxicam is an oxicam derivative.  
Celecoxib is a benzenesulphonamide derivative.
9. b Auronofin is more hydrophilic gold compound than aurothioglucose and gold sodium thiomalate and hence is administered orally.  
Aurothioglucose and gold sodium thiomalate show erratic absorption when administered orally and are generally administered intramuscularly.
17. d Histamine is an example of preformed mast cell mediator of inflammatory process. It produces vasodilation, vasopermeability, itch, cough and bronchoconstriction. PAF, LTC<sub>4</sub> and PGD<sub>2</sub> are lipid – derived mediators.
22. d Topical glucocorticoids e.g. beclomethasone, fluticasone, triamcinolone, budesonide, flunisolide or cromolyn are quite effective in allergic rhinitis.
27. a Dimaprit is a selective agonist of H<sub>2</sub> and H<sub>3</sub> receptors but not H<sub>1</sub> receptors.
38. a In gastrointestinal tract, serotonin causes:
  - Contraction of GI smooth muscles.
  - Increase in muscle tone.
  - Increase in peristalsis.
49. b TNF- $\alpha$  is a cytotoxic factor and plays important role in the inflammatory response.
60. a Eicosa means twenty and hence the general name eicosanoids for prostaglandins, thromboxanes and leukotrienes which contains 18, 20 and 22 carbon skeleton.
72. b Sulphinpyrazone inhibits the renal tubular reabsorption of uric acid and thus promotes the elimination of urate.
83. d Aspirin (in general salicylates) are contraindicated in the treatment of gout as they elevate uric acid levels and they also antagonize the actions of probenecid and sulfinpyrazone. Indomethacin, diclofenac and piroxicam have no such effects and hence are not contraindicated.
95. c Histamine, leukotrienes and bradykinin are mediators of acute inflammation. Interferons are involved in chronic inflammatory conditions.
107. c Histamine induced edema results from the action of H<sub>1</sub> receptors. This H<sub>1</sub> receptor effect results in outward passage of plasma protein and fluid from capillaries into extracellular spaces and increase in the flow of lymph and its protein content. H<sub>2</sub> and H<sub>3</sub> receptors are not involved in these effects.
111. b 5-HT<sub>2</sub> receptors are involved in the 5-HT mediated smooth muscle contraction and platelet aggregation.
123. d Vasodilation mediated by 5-HT<sub>1</sub> receptors involve various mechanisms:
  - Direct relaxant effect on smooth muscles
  - Release of NO from endothelial cells.
  - Inhibition of norepinephrine from sympathetic nerve terminals.
131. c 5-HT<sub>3</sub> receptors are ligand gated ion channels. 5-HT<sub>1A</sub>, 5-HT<sub>2A</sub> and 5-HT<sub>4</sub> receptors are coupled to second messenger system as follows:  
5-HT<sub>1A</sub> : Decrease in cAMP  
5-HT<sub>2A</sub> : Increase in IP<sub>3</sub>/DAG  
5-HT<sub>4</sub> : Increase in cAMP.
139. d In general, histamine dilates blood vessels in humans. It produces variety of effects on small blood vessels such as outward passage of plasma protein and fluid into the extracellular spaces, increase in the flow of lymph and its protein content and finally formation of edema.

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# CHAPTER 6

## CARDIOVASCULAR DRUGS

- 1. Relationship between arterial blood pressure (BP), cardiac output (CO) and peripheral vascular resistance (PVR) can be described as**
  - (a)  $BP = CO \times PVR$
  - (b)  $BP = CO / PVR$
  - (c)  $BP = PVR / CO$
  - (d) None of the above
- 2. If a fibrinolytic drug is used for treatment of acute myocardial infarction, the adverse drug effect that is most likely to occur is**
  - (a) Acute renal failure
  - (b) Development of antiplatelet antibodies
  - (c) Encephalitis secondary to liver dysfunction
  - (d) Hemorrhagic stroke
  - (e) Neutropenia
- 3. Increased serum levels of which of the following may be associated with a decreased risk of atherosclerosis?**
  - (a) Very low-density lipoproteins (VLDL)
  - (b) Low-density lipoproteins (LDL)
  - (c) Intermediate – density lipoproteins (IDL)
  - (d) High-density lipoproteins (HDL)
  - (e) Cholesterol
- 4. If the patient has a history of gout, which of the following drugs is most likely to exacerbate this condition?**
  - (a) Colestipol
  - (b) Gemfibrozil
  - (c) Lovastatin
  - (d) Niacin
  - (e) Simvastatin
- 5. After being counseled about lifestyle and dietary changes, the patient was started on atorvastatin. During his treatment with atorvastatin, it is important to routinely monitor serum concentrations of**
  - (a) Blood urea nitrogen (BUN)
  - (b) Alanine and aspartate aminotransferase
  - (c) Platelets
  - (d) Red blood cells
  - (e) Uric acid
- 6. Six months after beginning atorvastatin, the patient's total and LDL cholesterol concentrations remained above normal and he continued to have anginal attacks despite good adherence to his antianginal medications. His physician decided for niacin. The major recognized mechanism of action of niacin is**
  - (a) Decreased lipid synthesis in adipose tissue
  - (b) Decreased oxidation of lipids in endothelial cells
  - (c) Decreased secretion of VLDL by the liver
  - (d) Increased endocytosis of HDL by the liver
  - (e) Increased lipid hydrolysis by lipoprotein lipase



- 7. Following drugs act on imidazoline receptor**
- (a) Moxonidine (b) Dexmedetomidine  
(c) Tizanidine (d) All of the above
- 8. Which one of the following drugs increase digoxin plasma concentration by a pharmacokinetic mechanism?**
- (a) Captopril (b) Hydrochlorothiazide  
(c) Lidocaine (d) Quinidine  
(e) Sulfasalazine
- 9. A 55-year-old patient currently receiving other drugs for another condition is to be started on diuretic therapy for mild heart failure. Thiazides are known to reduce the excretion of**
- (a) Diazepam (b) Fluoxetine  
(c) Imipramine (d) Lithium  
(e) Potassium
- 10. A hypertensive patient has been using nifedipine for some time without untoward effects. If he experiences a rapidly developing enhancement of the antihypertensive effect of the drug, it is probably due to**
- (a) Concomitant use of antacids  
(b) Foods containing tyramine  
(c) Grapefruit juice  
(d) Induction of drug metabolism  
(e) Over-the-counter decongestants
- 11. A drug lacking vasodilator properties that is useful in angina is**
- (a) Isosorbide dinitrate  
(b) Metoprolol  
(c) Nifedipine  
(d) Nitroglycerin  
(e) Verapamil
- 12. Aldosterone release is stimulated by**
- (a) Angiotensin I (b) Angiotensin  
(c) Angiotensin III (d) Both (b) and (c)
- 13. Which one of the following drugs is used in the treatment of male impotence and activates prostaglandin E<sub>1</sub> receptors?**
- (a) Alprostadil (b) Fluoxetine  
(c) Mifepristone (d) Sildenafil  
(e) Zafirlukast
- 14. A treatment of angina that consistently decreases the heart rate and can prevent vasospastic angina attacks is**
- (a) Isosorbide dinitrate  
(b) Nifedipine  
(c) Nitroglycerin  
(d) Propranolol  
(e) Verapamil
- 15. In a patient receiving digoxin for congestive heart failure, condition that may facilitate the appearance of toxicity include**
- (a) Hyperkalemia (b) Hyponatremia  
(c) Hypocalcemia (d) Hypomagnesemia  
(e) All of the above
- 16. Activation of endothelin receptor ET<sub>A</sub> leads to**
- (a) Vasoconstriction  
(b) Bronchoconstriction  
(c) Aldosterone release  
(d) All of the above
- 17. Methylxanthine drugs such as aminophylline cause which one of the following?**
- (a) Vasoconstriction in many vascular beds  
(b) Decrease in the amount of cAMP in mast cells  
(c) Bronchodilation  
(d) Activation of the enzyme phosphodiesterase  
(e) Sedation
- 18. Drugs used in asthma that often cause tachycardia and tremor include**
- (a) Beclomethasone (b) Cromolyn sodium  
(c) Ipratropium (d) Metaproterenol  
(e) All of the above
- 19. Following potassium sparing diuretic inhibits action of aldosterone**
- (a) Amiloride (b) Triamterene  
(c) Spironolactone (d) All of the above

- 20. In patients with chronic granulomatous disease which of the following agents increases the synthesis of tumor necrosis factor, leading to activation of phagocytosis?**
- (a) Aldesleukin (b) Cyclosporine  
(c) Filgrastim (d) Infliximab  
(e) Interferon gamma
- 21. The mechanism of action of cyclosporine involves**
- (a) Activation of calcineurin  
(b) Binding to cyclophilin to cause inhibition of a cytoplasmic phosphatase  
(c) Blockade of interleukin – 2- receptors  
(d) Inhibition of phospholipase A<sub>2</sub>  
(e) Suppression of bone marrow progenitors
- 22. Which one of the following drugs predictably prolongs the PR interval and increases cardiac contractility?**
- (a) Digoxin (b) Lidocaine  
(c) Propranolol (d) Quinidine  
(e) Verapamil
- 23. Which of the following is the drug of choice for management of cardiac arrhythmias that occur in digitalis toxicity?**
- (a) Amiodarone (b) Lidocaine  
(c) Propranolol (d) Sotalol  
(e) Prazosin
- 24. A 54-year-old woman with severe hypercholesterolemia is to be treated with a combination of niacin and atorvastatin. With this drug combination, it is important that the patient be monitored closely for signs of**
- (a) Agranulocytosis (b) Gallstones  
(c) Lactic acidosis (d) Myopathy  
(e) Thyrotoxicosis
- 25. Regarding verapamil, which one of the following statements is false?**
- (a) Angina pectoris is an important indication for the use of verapamil  
(b) Contraindicated in the asthmatic patient  
(c) Relaxes vascular smooth muscle  
(d) Slows the depolarization phase of the action potential in AV nodal cells  
(e) Used in management of supraventricular tachycardias
- 26. What drug is used to prevent embolism in the lung and during myocardial infarction?**
- (a) Alteplase  
(b) Human growth hormone  
(c) Granulocyte–macrophage colony – stimulating factor (GM–CSF)  
(d) EPOGEN (EPO)  
(e) None of the above
- 27. Which of the following cardiovascular agents is classified chemically as a glycoside?**
- (a) Nifedipine (b) Digoxin  
(c) Flecainide (d) Cholestyramine  
(e) Warfarin
- 28. Inhibition of carbonic anhydrase results in**
- (a) Abolition of NaHCO<sub>3</sub> reabsorption in proximal tubule  
(b) Enhanced of NaHCO<sub>3</sub> reabsorption in proximal tubule  
(c) Enhanced NAHCO<sub>3</sub> secretion in distal tubule  
(d) None of the above
- 29. Which of the following cyclotron produced radiopharmaceuticals is used for assessing regional myocardial perfusion as part of an exercise stress test?**
- (a) Thallous chloride <sup>201</sup>Tl USP  
(b) Sodium iodide <sup>123</sup>I  
(c) Gallium citrate <sup>67</sup>Ga USP  
(d) Indium <sup>111</sup>In pentetate  
(e) Cobalt <sup>57</sup>Co cyanocobalamin
- 30. Mary has a family history of heart disease and wonders if garlic would be beneficial to her. Which of the following statements is correct about garlic?**
- (a) Enteric-coated tablets release their contents in the stomach  
(b) Side effects include heartburn, flatulence, and sweating  
(c) The safety of garlic in pregnancy is unknown  
(d) Garlic does not interact with warfarin

- 31. Exertion-induced angina, which is relieved by rest, nitroglycerin, or both, is referred to as**
- Prinzmetal's angina
  - Unstable angina
  - Classic angina
  - Variant angina
  - Preinfarction angina
- 32. Myocardial oxygen demand is increased by all of the following factors except**
- Exercise
  - Smoking
  - Cold temperatures
  - Isoproterenol
  - Propranolol
- 33. Which of the following agents used in Prinzmetal's angina has spasmolytic actions, which increase coronary blood supply?**
- Nitroglycerin
  - Nifedipine
  - Timolol
  - Isosorbide mononitrate
  - Propranolol
- 34. The oral absorption of following osmotic diuretic is negligible**
- Glycerin
  - Mannitol
  - Isosorbide
  - All of the above
- 35. Maximal medical therapy for treating angina pectoris is represented by which of the following choices?**
- Diltiazem, verapamil, nitroglycerin
  - Atenolol, isoproterenol, diltiazem
  - Verapamil, nifedipine, propranolol
  - Isosorbide, atenolol, diltiazem
  - Nitroglycerin, isosorbide, atenolol
- 36. The term ischemic heart disease (IHD) is used to designate all of the following conditions except**
- Angina pectoris
  - Sudden cardiac death
  - Congestive heart failure (CHF)
  - Arrhythmias
- 37. Which of the following thrombolytic agents would be appropriate at this time?**
- Anisoylated plasminogen streptokinase activator complex (APSAC)
  - Streptokinase (SK)
  - Recombinant tissue-type plasminogen activator (t-PA)
- 38. Strong anticholinergic effects limit the antiarrhythmic use of**
- Quinidine
  - Procainamide
  - Tocainide
  - Flecainide
  - Disopyramide
- 39. Following loop diuretic is a phenoxy acetic acid derivative**
- Furosemide
  - Bumetanide
  - Ethacrynic acid
  - All of the above
- 40. Following potassium sparing diuretic is a mineralocorticoid receptor antagonist**
- Amiloride
  - Triamterene
  - Spiroglactone
  - All of the above
- 41. A patient receiving a class I antiarrhythmic agent on a chronic basis complains of fatigue, low-grade fever, and joint pain suggestive of systemic lupus erythematosus (SLE). The patient is most likely receiving**
- Lidocaine
  - Procainamide
  - Quinidine
  - Flecainide
  - Propranolol
- 42. Which of the following drugs is a class IV antiarrhythmic that is primarily indicated for the treatment of supraventricular tachyarrhythmias?**
- Lbutilide
  - Mexiletine
  - Diltiazem
  - Quinidine
  - Propranolol
- 43. Which of the following agents has a direct effect on the AV node, delaying calcium-channel depolarization?**
- Lidocaine
  - Diltiazem
  - Bretylum
  - Quinidine
  - Lbutilide
- 44. Which of the following drugs is a class III**

**antiarrhythmic agent that is effective in the acute management of atrial fibrillation or atrial flutter of recent onset ?**

- (a) Bretylium
- (b) Lbutilide
- (c) Metoprolol
- (d) Disopyramide

**45. Which of the following groups of symptoms is most often associated with a patient who has right-sided heart failure?**

- (a) Nocturia, rales, paroxysmal nocturnal dyspnea
- (b) Paroxysmal nocturnal dyspnea, pedal edema, jugular venous distention, hepatojugular reflux
- (c) Jugular venous distention, hepatojugular reflux, pedal edema, shortness of breath
- (d) Hepatojugular reflux, jugular venous distention, pedal edema, abdominal distention
- (e) Paroxysmal nocturnal dyspnea, jugular venous distention, abdominal distention, shortness of breath

**46. Which of the following combinations of drugs, when used together, reduce both preload and afterload?**

- (a) Nitroglycerin and isosorbide dinitrate
- (b) Hydralazine and isosorbide dinitrate
- (c) Captopril and methyldopa
- (d) Prazosin and angiotension II
- (e) Hydralazine and methyldopa

**47. When digoxin is used in a patient with congestive heart failure (CHF), it works by exerting a positive effect on**

- (a) Stroke volume
- (b) Total peripheral resistance
- (c) Heart rate
- (d) Blood pressure
- (e) Venous return

**48. Because of proven beneficial effects on "cardiac remodeling", these agents are now indicated as first line therapy in CHF patients. Which of the following is representative of this group of drugs?**

- (a) Hydrochlorothiazide
- (b) Enalapril

- (c) Furosemide
- (d) Carvedilol
- (e) Bumetanide

**49. For treating the patient with congestive heart failure (CHF), which of the following dosages of dopamine is selected for its positive inotropic effects?**

- (a) 2.0 mg/kg/min
- (b) 5–10 mg/kg/min
- (c) 10–20 mg/kg/min
- (d) 40 mg/kg/min
- (e) 40 mg/kg/min

**50. Milrinone is an example of**

- (a) Phosphodiesterase I inhibitor
- (b) Phosphodiesterase II inhibitor
- (c) Phosphodiesterase III inhibitor
- (d) Phosphodiesterase IV inhibitor

**51. Situations that predispose a digitalis-treated patient to toxicity include**

- (a) Hypercalcemia
- (b) Hyperkalemia
- (c) Hypermagnesemia

**52. Unfractionated heparin binds to anti-thrombin III and inactivates clotting factor(s)**

- (a) Xa
- (b) Ixa
- (c) Iia
- (d) All of the above
- (e) None of the above

**53. A patient to be commenced on oral anti-coagulant therapy for DVT would be treated with**

- (a) Oral anticoagulant therapy with warfarin for a goal intentional normalized ration (INR) of 2–3
- (b) Oral anticoagulant therapy with warfarin for a goal INR of 2.5–3.5
- (c) Oral anticoagulant therapy with aspirin for a goal INR of 2–3

**54. A patient on oral anticoagulant therapy is commenced on sulfamethoxazole-trimethoprim, double-strength twice daily. One may expect to see the international normalized ratio**

- (a) Increase  
(b) Decrease  
(c) Remain unchanged
- 55. When compared to unfractionated heparin, low molecular weight heparins have**
- (a) Preferential binding affinity to factor Xa relative to thrombin  
(b) Shorter half-lives  
(c) Dose – dependent renal clearance
- 56. Acute renal failure (ARF) may be caused by all of the following except**
- (a) Acute tubular necrosis (ATN) due to drug therapy (e.g., aminoglycosides, contrast media)  
(b) Severe hypotension or circulatory collapse  
(c) Decreased cardiac output, as from congestive heart failure  
(d) Hemolysis, myoglobinuria  
(e) Hyperkalemia
- 57. During Phase 2 of action potential in cardiac cell, depolarizing current through calcium channels is balanced by**
- (a) Delayed rectifier potassium current  
(b) outward chloride channel  
(c) Both (a) and (b)  
(d) None of the above
- 58. The action of quinidine differs from that of digitalis in**
- (a) Decreasing irritability of cardiac muscle  
(b) Preventing passage of impulses to the ventricle  
(c) Increasing irritability of heart muscle  
(d) Reducing conductivity  
(e) None of the above
- 59. Overuse of digitalis may result in**
- (a) Habituation      (b) Tolerance  
(c) Addiction      (d) Physical dependence  
(e) Cumulative poisoning
- 60. The action of digitalis is enhanced by**
- (a) Sodium      (b) Calcium  
(c) Magnesium      (d) Potassium  
(e) Chloride
- 61. In case of acute pain of angina pectoris the most effective treatment would be to administer**
- (a) Mannitol hexanitrate  
(b) Erythryl tetranitrate  
(c) Sodium nitrate  
(d) Pentaerythritol tetranitrate  
(e) Nitroglycerin
- 62. Which of the following is used to lower blood lipid levels?**
- (a) Trimethadione      (b) Clofibrate  
(c) Flucytosine      (d) Coumarin  
(e) Propranolol
- 63. The chief use of levoarterenol is to treat**
- (a) Shock      (b) Diabetes  
(c) Hypertension      (d) Cardiac arrhythmias  
(e) Iron deficiencies
- 64. Tolerance to nitroglycerin may be overcome by**
- (a) Initially using the largest safe dose of the drug  
(b) Using other nitrites  
(c) Temporarily discontinuing the drug for one or two weeks  
(d) Use of higher doses  
(e) None of the above
- 65. Quinidine can cause paradoxical tachycardia in a patient of**
- (a) Sick sinus syndrome  
(b) Auricular extrasystoles  
(c) Auricular fibrillation  
(d) Ventricular extrasystoles
- 66. Quinidine is now used primarily for**
- (a) Conversion of auricular fibrillation to sinus rhythm  
(b) Control of ventricular rate in atrial flutter  
(c) Termination of ventricular tachycardia  
(d) Prevention of recurrences of atrial and ventricular extrasystoles/tachycardias
- 67. Procainamide differs from quinidine in the following respect**
- (a) It does not cause paradoxical tachycardia  
(b) It has no alpha adrenergic blocking activity  
(c) It has little antivagal action  
(d) Both (b) and (c)

- 68. In heart, potassium channels determine**
- (a) Pacemaker function
  - (b) Resting potential
  - (c) Action potential duration
  - (d) All of the above
- 69. Lidocaine is the preferred antiarrhythmic for emergency control of cardiac arrhythmias following acute myocardial infarction because**
- (a) It has a rapidly developing and titratable antiarrhythmic action
  - (b) It causes little myocardial depression and hypotension
  - (c) It has broad spectrum antiarrhythmic efficacy in atrial as well as ventricular arrhythmias
  - (d) Both (a) and (b)
- 70. Hypothyroidism is a possible consequence of prolonged therapy with**
- (a) Procainamide      (b) Mexiletine
  - (c) Sotalol              (d) Amiodarone
- 71. Which of the following drugs is preferred for termination of paroxysmal supraventricular tachycardia**
- (a) Digoxin              (b) Quinidine
  - (c) Propranolol        (d) Verapamil
- 72. The following drug is used to reduce the frequency of angina pectoris as well as to terminate an acute attack**
- (a) Digoxin              (b) Furosemide
  - (c) Enalapril            (d) Amrinone
- 73. Antianginal drugs afford the following benefit/benefits**
- (a) Terminate anginal attacks
  - (b) Decrease the frequency of anginal attacks
  - (c) Retard the progression of coronary artery disease
  - (d) Both (a) and (b)
- 74. Choose the correct statement about the action of nitrates on coronary vessels**
- (a) They mitigate angina pectoris by increasing total coronary flow
  - (b) They preferentially dilate conducting arteries without affecting resistance arterioles
  - (c) They preferentially dilate autoregulatory arterioles without affecting the larger arteries
  - (d) They increase subepicardial blood flow without affecting subendocardial blood flow
- 75. Organic nitrates relax vascular smooth muscle by**
- (a) Increasing intracellular cyclic AMP
  - (b) Increasing intracellular cyclic GMP
  - (c) Decreasing intracellular cyclic AMP
  - (d) Both (b) and (c)
- 76. Select the organic nitrate which undergoes minimal first-pass metabolism in the liver**
- (a) Glyceryl trinitrate
  - (b) Isosorbide dinitrate
  - (c) Isosorbide mononitrate
  - (d) Erythrityl tetranitrate
- 77. The primary mechanism of beneficial effect of glyceryl trinitrate in classical angina pectoris is**
- (a) Increase in total coronary blood flow
  - (b) Redistribution of coronary blood flow
  - (c) Reduction of cardiac preload
  - (d) Reduction of cardiac after load
- 78. Enhanced automaticity in cardiac cells may occur because of**
- (a)  $\beta$ -adrenergic stimulation
  - (b) Hypokalemia
  - (c) Mechanical stretch of cardiac muscles
  - (d) All of the above
- 79. Glyceryl trinitrate is administered by all of the following routes except**
- (a) Oral                      (b) Sublingual
  - (c) Intramuscular        (d) Intravenous
- 80. A patient of acute myocardial infarction being treated in intensive care unit developed left ventricular failure with raised central venous pressure. It was decided to use glyceryl trinitrate. Which route/method of administration would be most suitable.**
- (a) Sublingual
  - (b) Oral
  - (c) Intravenous bolus injection
  - (d) Slow intravenous infusion



- 81. A patient suffers from episodic pain diffusely localized over the chest and upper abdomen, which is relieved by sublingual glyceryl trinitrate. He could be suffering from**
- Angina pectoris
  - Biliary colic
  - Esophageal spasm
  - All of the above
- 82. The dihydropyridines block the following type of calcium channels.**
- L-type voltage sensitive channels
  - T-type voltage sensitive channels
  - N-type voltage sensitive channels
  - Receptor operated calcium channels
- 83. Which of the following drugs is most likely to accentuate variant (Prinzmetal) angina ?**
- Digoxin
  - Furosemide
  - Enalapril
  - Amrinone
- 84. In cardiac cells, adenosine**
- Causes shortening of action potential duration
  - Depolarization
  - Increase in normal automaticity
  - All of the above
- 85. Which of the following antianginal drugs is most likely to produce tachycardia as a side effect ?**
- Amlodipine
  - Nifedipine
  - Diltiazem
  - Verapamil
- 86. Which of the following is not an attribute of amlodipine ?**
- High and consistent oral bioavailability
  - Large volume of distribution
  - Generation of an active metabolite
  - Long elimination half-life
- 87. Propranolol should not be prescribed for a patient of angina pectoris who is already receiving**
- Nifedipine
  - Felodipine
  - Verapamil
  - Isosorbide mononitrate
- 88. Which of the following drugs is a potassium channel opener ?**
- Pinacidil
  - Hydralazine
  - Glibenclamide
  - Amiloride
- 89. Though nitrates and calcium channel blockers are both vasodilators, they are used concurrently in angina pectoris because**
- They antagonize each other's side effects
  - Nitrates primarily reduce preload while calcium channel blockers primarily reduce after load
  - Nitrates increase coronary flow while calcium
  - Both (b) and (c)
- 90. 'Coronary steal phenomenon' has been noted most frequently with**
- Glyceryl trinitrate
  - Dipyridamole
  - Propranolol
  - Diltiazem
- 91. Which of the following drugs is believed to improve microcirculation in peripheral vascular diseases by promoting RBC flexibility ?**
- Cyclandelate
  - Theophylline
  - Pentoxifylline
  - Nicotinic acid
- 92. Higher incidence of myocardial infarction and increased mortality has been noted with the use of the following anti-hypertensive drug**
- Nifedipine
  - Verapamil
  - Diltiazem
  - Lisinopril
- 93. Cardiac glycosides are obtained from following plant source.**
- Rauwolfia serpentina
  - Strophanthus gratus
  - Ricinus communis
  - Atropa belladonna
- 94. Therapeutic dose of digoxin in a normal individual has the following effects, except**
- Increase in the speed of myocardial contractility
  - No significant change in cardiac output
  - Relaxation of peripheral vascular bed
  - Increase in the force of myocardial contractility



- 95. Digoxin given for cardiac failure is extremely valuable in patients of**  
(a) Thyrotoxicosis (b) Beriberi  
(c) Cor pulmonale (d) Atrial fibrillation
- 96. The agent given sublingually in an acute attack of angina pectoris is**  
(a) Glycerol trinitrate  
(b) Amyl nitrite  
(c) Erythritol tetranitrate  
(d) Pentaerythritol tetranitrate
- 97. Following statement is true about lidocaine**  
(a) Reduce the slope of Phase 4  
(b) Threshold excitability is not altered  
(c) Action potential is not affected  
(d) All of the above
- 98. Aspirin in small doses (50 to 150 mg per day)**  
(a) Is of benefit in patients of unstable angina  
(b) Has thrombolytic action  
(c) PREFERentially inhibits prostacyclin synthetase enzyme  
(d) MAY Alleviate need for Verapamil in variant angina
- 99. Major beneficial effect of nitrates in classical angina is due to**  
(a) Dilation of veins more than arteries  
(b) Increase in total coronary blood flow  
(c) An increase in the end diastolic size of the heart  
(d) An increase in the heart rate
- 100. Major lipid class present in chylomicrons is**  
(a) Endogenous triglycerides  
(b) Cholesterol esters  
(c) Dietary triglycerides  
(d) All of the above
- 101. Polymorphic ventricular tachycardia can occur when terfenadine**  
(a) Is coadministered with azithromycin  
(b) Is coadministered with fluconazole  
(c) Is given in higher doses  
(d) Reduces QT interval
- 102. Digitalis was discovered by**  
(a) William Withering  
(b) Ottolewi  
(c) Walksman  
(d) Dale
- 103. The cardiac slowing by digitalis in atrial fibrillation and congestive failure**  
(a) Is due partly to increased vagal activity  
(b) Is due partly to decreased sympathetic activity  
(c) Is due partly to depression of S.A. Node  
(d) May be partly related to a vagal mediated increase in atrial frequency
- 104. After oral administration peak concentration of digoxin is reached in**  
(a) 1 to 2 mins (b) 30 to 60 mins  
(c) 5 to 10 mins (d) 4 to 6 hours
- 105. The normal therapeutic plasma concentration of digitalis is**  
(a) 0.5 to 1.5 ng/ml and toxicity appears above 3 mg/ml  
(b) 1 to 5 ng/ $\mu$ l and toxicity appears above 50 mg/ml  
(c) 0.1 to 0.5  $\mu$ g mg/ml and toxicity appears above 5  
(d) 0.5 to 1.5  $\mu$ g mg/ml and toxicity appears above 5  $\mu$ g mg/ml
- 106. Drug of choice for digitalis induced arrhythmia is**  
(a) Propranolol (b) Phenytoin  
(c) Xylocaine (d) Phenylephrine
- 107. In which of the following conditions, digitalis is most likely to be beneficial?**  
(a) Heart failure from valvular lesions  
(b) Furosemide  
(c) Heart disease with anaemia  
(d) Heart failure from thyrotoxicosis
- 108. Nicotinic acid**  
(a) Decreases production of VLDL  
(b) Decreases LDL levels  
(c) Increases HDL levels  
(d) All of the above

- 109. Which of the following would least likely benefit a patient in acute pulmonary edema due to congestive heart failure?**
- Intravenous morphine
  - Digoxin
  - Oxygen
  - Rotating tourniquets
- 110. Monoamine oxidase inhibitors**
- Do not cause postural hypotension
  - Are known to reduce blood pressure by depleting catecholamines
  - Have a prompt hypotensive action
  - Generally do not cause tachycardia
- 111. Digitalis is given before quinidine in the treatment of atrial fibrillation, because digitalis increase A-V conduction and counteracts**
- The "Vagotonic" effect of quinidine and prevents "paradoxical" tachycardia
  - The "Vagolytic" effect of quinidine and prevents "paradoxical" bradycardia
  - The "Vagotonic" effect of quinidine and prevents paradoxical bradycardia
  - The "Vagolytic" effect of quinidine and prevents paradoxical tachycardia
- 112. The earliest toxic symptom of chronic digitalis administration is**
- Altered color vision
  - Psychic symptoms
  - Anorexia, nausea, vomiting
  - Retrosternal pain
- 113. In normal condition sequence of conduction of cardiac action potential is**
- SA node to AV node to bundle of His to atrium
  - SA node to atrium to AV node to bundle of His
  - SA node to atrium to bundle of His to AV node
  - SA node to AV node to atrium to bundle of His
- 114. While treating a CHF patient with cardiac glycoside, one notices that the patient's resting heart rate, which previously had been 86/min is now 40/min. This would**
- Probably be unrelated to drug administration
  - Be the desired response of the drug
  - Probably be the result of drug-induced heart block
  - Be an indication for increasing the drug dose.
- 115. Digoxin differs from digitoxin in that digoxin**
- Has a longer half life
  - Is completely absorbed from the GI tract
  - Is bound extensively to plasma proteins
  - Its half-life is more dependent on the adequacy of renal function
- 116. Diazoxide is administered by slow IV-injection in emergency treatment of hypertension because**
- The drug is rapidly biotransformed by hepatic microsomal enzymes
  - The drug is highly lipid-soluble and quickly deposited in natural fat
  - This measure is necessary to prevent severe hyperglycemia
  - The drug is quickly inactivated by serum protein binding
- 117. Glyceryl trinitrate is generally taken by**
- Oral route
  - Intravenous route
  - Sublingual route
  - Subcutaneous route
- 118. Which of the following is longest acting nitrate?**
- Glyceryl trinitrate
  - Ethyl tetranitrate
  - Octyl nitrite
  - Pentaerythritol tetranitrate
- 119. Methaemoglobinaemia can occur with high doses of**
- Digitalis
  - Nitrites
  - Propranolol
  - All of the above
- 120. Cardiac glycoside consists of**
- Aminoacids and sugar
  - A steroid combined with sugar residue
  - A polypeptide and sugar
  - None of the above

- 121. Vasoconstriction is produced by following agent**
- (a) Sympathomimetic amines
  - (b) Eicosanoids
  - (c) Endothelin
  - (d) All of the above
- 122. Perhexillene melete is a**
- (a) Vasodilator drug
  - (b) Cardiotonic drug
  - (c) Antihyperlipidaemic drug
  - (d) Urinary antiseptic
- 123. The dose of verapamil is**
- (a) 4 to 6 gms per day
  - (b) 40 to 80 gms thrice daily
  - (c) 1 to 10 mg thrice daily
  - (d) 250 mg once daily
- 124. Chronic use of nitrites may lead to**
- (a) Allergic response
  - (b) Addiction
  - (c) Atherosclerotic changes
  - (d) Tolerance
- 125. While treating auricular fibrillation, digitalization is necessary prior to quinidine because**
- (a) It prevents paradoxical increase in ventricular rate
  - (b) Quinidine is only effective in the presence of digitalis
  - (c) It reduces the dose and side effects of quinidine
  - (d) It antagonizes the extracardiac effects of quinidine
- 126. Which of the following pharmacological properties of quinidine is not useful clinically?**
- (a) Shortening of A-V nodal refractory period due to vagolytic action
  - (b) Depression of cardiac contractility
  - (c) Decrease in the automaticity of the normal pacemaker
  - (d) Reduction in the slope of slow diastolic depolarization
- 127. Reserpine is used in hypertension, only in low doses because**
- (a) It is a very strong antihypertensive
  - (b) Side effects become disproportionately marked
  - (c) High doses on chronic use cause addiction
  - (d) It has a very long duration of action
- 128. There is no rationale of giving digitoxin parenterally because**
- (a) It is very painful if given parenterally
  - (b) Its total initial oral and parenteral digitalization dose is same
  - (c) It is quickly metabolized if given I.V. or I.M.
  - (d) It is always preferred by I.V. route
- 129. For a longer duration of action nitroglycerine can be administered by which of the following routes**
- (a) Sublingual
  - (b) Inhalation
  - (c) Intravenous
  - (d) Cutaneous application
- 130. Activation of prothrombin to thrombin is carried out by**
- (a) Factor VIII
  - (b) Factor V
  - (c) Factor IX
  - (d) All of the above
- 131. Which of the following is not a calcium channel blocker?**
- (a) Verapamil
  - (b) Diltiazam
  - (c) Prenylamine
  - (d) Propranolol
- 132. In the treatment of cardiac shock, the drug of choice is**
- (a) Dopamine
  - (b) Propranolol
  - (c) Phenoxybenzamine
  - (d) Metaraminol
- 133. Polymorphic ventricular tachycardia can be a complication of**
- (a) Loratadine
  - (b) Cetirizine
  - (c) Astemizole
  - (d) C + D
- 134. In hypertension which drug besides lowering blood pressure arrests and even reverses cardiac hypertrophy**

- (a) ACE inhibitors
- (b) Betablockers
- (c) Calcium channel blockers
- (d) Diuretics

**135. The ACE inhibitor useful in hypertensive emergencies is**

- (a) Enalaprilat
- (b) Benzalaprilat
- (c) Fosinoprilat
- (d) Quinoprilat

**136. Effect of decreased vitamin K on action of warfarin is**

- (a) Enhanced anticoagulatory effect
- (b) Decreased anticoagulatory
- (c) No effect
- (d) Unpredictable effect

**137. Nitroglycerin ointment in clinical use is**

- (a) 1%
- (b) 2%
- (c) 5%
- (d) 10%

**138. Which of the following is directly acting vascular smooth muscle relaxant ?**

- (a) Verapamil
- (b) Minoxidil
- (c) Clonidine
- (d) Diazoxide

**139. The most potent stimulant for heart is**

- (a) Adrenaline
- (b) Noradrenaline
- (c) Dopamine
- (d) Ephedrine

**140. Fibrinolysis is mainly carried out by**

- (a) Tissue – type plasminogen activator
- (b) Urokinase – type plasminogen activator
- (c) Both (a) and (b)
- (d) None of the above

**141. Following is a phenothiazine analog with sodium channel blocking properties**

- (a) Moricizine
- (b) Mexiletine
- (c) Tocainide
- (d) Propafenone

**ANSWERS**

- |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|
| 1. a   | 2. d   | 3. d   | 4. d   | 5. d   | 6. c   |
| 7. a   | 8. d   | 9. d   | 10. c  | 11. b  | 12. d  |
| 13. a  | 14. e  | 15. d  | 16. d  | 17. c  | 18. d  |
| 19. c  | 20. e  | 21. b  | 22. a  | 23. b  | 24. d  |
| 25. b  | 26. a  | 27. b  | 28. a  | 29. a  | 30. b  |
| 31. c  | 32. e  | 33. b  | 34. b  | 35. d  | 36. c  |
| 37. c  | 38. e  | 39. c  | 40. c  | 41. b  | 42. c  |
| 43. b  | 44. b  | 45. d  | 46. b  | 47. a  | 48. b  |
| 49. b  | 50. c  | 51. a  | 52. d  | 53. a  | 54. a  |
| 55. a  | 56. e  | 57. a  | 58. a  | 59. e  | 60. b  |
| 61. e  | 62. b  | 63. a  | 64. c  | 65. c  | 66. d  |
| 67. d  | 68. d  | 69. d  | 70. d  | 71. d  | 72. a  |
| 73. d  | 74. b  | 75. b  | 76. c  | 77. c  | 78. d  |
| 79. c  | 80. d  | 81. d  | 82. a  | 83. a  | 84. a  |
| 85. b  | 86. c  | 87. c  | 88. a  | 89. b  | 90. b  |
| 91. c  | 92. a  | 93. b  | 94. c  | 95. d  | 96. a  |
| 97. a  | 98. a  | 99. a  | 100. c | 101. c | 102. a |
| 103. a | 104. d | 105. a | 106. b | 107. a | 108. b |
| 109. d | 110. d | 111. d | 112. c | 113. b | 114. c |
| 115. d | 116. d | 117. c | 118. d | 119. b | 120. b |
| 121. d | 122. a | 123. b | 124. d | 125. a | 126. a |
| 127. b | 128. b | 129. d | 130. b | 131. d | 132. a |
| 133. d | 134. a | 135. a | 136. b | 137. b | 138. a |
| 139. a | 140. c | 141. a |        |        |        |

## EXPLANATIONS FOR THE ANSWERS

1. a Arterial blood pressure is directly proportional to the blood flow, i.e., cardiac output and peripheral vascular resistance. This relationship is correctly represented by equation in 'A'
7. d Moxonidine acts mainly on imidazline I<sub>1</sub> receptors and produces antihypertensive effect. Dexmedetomidine is a  $\alpha_2$ -adrenergic receptor agonist. Tizanidine is a spasmolytic agent.
12. d Both angiotensin II and III promote aldosterone release. Aldosterone promotes the reabsorption of sodium by distal renal tubules and this may increase the plasma volume and hypertension. Angiotensin I is inactive.
16. d Activation of ET<sub>A</sub> receptors leads to vasoconstriction, bronchoconstriction and stimulation of aldosterone release. Affinity of various endothelins for ET<sub>A</sub> receptor is ET<sub>1</sub> = ET<sub>2</sub> > ET<sub>3</sub>.
19. c Spironolactone binds with cytoplasmic mineralocorticoid receptors. It also decreases the interacellular formation of active metabolites of aldosterone. Triamterene and amiloride directly interfere with sodium entry.
28. a Carbonic anhydrase inhibitors inhibit both the membrane and cytoplasmic forms of carbonic anhydrase and thus completely inhibit reabsorption of sodium bicarbonate in the proximal tube.
34. b Both glycerin and isosorbide are orally active osmotic diuretics and hence show good oral absorption. Mannitol shows negligible absorption.
39. c Ethacrynic acid is a phenoxy acetic acid derivative. Furosemide and bumetanide contain sulfonamide moiety in their structure.
40. c Spironolactone is an aldosterone antagonist. Aldosterone is a mineralocorticoid and mineralocorticoid receptors are present in epithelial cells of late distal tubule and collecting duct.
50. c Milrinone is an inhibitor of phosphodiesterase III and it produces positive inotropism via inhibition of cGMP. Examples of inhibitors of other phosphodiesterase isoforms are as follows:  
Phosphodiesterase I : Vinopocetine  
Phosphodiesterase II : Not available  
Phosphodiesterase IV : Rolipram
57. a Phase 2 of action potential, also known as 'plateau phase' involves inward calcium current, which has a slower inactivation. This inward calcium current is balanced by outward delayed rectifier potassium current.
68. d Potassium channels play an important role in various aspects of action potential in the heart viz. pacemaker function, resting potential and action potential duration.
78. d  $\beta$ -Adrenergic stimulation, hypokalemia and mechanical stretch produce increase in phase 4 slope, leading to acceleration of pacemaker rate, which results in enhanced automaticity.
84. a In cardiac cells, adenosine acts on its specific membrane receptors and activates acetylcholine-sensitive potassium current, specifically in atrium, sinus and AV node. This results in shortening of action potential duration. Activation of potassium current also results in hyperpolarization and slowing of automaticity.
97. a Lidocaine blocks both open and inactivated cardiac sodium channels. It decreases automaticity mainly by reducing the slope of phase 4 and alters the threshold for cardiac excitability. Lidocaine may shorten the duration of action potential because of blockade of sodium channels, which get inactivated late during action potential,
100. c Chylomicrons contain dietary triglycerides as the major lipid class. VLDL contains endogenous triglycerides and IDL, LDL and HDL contain cholesterol esters as major lipid class.
108. d Nicotinic acid produces decrease in LDL levels because of decreased VLDL production and enhanced clearance of LDL precursors in liver. VLDL levels are decreased because of decreased delivery of free fatty acids to liver, decrease in triglyceride synthesis and decrease in VLDL-

- triglyceride transport. Mechanism of increased levels of HDL by nicotinamide is not known but decreased clearance of apo A-I and decreased synthesis of apoA-II may play important role.
113. b The entire sequence of conduction of action potential under normal condition is as follows: SA node → Atria → AV node → Bundle of His, Purkinje fibers → Ventricles.
221. d Sympathomimetic amines, eicosanoids and endothelins act on their respective receptors and increase the calcium influx thereby production contraction of smooth muscles and hence vasoconstriction.
130. b Prothrombin, which is bound to phospholipid surface of platelets, is activated by factor Xa in the presence of factor V to thrombin.
136. a Warfarin acts as an anticoagulant by inhibiting enzymatic reduction of vitamin K to its active hydroquinone form and the inhibition is competitive. Thus, if there are decreased levels of vitamin K obviously there will be less competition for inhibition resulting in enhanced anticoagulatory effect of warfarin.
140. c Fibrinolysis (thrombolysis) is carried out by various endogenous plasminogen activators e.g. tissue-type plasminogen activator, urokinase-type plasminogen activator and also kallikrein and neutrophil elastase.
141. a Moricizine is a phenothiazine analogue with sodium channel blocking activity and is used in the treatment of ventricular arrhythmias. Mexiletine and tocainide are analogous of lidocaine. Propafenone has some structural similarities to propranolol.

# CHAPTER 7

## DRUGS USED IN RESPIRATORY DISORDERS

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- 1. Which of the following terms best describes the antagonism of leukotriene's bronchoconstrictor effect (mediated at leukotriene receptors) by terbutaline (acting  $\alpha$  adrenoceptors) in a patient with asthma?**
  - (a) Pharmacologic antagonist
  - (b) Partial agonist
  - (c) Physiologic antagonist
  - (d) Chemical antagonist
  - (e) Noncompetitive antagonist
- 2. If therapy with multiple drugs causes induction of drug metabolism in your asthma patient, it will**
  - (a) Result in increased smooth endoplasmic reticulum
  - (b) Result in increased rough endoplasmic reticulum
  - (c) Result in decreased enzymes in the soluble cytoplasmic fraction
  - (d) Require 3-4 months to reach completion
  - (e) Be irreversible
- 3. The Symptoms of allergen-mediated asthma result from which of the following?**
  - (a) Increased release of mediators from mast cells
  - (b) Increased adrenergic responsiveness of the airways
  - (c) Increased vascular permeability of bronchial tissue
  - (d) Decreased calcium influx into the mast cells
  - (e) Decreased prostaglandin production
- 4. Which of the following will result from blockade of  $H_2$  receptors?**
  - (a) Decreased camp in cardiac muscle
  - (b) Increased camp in cardiac muscle
  - (c) Decreased  $IP_3$  in gastric mucosa
  - (d) Increased  $IP_3$  in gastric mucosa
  - (e) Increased  $IP_3$  in smooth muscle
- 5. Toxicities of  $H_2$  antihistamines include which one of the following?**
  - (a) Blurred vision
  - (b) Diarrhea
  - (c) Orthostatic hypotension
  - (d) P450 inhibition
  - (e) Sleepiness
- 6. A patient undergoing cancer chemotherapy is vomiting frequently. A drug that might help in this situation is**

(a) Bromocriptine	(b) Cimetidine
(c) Ketanserin	(d) Loratadine
(e) Ondansetron	
- 7. Which of the following is most useful in the treatment of hyperprolactinemia ?**

(a) Bromocriptine	(b) Cimetidine
(c) Ergotamine	(d) Ketanserin
(e) LSD	



- 8. Drugs that can dilate bronchi during an acute asthmatic attack include all of the following except**
- (a) Epinephrine (b) Terbutaline  
(c) Nedocromil (d) Theophylline  
(e) Ipratropium
- 9. Which of the following is a nonselective but very potent and efficacious bronchodilator that is not active by the oral route?**
- (a) Aminophylline (b) Cromolyn  
(c) Epinephrine (d) Ipratropium  
(e) Metaproterenol
- 10. Which of the following is a prophylactic agent that appears to stabilize mast cells?**
- (a) Aminophylline (b) Cromolyn  
(c) Epinephrine (d) Ipratropium  
(e) Metaproterenol
- 11. Which of the following is a direct bronchodilator that is most often used in asthma by the oral route?**
- (a) Aminophylline (b) Cromolyn  
(c) Epinephrine (d) Ipratropium  
(e) Metaproterenol
- 12. Acute exacerbations of asthma can be triggered by all of the following except**
- (a) Bacterial or viral pneumonia  
(b) Hypersensitivity reaction to penicillin  
(c) Discontinuation of asthma medication  
(d) Hot, dry weather  
(e) Stressful emotional events
- 13. Which of the following has overdose toxicity that includes insomnia, arrhythmias, and convulsions?**
- (a) Aminophylline (b) Cromolyn  
(c) Epinephrine (d) Ipratropium  
(e) Metaproterenol
- 14. Which of the following is a very long-acting  $\beta_2$  - selective agonist that is used for asthma prophylaxis?**
- (a) Aminophylline (b) Cromolyn  
(c) Epinephrine (d) Ipratropium  
(e) Salmeterol
- 15. Which one of the following drugs is most suitable for management of essential tremor in a patient who has pulmonary disease?**
- (a) Diazepam (b) Levodopa  
(c) Metoprolol (d) Propranolol  
(e) Terbutaline
- 16. A drug useful in the treatment of asthma but lacking bronchodilator action, is**
- (a) Cromolyn (b) Ephedrine  
(c) Isoproterenol (d) Metaproterenol  
(e) Metoprolol
- 17. Relative to fexofenadine, diphenhydramine is more likely to**
- (a) Be used for treatment of asthma  
(b) Be used for treatment of gastroesophageal reflux disease  
(c) Cause cardiac arrhythmias in overdose  
(d) Have efficacy in the prevention of motion sickness  
(e) Increase the serum concentration of warfarin
- 18. Bacteria that make either a fermentative or respiratory set of enzymes are known as**
- (a) Obligate anaerobes  
(b) Obligate aerobes  
(c) Microaerophiles  
(d) Facultative organisms
- 19. The symptoms of allergen-mediated asthma result from which of the following?**
- (a) Increased release of mediators from mast cells  
(b) Increased adrenergic responsiveness of the airways  
(c) Increased vascular permeability of bronchial tissue  
(d) Decreased calcium influx into the mast cell  
(e) Decreased prostaglandin production
- 20. Acute exacerbations of asthma can be triggered by all of the following except**
- (a) Bacterial or viral pneumonia  
(b) Hypersensitivity reaction to penicillin  
(c) Discontinuation of asthma medication

- (d) Hot, dry weather  
(e) Stressful emotional events
- 21. In the emergency department, the preferred first-line therapy for asthma exacerbation is**
- (a) Theophylline (b) A  $\beta$ -agonist  
(c) A corticosteroid (d) Cromolyn sodium  
(e) An antihistamine
- 22. Which of the following tests is used at home to assess therapy and determine if a patient with asthma should seek emergency care?**
- (a) Forced expiratory volume in one second (FEV<sub>1</sub>)  
(b) Forced vital capacity (FVC)  
(c) Total lung capacity (TLC)  
(d) Peak expiratory flow rate (PEFR)  
(e) Residual volume (RV)
- 23. Which of the following agents and dosage regimens is the best choice of treatment for an asthma patient with rheumatoid arthritis who is considered sensitive to aspirin (experiences bronchospasm with use)?**
- (a) Ibuprofen, 800 mg three times daily  
(b) Acetaminophen, 650 mg every 4 hours  
(c) Gold injections, 25 mg intramuscularly once a week  
(d) Azathioprine, 75 mg daily  
(e) Cyclophosphamide, 100 mg daily
- 24. A drug administered by inhalation of powder as a prophylactic for asthma is**
- (a) Ephedrine (b) Disodium cromolyn  
(c) Isoproterenol (d) Oxytriphylline  
(e) Epinephrine
- 25. Which of the following may precipitate an asthma attack?**
- (a) Respiratory acidosis  
(b) Viral and bacterial infections  
(c) Respiratory alkalosis  
(d) Cranberry juice  
(e) Chocolate or Coca Cola
- 26. Terbutaline has a preference for stimulation of which of the following receptors?**
- (a) Alpha (b) Gamma  
(c) Beta 1 (d) Beta 2  
(e) Dopaminergic
- 27. The National Institutes of Health (NIH) guidelines for the treatment of asthma recommended institution of routine inhaled corticosteroids when patients are classified as having greater than or equal to which type of asthma?**
- (a) Mild intermittent  
(b) Mild persistent  
(c) Moderate persistent  
(d) Severe persistent
- 28. Isoxuprine is used to treat**
- (a) Asthma (b) Severe hypotension  
(c) Nasal congestion (d) Premature labor  
(e) Hypertension
- 29. The most likely complication of prolonged use of nasal decongestant drops is**
- (a) Atrophic rhinitis  
(b) Hypertrophy of nasal mucosa  
(c) Naso-pharyngeal moniliasis  
(d) Blockage of Eustachian tubes
- 30. Which of the following is a selective H<sub>1</sub> receptor agonist ?**
- (a) 4-methyl histamine  
(b) Impromidine  
(c) 2-Thiazolyl ethylamine  
(d) Mepyramine
- 31. Fall in blood pressure caused by larger doses of histamine is blocked by**
- (a) H<sub>1</sub> antihistaminics alone  
(b) H<sub>2</sub> ANTAGONISTS alone  
(c) Combination of H<sub>1</sub> and H<sub>2</sub> antagonists  
(d) None of the above
- 32. Histamine is involved as a mediator in the following pathological condition**
- (a) Cocaine (b) Dibucaine  
(c) Lidocaine (d) Procaine

- 33. In the emergency department, the preferred first-line therapy for asthma exacerbation is**
- (a) Theophylline (b) A  $\beta$ -agonist  
(c) A corticosteroid (d) Cromolyn sodium  
(e) An antihistamine
- 34. The capacity of an antihistaminic to produce sedation depends on the following except**
- (a) Relative affinity for central versus peripheral  $H_1$  receptors  
(b) Ability to penetrate blood-brain barrier  
(c) Individual susceptibility  
(d) Ratio of  $H_1$  :  $H_2$  blockade produced by the drug
- 35. While prescribing the conventional  $H_1$  antihistaminics the patient should be advised to avoid**
- (a) Driving motor vehicles  
(b) Consuming processed cheese  
(c) Strenuous physical exertion  
(d) All of the above
- 36. The antihistaminic which has calcium channel blocking and labyrinthine suppressant property is**
- (a) Cyproheptadine (b) Cinnarizine  
(c) Clemastine (d) Cetirizine
- 37. Erythromycin should not be given to patient being treated with terfenadine because**
- (a) Erythromycin induces the metabolism of terfenadine  
(b) Dangerous ventricular arrhythmias can occur  
(c) Terfenadine inhibits metabolism of erythromycin  
(d) Terfenadine antagonizes the antimicrobial action of erythromycin
- 38. Select the  $H_1$  antihistaminic which is used topically in the nose for allergic rhinitis**
- (a) Deep intra-abdominal operation  
(b) Tracheal intubation  
(c) Tetanus  
(d) Diagnosis of myasthenia gravis
- 39.  $H_1$  antihistaminics are beneficial in**
- (a) All types of allergic disorders  
(b) Certain type I allergic reactions only  
(c) Anaphylactic shock (d) Bronchial asthma
- 40. The action of 5-Hydroxy tryptamine mediated by the 5-HT<sub>3</sub> receptor is**
- (a) Vasoconstriction (b) Bradycardia  
(c) EDRF release (d) Platelet aggregation
- 41. Tachyphylaxis to many actions on repeated injection is a feature of the following autocolid**
- (a) Histamine (b) 5-Hydroxytryptamine  
(c) Bradykinin (d) Angiotensin
- 42. The smooth muscle stimulating action of 5-HT is most marked in the**
- (a) Bronchi (b) Intestines  
(c) Ureter (d) Biliary tract
- 43. The 5-HT antagonist that has anti-hypertensive property is**
- (a) Methysergide (b) Cyproheptadine  
(c) Ketanserin (d) Ondansetron
- 44. The most important receptor involved in cytotoxic drug induced vomiting is**
- (a) Histamine  $H_1$  receptor  
(b) Serotonin 5-HT<sub>3</sub> receptor  
(c) Dopamine D2 receptor  
(d) Opioid  $\mu$  receptor
- 45. Which of the following expectorants acts both directly on the airway mucosa as well as reflexly ?**
- (a) Potassium iodide (b) Guaiphenesin  
(c) Terpin hydrate (d) Bromhexine
- 46. Bromhexine acts by**
- (a) Inhibiting cough center  
(b) Irritating gastric mucosa and reflexly increasing bronchial secretion  
(c) Depolymerizing mucopolysaccharides present  
(d) Desensitizing stretch receptors in the lungs
- 47. The primary goals of asthma therapy include all of the following except**
- (a) maintain normal activity levels  
(b) maintain control of symptoms  
(c) avoid adverse effects of asthma medications  
(d) prevent acute exacerbations and chronic symptoms  
(e) prevent destruction of lung tissue

**48. Antitussives act by**

- (a) Liquifying bronchial secretions
- (b) Raising the threshold of cough centre
- (c) Reducing cough inducing impulses from the lungs
- (d) Both (b) and (c)

**49. Which of the following antitussive is present in opium but has no analgesic or addicting properties ?**

- (a) Noscapine
- (b) Codeine
- (c) Pholcodeine
- (d) Ethylmorphine

**50. Bronchodilators are useful in cough**

- (a) Only when cough is non-productive
- (b) Only when cough is associated with thick sticky secretions
- (c) Only when reflex bronchoconstriction is associated
- (d) Irrespective of nature of cough or associated features

**51. The common and dose related side effect of salbutamol is**

- (a) Rise in blood pressure
- (b) Muscle tremor
- (c) Hyperglycaemia
- (d) Central nervous system stimulation

**52. Which of the following tests is used at home to assess therapy and determine if a patient with asthma should seek emergency care?**

- (a) Forced expiratory volume in one second (FEV<sub>1</sub>)
- (b) Forced vital capacity (FVC)
- (c) Total lung capacity (TLC)
- (d) Peak expiratory flow rate (PEFR)
- (e) Residual volume (RV)

**53. In a patient of bronchial asthma, inhaled salbutamol produces the following effect(s).**

- (a) Inhibits antigen-antibody reaction in the lungs
- (b) Causes bronchodilatation
- (c) Reduces bronchial hyperreactivity
- (d) Both (b) and (c)

**54. Select the correct statement about salmeterol.**

- (a) It is a long acting selective  $\beta_2$  agonist bronchodilator

- (b) It is a bronchodilator with anti-inflammatory property
- (c) It is a  $\beta$  blocker that can be safely given to asthmatics
- (d) It is an antihistaminic with mast cells stabilizing property

**55. Caffeine is more powerful than theophylline in exerting the following action**

- (a) Bronchodilatation
- (b) Cardiac stimulation
- (c) Diuresis
- (d) Augmentation of skeletal muscle contractility

**56. Methylxanthines exert the following action (s) at cellular/molecular level**

- (a) Intracellular release of Ca<sup>2+</sup>
- (b) Antagonism of adenosine
- (c) Inhibition of phosphodiesterase
- (d) All of the above

**57. Relatively higher dose of theophylline is required to attain therapeutics plasma concentration in**

- (a) Smokers
- (b) Congestive heart failure patients
- (c) Those receiving erythromycin
- (d) Those receiving cimetidine

**58. The antiasthma drug which cannot be administered by inhalation is**

- (a) Theophylline
- (b) Ipratropium bromide
- (c) Budesonide
- (d) Terbutaline

**59. A 10 year old child suffers from exercise induced asthma: Which is the most suitable first line drug for regular prophylactic therapy ?**

- (a) Oral salbutamol
- (b) Oral theophylline
- (c) Inhaled sodium cromoglycate
- (d) Inhaled beclomethasone dipropionate

**60. Which of the following drugs is neither bronchodilator nor anti-inflammatory, but has antihistaminic and mast cell stabilizing activity ?**

- (a) Sodium cromoglycate
- (b) Ketotifen

- (c) Beclomethasone dipropionate
- (d) Mepyramine maleate

**61. The most consistent, pronounced and sustained relief of symptoms in chronic bronchial asthma is afforded by**

- (a)  $\beta_2$  sympathomimetics
- (b) Anticholinergics
- (c) Sodium cromoglycate
- (d) Corticosteroids

**62. Intranasal spray of budesonide is indicated in**

- (a) Common cold
- (b) Acute vasomotor rhinitis
- (c) Perennial vasomotor rhinitis
- (d) Epistaxis

**63. In patients of bronchial asthma inhaled corticosteroids achieve the following except**

- (a) Reduce the need for bronchodilator medication
- (b) Control an attack of refractory asthma
- (c) Reduce bronchial hyperreactivity
- (d) Reverse diminished responsiveness to sympathomimetic bronchodilators

**64. Budesonide is a**

- (a) Nonsteroidal anti-inflammatory drug
- (b) High ceiling diuretic
- (c) Inhaled corticosteroid for asthma
- (d) Contraceptive

**65. In an asthma patient treated with systemic corticosteroids, bronchodilator drugs**

- (a) Are not needed
- (b) Are contraindicated
- (c) May be used on 'as and when required' basis
- (d) Are ineffective

**66. To be a useful inhaled glucocorticoid the drug should have**

- (a) High oral bioavailability
- (b) Low oral bioavailability
- (c) Additional bronchodilator activity
- (d) Prodrug character

**67. Histamine**

- (a) May be released from mast cells by a number of therapeutic agents
- (b) Causes sedation
- (c) Decreases the force of contraction of ventricular muscle
- (d) Can cause strong contractions of the gravid human uterus

**68. Chronic Bronchitis is characterized by**

- I. the destruction of central and peripheral portions of the acinus
  - II. an increased number of mucous glands and goblet cells
  - III. edema and inflammation of the bronchioles
- (a) only I is correct
  - (b) only III is correct
  - (c) I and II are correct
  - (d) II and III are correct
  - (e) I, II and III are correct

**69. Smooth muscle relaxation is due to stimulation of which type of histamine receptors**

- (a)  $H_1$
- (b)  $H_2$
- (c)  $H_3$
- (d) All of the above

**70. All the following are employed in inhalation therapy of asthma except**

- (a) Beclomethasone
- (b) Budesonide
- (c) Dexamethasone
- (d) Triamcinolone

**71. Which xanthine derivative has no function in asthma ?**

- (a) Theophylline
- (b) Pentoxifyllin
- (c) Enprofyllin
- (d) None of the above

**72. What is symport ?**

- (a) Counter transport
- (b) Contransport
- (c) Carrier mediated diffusion
- (d) Solvent drug

**73. Pyridostigmine differs from neostigmine in that**

- (a) More potent orally
- (b) Longer acting
- (c) Less muscarinic side effects
- (d) All of the above

**ANSWERS**

1. c	2. a	3. a	4. a	5. d	6. e
7. a	8. c	9. c	10. b	11. a	12. d
13. a	14. e	15. c	16. a	17. d	18. d
19. a	20. d	21. b	22. d	23. c	24. b
25. b	26. d	27. b	28. d	29. a	30. c
31. c	32. b	33. b	34. d	35. a	36. b
37. b	38. d	39. b	40. b	41. b	42. b
43. c	44. b	45. a	46. c	47. e	48. d
49. a	50. c	51. b	52. d	53. b	54. a
55. d	56. d	57. a	58. a	59. c	60. b
61. d	62. c	63. b	64. c	65. c	66. b
67. d	68. c	69. b	70. c	71. b	72. b
73. b					

**EXPLANATIONS FOR THE ANSWERS**

3. a In asthma, airborne antigen binds to the mast cell, activating the immunoglobulin E (IgE)-mediated process. Mediators (e.g., histamine, leukotrienes, prostaglandins) are then released, causing bronchoconstriction and tissue edema.
12. d Exacerbations of asthma can be triggered by allergens, respiratory infections, occupational stimuli (e. g., fumes from gasoline or paint), emotions, and environmental factors. Studies have shown that cold air can cause release of mast cells mediators by an undetermined mechanism. Hot, dry air does not cause this release.
27. b The National Institutes of Health (NIH) guidelines recommend routine use of inhaled corticosteroids in patients who have mild persistent asthma. Short-acting  $\beta$ -agonist administered in a nebulizer or administered as a subcutaneous agent is the most appropriate first line therapy.
33. b In an emergency situation, the most rapidly acting agent is used first. Selection of the route of administration depends on the severity of the attack. An inhaled  $\beta$ -agonist administered in a nebulizer or administered as a subcutaneous agent is the most appropriate first-line therapy.
47. e Asthma is characterized by reversible airway obstruction in response to specific stimuli. Mast cells release mediators, which trigger bronchoc-
- onstriction. After an acute attack, in most cases symptoms are minimal, and pathological changes are not permanent. Unlike asthma, chronic obstructive pulmonary disease does cause progressive airway destruction, chronic bronchitis by excessive mucus production and other changes, and emphysema by destruction of the acinus.
52. d In monitoring of asthma therapy at home, peak expiratory flow rate (PEFR) is the best test for assessment of therapy, trigger identification, and the need for referral to emergency care. It is recommended for patients who have had severe exacerbations of asthma, who are poor perceivers of asthma symptoms, and those with moderate to severe disease.
68. d Chronic bronchitis is characterized by an increase in the number of mucous and goblet cells due to bronchial irritation. This results in increased mucus production. Other changes include edema and inflammation of the bronchioles and changes in smooth muscle and cartilage. Emphysema is a permanent destruction of the central and peripheral portions of the acinus distal to the bronchioles. In this disease, adequate oxygen reaches the alveolar duct, due to increased rate of breathing, but perfusion is abnormal.

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# CHAPTER 8

## ANTIBIOTICS

- 1. Isoniazid is a primary antitubercular agent that**
  - (a) Requires pyridoxine supplementation
  - (b) May discolor the tears, saliva, urine or feces orange-red
  - (c) Causes ocular complications that are reversible if the drug is discontinued
  - (d) May be ototoxic and nephrotoxic
  - (e) Should never be used due to hepatotoxic potential
- 2. A 36-year-old woman recently treated for leukemia is admitted to hospital with malaise, chills and high fever. Gram stain of blood reveals the presence of gram-negative bacilli. The initial diagnosis is bacteremia and parenteral antibiotics are indicated. The records of the patient reveal that she had a severe urticarial risk, hypotension, and respiratory difficulty following oral penicillin V about 6 months ago. The most appropriate drug regimen for empiric treatment is**
  - (a) Ampicillin plus sulbactam
  - (b) Aztreonam
  - (c) Cefazolin
  - (d) Imipenem plus cilastatin
  - (e) Ticarcillin plus clavulanic acid
- 3. Which one of the following statements about cefotetan is accurate?**
  - (a) It is active against MRSA strains
  - (b) It is the drug of choice in community-acquired pneumonia
  - (c) It is a fourth-generation cephalosporin
  - (d) It decreases prothrombin time
  - (e) Its antibacterial spectrum include Bacteroides fragilis
- 4. A patient needs antibiotic treatment for native valve, culture-positive infective enterococcal endocarditis. His medical history includes a severe anaphylactic reaction to penicillin G during the past year. The best approach would be treatment with**
  - (a) Amoxicillin/clavulanate
  - (b) Aztreonam
  - (c) Cefazolin plus gentamicin
  - (d) Meropenem
  - (e) Vancomycin
- 5. This drug has activity against many strains of Pseudomonas aeruginosa. However, when it is used alone, resistance has emerged during the course of treatment. The drug should not be used in penicillin-allergic patients. Its activity against gram-negative rods is enhanced if it is given in combination with tazobactam**
  - (a) Amoxicillin
  - (b) Aztreonam
  - (c) Imipenem
  - (d) Piperacillin
  - (e) Vancomycin

- 6. Which of the following statements about vancomycin is accurate?**
- It is bacteriostatic
  - It binds to PBPs
  - It is not susceptible to penicillinase
  - It has the advantage of oral bioavailability
  - Staphylococcal enterocolitis occurs commonly with its use
- 7. Which one of the following statements about ampicillin is false?**
- Its activity is enhanced by sulbactam
  - It causes maculopapular rashes
  - It is the drug of choice for *Listeria monocytogenes* infection
  - It eradicates most strains of MRSA
  - Pseudomembranous colitis may occur with its use
- 8. The mechanism of antibacterial action of tetracycline involves**
- Binding to a component of the 50S ribosomal subunit
  - Inhibition of translocase activity
  - Blockade of binding of aminoacyl – tRNA to bacterial ribosomes
  - Selective inhibition of ribosomal peptidyl transferases
  - Inhibition of DNA-dependent RNA polymerase
- 9. Clarithromycin and erythromycin have very similar spectrums of antimicrobial activity. The major advantage of clarithromycin is that it**
- Eradicates mycoplasmal infections in a single dose
  - Is active against strains of streptococci that are resistant to erythromycin
  - Is more active against *Mycobacterium avium* complex
  - Does not inhibit live drug-metabolizing enzymes
  - Acts on methicillin-resistant strains of staphylococci
- 10. The primary mechanism underlying the resistance of gram-positive organisms to macrolide antibiotics is**
- Methylation of binding sites on the 50S ribosomal subunit
  - Formation of esterases that hydrolyze the lactone ring
  - Increased activity of efflux mechanisms
  - Formation of drug-inactivating acetyltransferases
  - Decreased drug permeability of the cytoplasmic membrane
- 11. The appearance of markedly vacuolated, nucleated red cells in the marrow, anemia, and reticulocytopenia are characteristic dose-dependent side effects of**
- Azithromycin
  - Chloramphenicol
  - Clindamycin
  - Doxycycline
  - Linezolid
- 12. In a patient with culture-positive enterococcal endocarditis who has failed to respond to vancomycin because of resistance, the treatment most likely to be effective is**
- Clarithromycin
  - Erythromycin
  - Linezolid
  - Minocycline
  - Ticarcillin
- 13. All of the following factors may increase the risk of nephrotoxicity from gentamicin therapy except**
- age over 70 years
  - prolonged courses of gentamicin therapy
  - concurrent amphotericin B therapy
  - trough gentamicin levels below 2 mg/ml
  - concurrent cisplatin therapy
- 14. Which one of the following antibiotics is likely to be most effective agent in the treatment of an infection due to enterococci if used in conjunction with penicillin G?**
- Amikacin
  - Gentamicin
  - Netilmicin
  - Streptomycin
  - Tobramycin
- 15. Regarding the antibacterial action of gentamicin, which one of the following statements is most accurate?**
- Efficacy is directly proportionate to the time that the plasma level of the drug is greater than the minimal inhibitory concentration

- (b) The antibacterial action of gentamicin is not concentration - dependent
- (c) Gentamicin continues to exert antibacterial effects even after plasma levels decrease below detectable levels
- (d) Antibacterial activity is often reduced by the presence of an inhibitor of cell wall synthesis
- (e) The antibacterial action of gentamicin is time - dependent
- 16. Which one of the following drugs is most likely to be effective against multidrug - resistant strains of *M tuberculosis*, including those resistant to streptomycin?**
- (a) Amikacin                      (b) Clarithromycin
- (c) Gentamicin                    (d) Meropenem
- (e) Spectinomycin
- 17. Streptomycin has no useful activity in the treatment of**
- (a) Bubonic plague              (b) Brucellosis
- (c) Lyme disease                (d) Tuberculosis
- (e) Tularemia
- 18. Your 23-year-old female patient is pregnant and has gonorrhea. The past medical history includes anaphylaxis following exposure to amoxicillin. Worried about compliance, you would like to treat this patient with a singly dose, so you chose**
- (a) Cefixime                      (b) Ceftriaxone
- (c) Ciprofloxacin                (d) Spectinomycin
- (e) Tetracycline
- 19. In the empiric treatment of severe bacterial infections of unidentified etiology, this drug, often used in combination with an aminoglycoside, provides coverage against many staphylococci**
- (a) Amoxicillin                    (b) Clavulanic acid
- (c) Erythromycin                (d) Nafcillin
- (e) Tetracycline
- 20. Which one of the following statements about "one daily" dosing with aminoglycosides is false ?**
- (a) It is convenient for outpatient therapy
- (b) Adjustment of dosage is less important in renal insufficiency
- (c) Less nursing time is required
- (d) It is often less toxic than conventional (multiple)dosing regimens
- (e) Under-dosing is less of a problem
- 21. Regarding the recently introduced lipid formulation of amphotericin B, which one of the following statements is accurate?**
- (a) Affinity of amphotericin B for these lipids is greater than affinity for ergosterol
- (b) They are less expensive to use than conventional amphotericin B
- (c) They are more effective in fungal infections because they increase tissue uptake of amphotericin B
- (d) They may decrease nephrotoxicity of amphotericin B
- (e) They have wider spectrums of antifungal activity than conventional formulations of amphotericin B
- 22. Which one of the following antimicrobial drugs does not require supplementation of dosage following hemodialysis?**
- (a) Ampicillin                    (b) Cefazolin
- (c) Ganciclovir                  (d) Tobramycin
- (e) Vancomycin
- 23. The persistent suppression of bacterial growth that may occur following limited exposure to some antimicrobial drugs is called**
- (a) Time-dependent killing
- (b) The post antibiotic effect
- (c) Clinical synergy
- (d) Concentration - dependent killing
- (e) Sequential blockade
- 24. In which of the following groups do all four drugs warrant careful monitoring for drug-related seizures in high-risk patients?**
- (a) Penicillin G, imipenem, amphotericin B, metronidazol
- (b) Penicillin G, chlormphenicol, tetracycline, vancomycin
- (c) Imipenem, tetracycline, vancomycin, sulfadiazine
- (d) Cycloserine, metronidazole, vancomycin, sulfadiazine
- (e) Metronidazole, imipenem, doxycycline, erythromycin

- 25. Which one of the following antibiotics is a potent inducer of hepatic drug-metabolizing enzymes?**
- (a) Ciprofloxacin      (b) Cyclosporine  
(c) Erythromycin      (d) Rifampin  
(e) Tetracycline
- 26. Beta – lactamase production by strains of *Haemophilus influenzae*, *Moraxella catarrhalis*, and *Neisseria gonorrhoeae* confers resistance against penicillin G. which one of the following antibiotics is most likely to be effective against all strains of each of the above organisms?**
- (a) Ampicillin      (b) Ceftriaxone  
(c) Clindamycin      (d) Gentamicin  
(e) Piperacillin
- 27. A 19-year-old woman with recurrent sinusitis has been treated with different antibiotics on several occasions. During the course of one such treatment she developed a severe diarrhea and was hospitalized. Sigmoidoscopy revealed colitis, and pseudomembranes, were confirmed histologically. Which of the following drugs, administered orally, is most likely to be effective in the treatment of colitis due to *C difficile*?**
- (a) Ampicillin      (b) Cefazolin  
(c) Clindamycin      (d) Metonidazole  
(e) Tetracycline
- 28. Bleomycin is used in most effective drug combination regiment for the chemotherapy of testicular carcinoma. Which one of the following statements about the drug is accurate?**
- (a) Acts mainly in the M phase of the cell cycle  
(b) Derived from the bark of yew trees  
(c) Myelosuppression is dose-limiting  
(d) Peripheral neuropathy occurs in more than 50% of patients  
(e) Pulmonary infiltrates and fibrosis may occur
- 29. A high school student presents with headache, fever, and cough of 2 day's duration. Sputum is scant and nonpurulent and a Gram stain reveals many white cells but no organisms. Since this patient appears to have atypical pneumonia. You should initiate treatment with**
- (a) Cefazolin      (b) Clindamycin  
(c) Erythromycin      (d) Gentamicin  
(e) Trovafloxacin
- 30. Chloramphenicol is particularly effective in the treatment of**
- (a) Diphtheria      (b) Tuberculosis  
(c) Emphysema      (d) Rickettsial diseases  
(e) *Streptomyces pyogenes* infections
- 31. An advantage of bleomycin over most antineoplastic drugs is its**
- (a) Rapid onset of action  
(b) Lack of toxicity to all normal cells  
(c) Relative lack of bone marrow toxicity  
(d) Very broad spectrum of activity  
(e) Both (a) and (b)
- 32. The drug of choice for scarlet fever is**
- (a) Tetracycline      (b) Sulfonamides  
(c) Penicillin      (d) Chloromycetin  
(e) Novobiocin
- 33. An advantage of betamethasone acetate over betamethasone sodium phosphate is**
- (a) Fewer allergic reactions  
(b) Prompter action  
(c) More sustained action  
(d) Greater solubility  
(e) There is no advantage
- 34. Cyclosporine is used for**
- (a) Allergies  
(b) Angina  
(c) Prevention of transplant rejection  
(d) Steroid deficiency  
(e) Treating lead poisoning
- 35. The plasma half life of penicillin-G is longer in the new born because their**
- (a) Plasma protein level is low  
(b) Drug metabolizing enzymes are immature

- (c) Glomerular filtration rate is low  
(d) Tubular transport mechanisms are not well developed
- 36. Choose the correct statement about the role of opioid antimotility drugs in the management of diarrhoeas**
- (a) They are used to control diarrhoea irrespective of its etiology  
(b) They should be used only as a short-term measure after ensuring that enteroinvasive organisms are not involved  
(c) They are used as adjuvants to antimicrobial therapy of diarrhoea  
(d) They are the drugs of choice in irritable bowel syndrome diarrhoea
- 37. Spectinomycin is an aminoglycoside-like antibiotic indicated for the treatment of**
- (a) Gram-negative bacillary septicemia  
(b) Tuberculosis  
(c) Penicillin-resistant gonococcal infections  
(d) Syphilis  
(e) Gram-negative meningitis due to susceptible organisms
- 38. Select the antibiotic with a high therapeutic index**
- (a) Streptomycin (b) Doxy  
(c) Cephalexin (d) Polymyxin B
- 39. Which of the following organisms is notorious for developing antimicrobial resistance rapidly?**
- (a) Streptococcus pyogenes  
(b) Meningococcus  
(c) Treponema pallidum  
(d) Escherichia coli
- 40. Widespread and prolonged use of an antibiotic leads to emergence of drug resistant strains because antibiotics**
- (a) Induce mutation in the bacteria  
(b) Promote conjugation among bacteria  
(c) Allow resistant strains to propagate preferentially  
(d) All of the above
- 41. Of the following which is the most important mechanism of concurrent acquisition of multidrug resistance among bacteria?**
- (a) Mutation (b) Conjugation  
(c) Transduction (d) Transformation
- 42. Methicillin resistant staphylococci do not respond to  $\beta$ -lactam antibiotics because**
- (a) They produce a  $\beta$ -lactamase which destroys methicillin and related drugs  
(b) They elaborate an amidase which destroys methicillin and related drugs  
(c) They have acquired a penicillin binding protein which has low affinity for  $\beta$ -lactam antibiotics  
(d) They are less permeable to  $\beta$ -lactam antibiotics
- 43. A man has an Escherichia coli bacteremia with a low-grade fever (101.6°F). Appropriate management of his fever would be**
- (a) Give acetaminophen 650 mg orally every 4 hours  
(b) Give aspirin 650 mg orally every 4 hours  
(c) Give alternating doses of aspirin and acetaminophen every 4 hours  
(d) Withhold antipyretics, and use the fever curve to monitor his response to antibiotic therapy  
(e) Use tepid water baths to reduce the fever
- 44. Superinfections are more common with**
- (a) Use of narrow spectrum antibiotics  
(b) Short courses of antibiotics  
(c) Use of antibiotics that are completely absorbed from the small intestines  
(d) Use of antibiotic combinations covering both gram positive and gram negative bacteria
- 45. Select the antibiotic whose dose must be reduced in patients with renal insufficiency**
- (a) Ampicillin (b) Chloramphenicol  
(c) Tobramycin (d) Erythromycin
- 46. Which antimicrobial should be avoided in patients of liver disease?**
- (a) Chlortetracycline  
(b) Cotrimoxazole  
(c) Cephalexin  
(d) Ethambutol

- 47. What is break point concentration of an antibiotic ?**
- (a) Concentration at which the antibiotic lyses the bacteria
  - (b) Concentration of the antibiotic which demarks between sensitive and resistant bacteria
  - (c) Concentration of the antibiotic which overcomes bacterial resistance
  - (d) Concentration at which a bacteriostatic antibiotic becomes bactericidal
- 48. Which type of antimicrobial drug combination is most likely to exhibit antagonism ?**
- (a) Bactericidal + Bactericidal
  - (b) Bactericidal + Bacteriostatic for a highly sensitive organism
  - (c) Bactericidal + Bacteriostatic for a marginally sensitive organism
  - (d) Bacteriostatic + Bacteriostatic
- 49. Indicate the sulfonamide whose sodium salt yields a nearly neutral solution which is suitable for topical use in the eye**
- (a) Sulfadiazine      (b) Sulfacetamide
  - (c) Sulfamerazine    (d) Sulfamethizole
- 50. Sulfamethoxypyridazine and other related long acting sulfonamides have now gone into disuse because**
- (a) They have produced serious cutaneous reactions
  - (b) They have produced high incidence of crystalluria
  - (c) They interact with many drugs
  - (d) They do not penetrate blood-brain barrier
- 51. Which of the following is not true of sulfonamides ?**
- (a) They are primarily metabolized by acetylation
  - (b) They are more likely to produce crystalluria in alkaline urine in which they are less soluble
  - (c) They may exert bactericidal action in the urinary tract
  - (d) Used alone, they have become therapeutically unreliable for serious infections
- 52. Adverse effects of ciprofloxacin are referable primarily to the following except**
- (a) Gastrointestinal tract
  - (b) Kidney
  - (c) Skin
  - (d) Nervous system
- 53. A single oral dose of the following drug can cure most cases of uncomplicated gonorrhoea**
- (a) Ciprofloxacin      (b) Cotrimoxazole
  - (c) Spectinomycin    (d) Doxycycline
- 54. Which fluoroquinolone has markedly enhanced activity against gram positive bacteria and anaerobes ?**
- (a) Pefloxacin      (b) Ciprofloxacin
  - (c) Sparfloxacin    (d) Norfloxacin
- 55. A woman has an upper respiratory infection. Six years ago, she experienced an episode of bronchospasm following penicillin V therapy. The cultures now reveal a strain of streptococcus pneumoniae that is sensitive to all of the following drugs. Which of these drugs would be the best choice for this patient?**
- (a) Amoxicillin/clavulanate
  - (b) Erythromycin
  - (c) Ampicillin
  - (d) cefaclor
  - (e) Cyclacillin
- 56. Important microbiological features of ciprofloxacin include the following except**
- (a) Long postantibiotic effect
  - (b) Marked suppression of intestinal anaerobes
  - (c) MBC values close to MIC values
  - (d) Slow development of resistance
- 57. Currently the drug of choice for emperic treatment of typhoid fever is**
- (a) Chloramphenicol    (b) Cotrimoxazole
  - (c) Ciprofloxacin      (d) Ampicillin
- 58. In the treatment of typhoid fever, ciprofloxacin has the following advantage(s)**
- (a) It is effective in nearly all cases
  - (b) Early abatement of fever and other symptoms



- (c) Development of carrier state is less likely  
(d) All of the above
- 59. Penicillins interfere with bacterial cell wall synthesis by**
- (a) Inhibiting synthesis of N-acetyl muramic acid pentapeptide  
(b) Inhibiting conjugation between N-acetyl muramic acid and N-acetyl glucosamine  
(c) Inhibiting transpeptidases and carboxy peptidases which cross link the peptidoglycan residues  
(d) Counterfeiting for D-alanine in the bacterial cell wall
- 60. All of the following drugs are suitable oral therapy for a lower urinary tract infection due to *Pseudomonas aeruginosa* except**
- (a) Norfloxacin  
(b) Trimethoprim-sulfamethoxazole  
(c) Ciprofloxacin  
(d) Carbenicillin  
(e) Methenamine mandelate
- 61. Gram negative organisms are largely insensitive to benzyl penicillin because**
- (a) They produce large quantities of penicillinase  
(b) They do not utilize D-alanine whose incorporation in the cell wall is inhibited by benzyl penicillin  
(c) Benzyl penicillin is not able to penetrate deeper into the lipoprotein-peptidoglycan multi-layer cell wall of gram-negative bacteria  
(d) Both (a) and (b)
- 62. The penicillin G preparation with the longest duration of action is**
- (a) Benzathine penicillin  
(b) Sodium penicillin  
(c) Potassium penicillin  
(d) Procaine penicillin
- 63. If a patient gives history of urticaria, itching and swelling of lips following injection of penicillin G, then**
- (a) He will develop similar reaction whenever penicillin is injected  
(b) He can be given ampicillin safely  
(c) He can be given oral phenoxymethyl penicillin safely  
(d) All natural and semisynthetic penicillins are contraindicated for him
- 64. The most important reason for highly restricted use of penicillin G injections in present day therapeutics is its**
- (a) Narrow spectrum of activity  
(b) Potential to cause hypersensitivity reaction  
(c) Short duration of action  
(d) Neurotoxicity
- 65. Benzathine penicillin injected once every 4 weeks for 5 years or more is the drug of choice for**
- (a) Agranulocytosis patients  
(b) Prophylaxis of bacterial endocarditis in patients with valvular defects  
(c) Prophylaxis of rheumatic fever  
(d) Treatment of anthrax
- 66. Which of the following is not a semisynthetic penicillin ?**
- (a) Procaine penicillin (b) Ampicillin  
(c) Cloxacillin (d) Carbenicillin
- 67. Cloxacillin is indicated in infections caused by the following organism(s)**
- (a) Staphylococci (b) Streptococci  
(c) Gonococci (d) All of the above
- 68. The most frequent side effect of oral ampicillin is**
- (a) Nausea and vomiting  
(b) Loose motions  
(c) Constipation  
(d) Urticaria
- 69. Amoxicillin is inferior to ampicillin for the treatment of the following infection**
- (a) Typhoid  
(b) Shigella enteritis  
(c) Subacute bacterial endocarditis  
(d) Gonorrhoea
- 70. Piperacillin differs from carbenicillin in the following respect(s)**
- (a) It is more active against *Pseudomonas aeruginosa*  
(b) It is active against *Klebsiella* also  
(c) It is acid resistant  
(d) Both (a) and (b)



- 71. Clavulanic acid is combined with amoxicillin because**
- It kills bacteria that are not killed by amoxicillin
  - It reduces renal clearance of amoxicillin
  - It counteracts the adverse effects of amoxicillin
  - It inhibits beta lactamases that destroy amoxicillin
- 72. Amoxicillin + Clavulanic acid is active against the following organism except**
- Methicillin resistant Staph. aureus
  - Penicillinase producing Staph. aureus
  - Penicillinase producing n. gonorrhoeae
  - $\beta$ -lactamase producing E. coli
- 73. A woman's neglected hangnail has developed into a mild staphylococcal cellulites. Which of the following regimens would be appropriate oral therapy?**
- Dicloxacillin 125 mg q6h
  - Vancomycin 250 mg q6h
  - Methicillin 500 mg q6h
  - Cefazolin 1 g q8h
  - Penicillin V 500 mg q6h
- 74. Cefotaxime has the following properties except**
- It is highly active against aerobic gram negative bacteria
  - It is the most active cephalosporin against Pseudomonas aeruginosa
  - It produces an active metabolite
  - It has achieved high cure rates in serious hospital acquired infections
- 75. Select the fourth generation cephalosporin among the following**
- Cefpirome
  - Ceftizoxime
  - Ceftazidime
  - Cefuroxime
- 76. The most important mechanism by which tetracycline antibiotics exert antimicrobial action is**
- They chelate  $Ca^{2+}$  ions and alter permeability of bacterial cell membrane
  - They bind to 30S ribosomes and inhibit bacterial protein synthesis
  - They bind to 50S ribosomes and interfere with translocation of the growing peptide chain in the bacteria
  - They interfere with DNA mediated RNA synthesis in bacteria
- 77. Select the most potent tetracycline antibiotic**
- Demeclocycline
  - Methacycline
  - Minocycline
  - Doxycycline
- 78. An 8-year-old child presented with brownish discoloured and deformed anterior teeth. History of having received an antibiotic about 4 years earlier was obtained. Which antibiotic could be responsible for the condition ?**
- Chloramphenicol
  - Tetracycline
  - Erythromycin
  - Genetamicin
- 79. The most suitable tetracycline for use in a patient with impaired renal function is**
- Chlortetracycline
  - Demeclocycline
  - oxytetracycline
  - Doxycycline
- 80. Compared to older tetracyclines, doxycycline produces a lower incidence of superinfection diarrhoea because**
- It is completely absorbed in the small intestines so that drug concentration in the colonic contents is low
  - It is inactivated by the gut microflora
  - It is not active against the microbes of the normal gut flora
  - It is a potent tetracycline and inhibits the superinfection causing microbes as well
- 81. Tetracyclines are still the first choice drugs for the following disease.**
- Granuloma linguale
  - Chancroid
  - Syphilis
  - Gonorrhoea in patients allergic to penicillin
- 82. Chloramphenicol is more active than tetracyclines against**
- Bacteroides fragilis
  - Treponema pallidum
  - Streptococci
  - Staphylococci

- 83. Which out of the following antibiotics penetrates blood-CSF barrier the best**
- (a) Erythromycin (b) Gentamicin  
(c) Tetracycline (d) Chloramphenicol
- 84. The most important mechanism by which gram negative bacilli acquire chloramphenicol resistance is**
- (a) Decreased permeability into the bacterial cell  
(b) Acquisition of a plasmid encoded for chloramphenicol acetyl transferase  
(c) Lowered affinity of the bacterial ribosome for chloramphenicol  
(d) Switching over from ribosomal to mitochondrial protein synthesis
- 85. What is the most important reason for restricted clinical use of chloramphenicol ?**
- (a) Its narrow spectrum of activity  
(b) Emergence of chloramphenicol resistance  
(c) Its potential to cause bone marrow depression  
(d) Its potential to cause superinfections
- 86. Aminoglycoside antibiotics have the following common property**
- (a) They are primarily active against gram-negative bacilli  
(b) They are more active in acidic medium  
(c) They readily enter cells and are distributed in total body water  
(d) They are nearly completely metabolized in liver
- 87. Which aminoglycoside antibiotic causes more hearing loss than vestibular disturbance as toxic effect ?**
- (a) Streptomycin (b) Gentamicin  
(c) Kanamycin (d) Sisomicin
- 88. Which of the following drugs has demonstrated in vitro activity against Mycobacterium avium-intracellular (MAI)?**
- (a) Vancomycin  
(b) Clarithromycin  
(c) Erythromycin base  
(d) Troleandomycin  
(e) Erythromycin estolate
- 89. The most important mechanism of bacterial resistance to an aminoglycoside antibiotic is**
- (a) Plasmid mediated acquisition of aminoglycoside conjugating enzyme  
(b) Mutational acquisition of aminoglycoside hydrolyzing enzyme  
(c) Mutation reducing affinity of ribosomal protein for the antibiotic  
(d) Mutational loss of porin channels
- 90. Which toxic effect of aminoglycoside antibiotics is most irreversible in nature ?**
- (a) Vestibular damage  
(b) Hearing loss  
(c) Neuromuscular blockade  
(d) Kidney damage
- 91. Streptomycin sulfate is not absorbed orally because it is**
- (a) Degraded by gastrointestinal enzymes  
(b) Destroyed by gastric acid  
(c) Highly ionized at a wide range of pH values  
(d) Insoluble in water
- 92. The aminoglycoside antibiotic which is distinguished by its resistance to bacterial aminoglycoside inactivating enzymes is**
- (a) Kanamycin (b) Sisomicin  
(c) Amikacin (d) Tobramycin
- 93. An aminoglycoside antibiotic should not be used concurrently with the following drug**
- (a) Ampicillin (b) Vancomycin  
(c) Ciprofloxacin (d) Rifampin
- 94. All of the following statements regarding pentamidine isethionate are true except**
- (a) it is indicated for treatment or prophylaxis of infection due to Pneumocystis carinii  
(b) it may be administered intramuscularly, intravenously or by inhalation  
(c) it has no clinically significant effect on serum glucose  
(d) it is effective in the treatment of leishmaniasis

- 95. Prolonged oral therapy with the following antibiotic can damage intestinal villi resulting in statorrhoea and loose motions**
- (a) Ampicillin (b) Tetracycline  
(c) Neomycin (d) Nystatin
- 96. Hepatitis with cholestatic jaundice occurs most frequently as an adverse reaction to the following preparation of erythromycin**
- (a) Erythromycin base  
(b) Erythromycin stearate  
(c) Erythromycin estolate  
(d) Erythromycin ethylsuccinate
- 97. The following antibiotic is a first line drug for treatment of Mycobacterium avium complex infection in AIDS patients**
- (a) Clindamycin (b) Clarithromycin  
(c) Roxithromycin (d) Erythromycin
- 98. Roxithromycin has the following advantages over erythromycin except**
- (a) It is more effective in whooping cough  
(b) It causes less gastric irritation  
(c) It has longer plasma half-life  
(d) It is unlikely to precipitate theophylline toxicity
- 99. Highest incidence of antibiotic associated pseudo membranous enterocolitis has been noted with the use of**
- (a) Ampicillin (b) Chloramphenicol  
(c) Vancomycin (d) Clindamycin
- 100. The drug of choice for treatment of methicillin resistant Staphylococcus aureus infection is**
- (a) Cloxacillin (b) Vancomycin  
(c) Erythromycin (d) Amikacin
- 101. 'Red man syndrome' has been associated with rapid intravenous injection of the following antibiotic**
- (a) Vancomycin (b) Clindamycin  
(c) Cefoperazone (d) Piperacillin
- 102. Clarithromycin is used for the following**
- (a) Multidrug resistant M.tuberculosis infection  
(b) M.avium complex infection in AIDS patient  
(c) M.tuberculosis infection in a patient who develops jaundice due to first line antitubercular drugs  
(d) Both (a) and (b)
- 103. A 23-year-old male with a history of influenza A infection. An outbreak of influenza A has just been reported in his community and he is exhibiting initial symptoms of influenza A. Which agent would be the most useful to treat him?**
- (a) Cidofovir (b) Famciclovir  
(c) Rimantidine (d) Foscarnet  
(e) Ribavirin
- 104. Addition of clavulanic acid to amoxicillin is to**
- (a) Decrease the renal excretion of amoxicillin  
(b) Enhance the anti-bacterial activity of amoxicillin  
(c) Decrease the biotransformation of amoxicillin  
(d) To increase oral absorption of amoxicillin
- 105. The aminoglycoside that can be used in amoebiasis is**
- (a) Paromomycin (b) Framycetin  
(c) Amikacin (d) Netilmicin
- 106. Tetracyclines are avoided in pregnancy because they can**
- (a) Cause abortions  
(b) Cause excessive postpartum hemorrhage  
(c) Affect the bones and teeth of the fetus  
(d) Cause excessive vomiting in the mother
- 107. Ciprofloxacin inhibits the bacterial enzyme**
- (a) Transpeptidase  
(b) DNA gyrase  
(c) DNA dependent RNA polymerase  
(d) Dihydrofolate reductase
- 108. Erythromycin is the drug of choice in**
- (a) Pertussis  
(b) Gonococcal urethritis  
(c) Prophylaxis of bacterial endocarditis  
(d) Chlamydial infections

**109. Cyclosporine**

- (a) Is derived from a bacterium
- (b) Has a selective inhibitory effect on T-lymphocytes
- (c) Is not absorbed orally
- (d) Is excreted unchanged from the body

**110. Tetracycline is stored in the body in**

- (a) Protein bound form
- (b) In hairs, nails and skin
- (c) In muscular tissues
- (d) In bones

**111. Drug which interfere with the bacterial cell wall synthesis is**

- (a) Chloramphenicol
- (b) Tetracyclines
- (c) Colistin
- (d) Penicillins and cephalosporins

**112. Antibiotic(s) which inhibit the protein synthesis in cells is/are**

- (a) Sulphonamides and PAS
- (b) Isonized and PAS
- (c) Tetracyclines and chloramphenicol
- (d) Penicillin and cephalosporins

**113. Penicillins are not effective against**

- (a) Gram-positive cocci
- (b) Gram-positive bacilli
- (c) Gram-negative bacilli
- (d) Gram-negative cocci

**114. Pseudomonas aeruginosa organism is always sensitive to**

- (a) Streptomycin
- (b) Colistin
- (c) Penicillin
- (d) Tetracyclines

**115. Drug of choice for Brucella infection is**

- (a) Tetracycline
- (b) Gentamycin
- (c) Ampicillin
- (d) Sulfonamides

**116. Streptomycin is more active at**

- (a) pH 5.5 than pH 8.5 of urine
- (b) pH 8.5 than pH 5.5 of urine
- (c) Equally active at all pH of urine
- (d) All of the above

**117. Dr. Jones requests your help in prescribing a protease inhibitor for his patient. He has heard that not all agents are the same and asks for your recommendation as to which agent would penetrate the blood-brain barrier. Which agent would you recommend?**

- (a) Saquinavir
- (b) Ritonavir
- (c) Indinavir
- (d) Nelfinavir
- (e) Amprenavir

**118. Which of the following agents is not a broad spectrum antibiotic**

- (a) Ampicillin
- (b) Tetracycline
- (c) Chlormphenicol
- (d) Gentamycin

**119. Probenacid increases the plasma concentration of penicillin because**

- (a) It blocks the renal tubular excretion of penicillin
- (b) It prevents the metabolism of penicillin
- (c) It displaces penicillin from protein binding sites and thus increases free drug concentration
- (d) It acts by all above mechanisms

**120. Benzylpenicillin is not used orally because**

- (a) It is destroyed by acid in stomach and absorption is also incomplete
- (b) It is well absorbed from intestine but is unpredictable
- (c) It produces severe diarrhoea on oral administration
- (d) All of the above

**121. Penicillins should not be given by**

- (a) Intramuscular route
- (b) Intravenous route
- (c) Intrathecal route
- (d) Intra-articular route

**122. Anaphylactic shock to penicillin occurs**

- (a) Almost at once after administration
- (b) Between 6 to 12 hrs of administration
- (c) Between 4 to 6 hrs of administration
- (d) After 12 hrs of administration

- 123. Drugs usually active against penicillinase producing *Staphylococcus aureus* include which of the following?**
- Timentin (ticarcillin-clavulanate)
  - Augmentin (amoxicillin-clavulanate)
  - Oxacillin
- Only I is correct
  - Only III is correct
  - I and II are correct
  - II and III are correct
  - I, II and III are correct
- 124. Cephalosporins**
- Are more vulnerable to beta-lactamase enzyme
  - Are less vulnerable to beta-lactamase enzyme
  - Do not possess beta lactam ring
  - Have multiple beta lactam rings
- 125. Which of the following antibiotics possess neuromuscular blocking action**
- Ampicillin
  - Streptomycin
  - Chloramphenicol
  - Sulphonamides
- 126. Oral neomycin and streptomycin are used for sterilization of bowel and for dysentery because**
- They are least absorbed from oral route
  - The peak concentration in blood is achieved quickly
  - They are least toxic to G.I.T
  - None of the above
- 127. Chloramphenicol is the drug of choice in**
- Staphylococcal infection
  - Salmonella infection
  - Viral infection
  - Amoebic dysentery
- 128. Drug of choice for ringworm infection is**
- Griseofulvin
  - Amphotericin B
  - Nystatin
  - Neomycin
- 129. In renal failure safest tetracycline is**
- Oxytetracycline
  - Chlortetracycline
  - Doxycycline
  - Demethyl chlortetracycline
- 130. Penicillin was first used clinically for systemic infections in the year**
- 1926
  - 1935
  - 1941
  - 1957
- 131. Antiviral agents that are active against cytomegalovirus (CMV) include which of the following?**
- Ganciclovir
  - Foscarnet
  - Acyclovir
- Only I is correct
  - Only III is correct
  - I and II are correct
  - II and III are correct
  - I, II and III are correct
- 132. Which of the following is a steroidal antibiotic**
- Nalidixic acid
  - Fusidic acid
  - Spectinomycin
  - Nitrofurantoin
- 133. The antibiotic that enters brain freely is**
- Tetracycline
  - Erythromycin
  - Chloramphenicol
  - Gentamicin
- 134. The tetracycline safe in renal failure is**
- Digoxin
  - Furosemide
  - Enalapril
  - Amrinone
- 135. The semisynthetic penicillin which is destroyed by acid is**
- Phenoxymethyl penicillin
  - Ampicillin
  - Carbenicillin
  - Coxacillin
- 136. Why benzyl penicillin is ineffective in gram negative infections ?**
- Is destroyed by penicillinase of gram negative organisms
  - Gram negative organisms donot utilize D-alanine whose incorporation is inhibited by benzyl penicillin
  - The lipoprotein – peptidoglycan cell wall of gram negative organisms prevents entry of penicillin
  - All of the above

**ANSWERS**

1. a	2. b	3. e	4. e	5. d	6. c
7. d	8. c	9. c	10. a	11. b	12. c
13. d	14. d	15. c	16. a	17. c	18. d
19. d	20. b	21. d	22. e	23. b	24. a
25. d	26. b	27. d	28. e	29. c	30. d
31. c	32. c	33. c	34. c	35. d	36. b
37. c	38. c	39. d	40. c	41. b	42. c
43. d	44. d	45. c	46. a	47. b	48. b
49. b	50. a	51. b	52. b	53. a	54. c
55. b	56. b	57. c	58. d	59. c	60. b
61. c	62. a	63. d	64. b	65. c	66. a
67. a	68. b	69. b	70. d	71. d	72. a
73. a	74. b	75. a	76. b	77. c	78. b
79. d	80. a	81. a	82. a	83. d	84. b
85. c	86. a	87. c	88. b	89. a	90. b
91. c	92. c	93. b	94. c	95. c	96. c
97. b	98. a	99. d	100. b	101. a	102. b
103. c	104. b	105. a	106. c	107. b	108. a
109. b	110. d	111. d	112. c	113. c	114. c
115. d	116. b	117. d	118. d	119. a	120. a
121. b	122. a	123. e	124. b	125. b	126. a
127. b	128. a	129. c	130. c	131. c	132. b
133. c	134. b	135. c	136. c		

**EXPLANATIONS FOR THE ANSWERS**

1. a Isoniazid increases the excretion of pyridoxine, which can lead to peripheral neuritis, particularly in poorly nourished patients. Pyridoxine (a form of vitamin B6) deficiency may cause convulsions as well as the neuritis, involving synovial tenderness and swelling. Treatment with the vitamin can reverse the neuritis and prevent or cure the seizures.
13. d Trough serum levels below 2 mg/ml are considered appropriate for gentamicin and are recommended to minimize the risk of toxicity from this aminoglycoside. Because aminoglycosides accumulate in the proximal tubule of the kidney, nephrotoxicity can occur.
24. a Seizures have been attributed to the use of penicillin G, imipenem, amphotericin B and metronidazole. Seizures are especially likely with high doses in patients with a history of seizures and in patients with impaired drug elimination.
37. c Although active against various gram-negative organisms, spectinomycin is approved only for the treatment of gonorrhea and is particularly recommended for treatment of uncomplicated forms of the disease.
43. d The fever curve is very useful for monitoring a patient's response to antimicrobial therapy. Antipyretics can be used to reduce high fever in patients at risk for complications (e. g., seizures) or in some cases to make the patient more comfortable.
55. b Amoxicillin, ampicillin and cycloacillin are all penicillins and should be avoided in patients with histories of hypersensitivity to other penicillin compounds. Although the risk of cross-reactivity with cephalosporins (e. g., cefaclor)

- is now considered very low, most clinicians avoid the use of these agents in patients with histories of type I hypersensitivity reactions (e.g., anaphylaxis, bronchospasm, giant hives)
60. b Norfloxacin, ciprofloxacin, carbenicillin and methenamine mandelate achieve urine concentrations high enough to treat urinary tract infections due to *Pseudomonas aeruginosa*. Trimethoprim-sulfamethoxazole is not useful for treating infections due to this organism, although the combination is useful for treating certain other urinary tract infections.
73. a Although vancomycin, methicillin and cefazolin have excellent activity against staphylococci, they are not effective orally for systemic infections. Vancomycin is prescribed orally for infections limited to the gastrointestinal tract, but because it is poorly absorbed orally, it is not effective for systemic infections. Most hospital and community acquired staphylococci are currently resistant to penicillin V. Thus, of the drugs listed in the question, the most appropriate drug for oral therapy of staphylococcal cellulites is dicloxacillin.
88. b Clarithromycin, an alternative to erythromycin, has demonstrated in vitro activity against *Mycobacterium avium-intracellulare* (MAI). Clarithromycin is also used against *Toxoplasma gondii* and *Cryptosporidium* species, and it is more active than erythromycin against staphylococci and streptococci. Vancomycin is used to treat staphylococci and streptococci, but has no demonstrated activity versus MAI. Troleandomycin is similar to erythromycin but is generally less active against these organisms.
94. c Pentamidine isethionate is indicated for both treatment and prophylaxis of infection due to *Pneumocystis carinii*. It can be administered intramuscularly, intravenously or by inhalation. Inhalation may produce bronchospasm. Blood glucose should be carefully monitored because pentamidine may produce either hyperglycemia or hypoglycemia.
103. c Cidofovir, famciclovir and foscarnet have little or no in vivo activity against influenza A. Ribavirin has some activity but is a second line agent for influenza A and is mainly indicated for treatment of RSV. Rimantidine is a derivative of amantidine with excellent activity against influenza A. It is indicated for the prophylaxis and treatment of influenza A viral infections.
117. d All are protease inhibitors, but only nelfinavir has been shown to cross the blood-brain barrier, a known reservoir for HIV viruses.
123. e Timentin and Augmentin each include a  $\beta$ -lactamase inhibitor, combined with ticarcillin and amoxicillin respectively. These combinations offer activity against *Staphylococcus aureus* similar to that of the penicillinase-resistant penicillins, such as oxacillin.
131. c Only ganciclovir and foscarnet are active against cytomegalovirus (CMV) infections. These agents are virustatic and arrest DNA synthesis by inhibiting viral DNA polymerase. Although ganciclovir in the treatment of CMV infections in the CNS has not been successful. Foscarnet is a broad-spectrum antiviral agent and is used in patients with ganciclovir resistance. Acyclovir is not clinically useful for the treatment of CMV infections because CMV is relatively resistant to acyclovir in vitro.



# CHAPTER 9

## DRUGS USED IN GASTROINTESTINAL TRACT DISORDERS

- 1. Which of the following is most effective in the treatment of peptic ulcer disease?**
  - (a) Bromocriptine
  - (b) Cimetidine
  - (c) Ergotamine
  - (d) Ketanserin
  - (e) LSD
- 2. Which laxative should not be used to treat acute constipation because of its slow onset of action?**
  - (a) Glycerin
  - (b) Bisacodyl suppository
  - (c) Psyllium
  - (d) Milk of magnesia
- 3. Which of the following—if given intravenously—will cause increased gastrointestinal motility and diarrhea?**
  - (a) Angiotensin II
  - (b) Bethanechol
  - (c) Bradykinin
  - (d) Renin
  - (e) All of the above
- 4. A peptide that causes increased capillary permeability and edema is**
  - (a) Angiotensin II
  - (b) Bradykinin
  - (c) Captopril
  - (d) Histamine
  - (e) Losartan
- 5. A vasodilator that can be inactivated by proteolytic enzymes is**
  - (a) Angiotensin I
  - (b) Isoproterenol
  - (c) Histamine
  - (d) Neuropeptide Y
  - (e) Vasoactive intestinal peptide
- 6. Which of the following is released in traumatized tissue, causes pain and edema, and is inactivated by angiotensin converting enzyme?**
  - (a) Angiotensin I
  - (b) Angiotensin II
  - (c) Atrial natriuretic peptide
  - (d) Bradykinin
  - (e) Calcitonin gene-related peptide
- 7. Which of the following is a decapeptide precursor of a vasoconstrictor substance?**
  - (a) Angiotensin I
  - (b) Angiotensin II
  - (c) Atrial natriuretic peptide
  - (d) Bradykinin
  - (e) Calcitonin gene-related peptide
- 8. Which is not a risk factor for hyperphosphatemia and death from sodium phosphate enemas when used in children?**
  - (a) Renal insufficiency
  - (b) Hirschsprung's disease
  - (c) Anorectal malformations
  - (d) Children 6 to 12 years of age
- 9. Which of the following is the most potent vasodilator discovered to date and is found in high concentration in the thyroid?**

- (a) Angiotensin I  
 (b) Angiotensin II  
 (c) Atrial natriuretic peptide  
 (d) Bradykinin  
 (e) Calcitonin gene-related peptide
- 10. Which of the following statements adequately describes bulk-forming laxatives?**
- (a) Can cause diarrhea if not taken with water  
 (b) Are derived from polysaccharides and resemble fiber (bran) in mechanism of action  
 (c) Onset of action is in 4–8 hours  
 (d) Produce much more complete evacuation of constipation than stimulant products
- 11. Cardiac arrhythmias have occurred when this drug was used by patients taking the gastrointestinal promotility agent cisapride**
- (a) Amphotericin B    (b) Clotrimazole  
 (c) Griseofulvin    (d) Ketoconazole  
 (e) Voriconazole
- 12. Metronidazole is least likely to be effective in the treatment of**
- (a) Amebiasis    (b) Giardiasis  
 (c) Pneumocystosis    (d) Pseudomembranous colitis  
 (e) Trichomoniasis
- 13. Which of the following statements about non-drug therapies for acute diarrhea is not correct?**
- (a) Breast feeding should be continued as normal  
 (b) Even if the patient is not vomiting, food should be withheld for 6–12 hours  
 (c) Fluids can be given to patients who experience vomiting, but small amounts of fluid should be used.  
 (d) Replacement fluids mainly consist of water, sugar, potassium, sodium and bicarbonates
- 14. A 2-year-old child was brought to the emergency room 1 hour after ingestion of tablets he had managed to obtain from a bottle on top of the refrigerator. His symptoms included marked gastrointestinal distress, vomiting (with heme-**
- mesis), and epigastric pain. Metabolic acidosis and leukocytosis were also present. This patient is most likely to have ingested tablets containing**
- (a) Acetaminophen  
 (b) Aspirin  
 (c) Diphenhydramine  
 (d) Iron  
 (e) Vitamin C
- 15. A patient is brought to the emergency room suffering from nausea, vomiting, and abdominal pain. He has muscle weakness, which seems to be progressing downward from the head and neck. The patient has difficulty talking clearly and has ptosis and ophthalmoplegia. The most likely cause of these symptoms is**
- (a) Accidental ingestion of paraquat  
 (b) An overdose of phenobarbital  
 (c) Excessive consumption of ethanol  
 (d) Food poisoning  
 (e) Organophosphate poisoning
- 16. A 55-year-old woman with insulin-dependent diabetes of 40 years' duration complains of severe bloating and abdominal distress, especially after meals. Evaluation is consistent with diabetic gastroparesis. The drug you would be most likely to recommend is**
- (a) Docusate    (b) Dopamine  
 (c) Loperamide    (d) Metoclopramide  
 (e) Sucralfate
- 17. A patient who must take verapamil for hypertension and angina has become severely constipated. Which of the following drugs would be most suitable as a cathartic?**
- (a) Aluminum hydroxide  
 (b) Diphenoxylate  
 (c) Magnesium hydroxide  
 (d) Metoclopramide  
 (e) Mineral oil
- 18. Your cousin is planning a three-week trip overseas and asks your advice regarding medications for traveler's diarrhea. A drug suitable for noninfectious diarrhea is**

- (a) Aluminum hydroxide  
(b) Diphenoxylate  
(c) Magnesium hydroxide  
(d) Metoclopramide  
(e) Mineral oil
- 19. Which of the following products should not be used to replenish lost fluids from acute diarrhea?**
- (a) Pedialyte solution  
(b) Kool-Aid  
(c) Gatorade (half-strength diluted with water)  
(d) The World Health Organization (WHO) solution
- 20. A drug associated with the long QT syndrome and cardiac arrhythmias is**
- (a) Aluminum hydroxide  
(b) Cisapride  
(c) Granisetron  
(d) Loperamide  
(e) Metromidazole
- 21. On your way to an examination you experience that vulnerable feeling that an attack of diarrhea is imminent. If you stopped at a drugstore, you could buy this antidiarrheal drug without a prescription even though it is related chemically to the strong opioid – analgesic meperidine**
- (a) Aluminum hydroxide  
(b) Diphenoxylate  
(c) Loperamide  
(d) Magnesium hydroxide  
(e) Metoclopramide
- 22. This antibiotic is not appropriate for use as an oral agent in the treatment of recurrent peptic ulcer associated with *Helicobacter pylori***
- (a) Amoxicillin      (b) Clarithromycin  
(c) Metronidazole    (d) Tetracycline  
(e) Vancomycin
- 23. Which of the following statements about adsorbant drugs used for diarrhea is true?**
- (a) Useful for treatment of severe diarrhea  
(b) Very unsafe because not absorbed systemically  
(c) In general, small doses are needed to relieve diarrhea  
(d) Kaolin is now generally recognized as a safe and effective OTC antidiarrheal agent.
- 24. Which one of the following drugs has no effect on prothrombin but increases the likelihood of bleeding in patients who are also taking warfarin?**
- (a) Carbamazepine    (b) Cholestyramine  
(c) Naproxen          (d) Rifampin  
(e) Vitamin K
- 25. Which one of the following drugs has resulted in severe hematotoxicity when administered to a patient being treated with azathioprine?**
- (a) Allopurinol      (b) Cholestyramine  
(c) Digoxin          (d) Lithium  
(e) Theophylline
- 26. Which one of the following antibodies has the longest half-life?**
- (a) Black widow spider antivenin  
(b) Botulinum antitoxin  
(c) Diphtheria antitoxin  
(d) Hepatitis B immune globulin  
(e) Snake bite antivenin
- 27. Hepatitis B vaccine is least likely to be recommended for prophylactic use in**
- (a) Dialysis patients  
(b) Intravenous drug abusers  
(c) Newborns  
(d) Raw oyster eaters  
(e) Surgeons
- 28. Which of the following statements concerning traveler's diarrhea (TD) is true?**
- (a) TD can usually be avoided by not eating raw vegetables, seafood or eggs when traveling to third-world countries  
(b) TD can be prevented by taking one dose of antibiotic 1 day before a trip

- (c) A specific of *Helicobacter pylori* is the primary pathogen responsible for TD
- (d) Phillip's milk of magnesia is used to prevent/treat TD
- 29. Dietary supplementation with DHEA is best documented to have therapeutic value in the treatment of**
- (a) Acne  
(b) Diabetes insipidus  
(c) Hirsutism in female patient  
(d) Postmenopausal osteoporosis  
(e) Systemic lupus erythematosus
- 30. Which one of the following compounds has been shown to have value in managing symptoms of jet lag?**
- (a) DHEA (b) Garlic  
(c) Ginseng (d) Melatonin  
(e) Sassafras
- 31. A patient with Zollinger–Ellison syndrome has been receiving high doses of cimetidine for 7 weeks. A frequent adverse effect of cimetidine is**
- (a) Agranulocytosis  
(b) Systemic lupus erythematosus  
(c) Inhibition of hepatic metabolism of other drugs  
(d) Antiestrogenic effects  
(e) Hypertension
- 32. Most weak acid drugs as well as weak base drugs are absorbed primarily from the small intestine after oral administration because**
- (a) Both types are more ionized in the small intestine  
(b) Both types are less ionized in the small intestine  
(c) The blood flow is greater in the small intestine than that of other parts of the gut  
(d) The surface area of the small intestine is greater than other parts of the gut  
(e) The small intestine has nonspecific carriers for most drugs
- 33. A patient with a 30-year history of type 1 diabetes comes to you with a complaint of bloating and sour bleaching after meals. On several occasions, vomiting has occurred after a meal. Evaluation reveals delayed emptying of the stomach, and you diagnose diabetic gastro paresis. Which of the following drugs would be most useful in this patient?**
- (a) Famotidine (b) Metoclopramide  
(c) Misoprostol (d) Omeprazole  
(e) Ondansetron
- 34. Which one of the following agents is least likely to protect the upper gastrointestinal tract from ulcer formation?**
- (a) Antacids (b) Celecoxib  
(c) Cimetidine (d) Misoprostol  
(e) Sucralfate
- 35. This agent is the drug of choice in severe amebic disease and for hepatic abscess. It is activated to toxic intermediates by the pyruvate – ferredoxin oxidoreductase enzyme system present in the parasite.**
- (a) Diloxanide furoate  
(b) Emetine  
(c) Iodoquinol  
(d) Metronidazole  
(e) Paromomycin
- 36. All of the following agents are considered close to ideal laxatives except**
- (a) emollient laxatives  
(b) bulk-forming laxatives  
(c) fiber  
(d) stimulant laxatives
- 37. Which solution is used as an astringent?**
- (a) Strong iodine solution USP  
(b) Aluminum acetate topical solution USP  
(c) Acetic acid NE  
(d) Aromatic ammonia spirit USP  
(e) Benzalkonium chloride
- 38. Mechanistically, which of the following drugs will decrease stomach acid secretion by blockade of H<sub>2</sub> histaminic receptors?**
- (a) Pyrilamine (b) Hydroxyzine  
(c) Cisapride (d) Omeprazole  
(e) Ranitidine

- 39. Lansoprazole would be effective in the treatment of**
- (a) Gastroesophageal reflux disease
  - (b) Peptic ulcer disease
  - (c) Zollinger-Ellison syndrome
  - (d) All of the above
  - (e) None of the above
- 40. All of the following statements about stool softeners are true except**
- (a) There is minimal systemic absorption
  - (b) the onset of action is usually 1–2 days
  - (c) they are useful in patients with constipation who have experienced an acute myocardial infarction
  - (d) they can be taken with little or no water
- 41. All of the following statements adequately describe bulk-forming laxatives except**
- (a) they produce a much more complete evacuation of constipation than stimulant products
  - (b) they can cause constipation if not taken with water
  - (c) they are derived from polysaccharides and resemble fiber (bran) in the mechanism of action
  - (d) the onset of action is 24–72 hours
- 42. Which of the following statements adequately describes bulk-forming laxatives?**
- (a) Can cause diarrhea if not taken with water
  - (b) Are derived from polysaccharides and resemble fiber (bran) in mechanism of action
  - (c) Onset of action is in 4–8 hours
  - (d) Produce much more complete evacuation of constipation than stimulant products
- 43. Which of the following statements about adsorbent drugs used for diarrhea is true?**
- (a) Useful for treatment of severe diarrhea
  - (b) Very safe because not absorbed systemically
  - (c) In general, small doses are needed to relieve diarrhea
  - (d) Kaolin and pectin are considered to be very effective (category I) adsorbents
- 44. Which of the following statements concerning traveler's diarrhea (TD) is true?**
- (a) TD can usually be avoided by not eating raw vegetables, seafood, or eggs when traveling to third-world countries.
  - (b) TD can be prevented by taking one dose of antibiotic one day before a trip
  - (c) A species of *Helicobacter pylori* is the primary pathogen responsible for TD
  - (d) Phillip's Milk of Magnesia is used to prevent / treat TD
- 45. All of the following statements about stool softeners are true except**
- (a) There is minimal systemic absorption
  - (b) The onset of action is usually 1–2 days
  - (c) They are useful in patients with constipation who have experienced an acute myocardial infarction
  - (d) They can be taken with little or no water
- 46. Which of the following is an appropriate non-pharmacologic recommendation for patients with gastroesophageal reflux disease (GERD)?**
- (a) Eat larger but fewer meals
  - (b) Avoid meals high in protein
  - (c) Eat evening meals at least 3 hours before bed
  - (d) Prop a patient's head up with 2 pillows at night
- 47. Which of the following organisms has been implicated as a possible cause of chronic gastritis and peptic ulcer disease?**
- (a) *Campylobacter jejuni*
  - (b) *Escherichia coli*
  - (c) *Helicobacter pylori*
  - (d) *Calymmatobacterium granulomatis*
  - (e) *Giardia lamblia*
- 48. A patient suffering from acute infectious diarrhea caused by *Shigella* can be managed in all of the following ways except**
- (a) no treatment because signs and symptoms usually resolve in 48 hours

- (b) use of glucose solutions (e.g., soda, apple juice) to settle the stomach and decrease the number of stools
- (c) avoiding food for at least 6 hours, then slowly increasing fluid intake.
- (d) using antibiotics (e.g. Bactrim, doxycycline) for 7 days
- 49. As part of a comprehensive management strategy to treat peptic ulcer disease, patients should be encouraged to do all of the following except**
- (a) Decrease caffeine ingestion
- (b) Eat only bland foods
- (c) Stop smoking
- (d) Avoid alcohol
- (e) Avoid the use of milk as a treatment modality
- 50. A gastric ulcer patient requires close follow-up to document complete ulcer healing because**
- (a) Perforation into the intestine is common
- (b) Spontaneous healing of the ulcer may occur in 30% – 50% of cases
- (c) There is the risk of the ulcer being cancerous
- (d) Symptoms tend to be chronic and recur
- (e) Weight loss may be severe in gastric ulcer patients
- 51. For each effect, select the agent that is most likely associated with it**
- (a) Sodium bicarbonate
- (b) Aluminum hydroxide
- (c) Calcium carbonate
- (d) Magnesium hydroxide
- (e) Propantheline
- (1) May cause diarrhea
- (2) Cannot be used by patients with heart failure
- (3) Use with milk and an alkaline substance can cause milk-alkali syndrome
- (4) May cause dry mouth
- (5) Can be alternated with an antacid mixture to control diarrhea
- 52. Aluminum hydroxide is used to treat hyperphosphatemia associated with renal failure. Chronic use of aluminum hydroxide may cause all of the following conditions except**
- (a) Phosphate depletion
- (b) Calcium resorption and bone demineralization
- (c) Anorexia and constipation
- (d) Fluid retention
- 53. Which local anesthetic should be used to treat symptoms of pain, itching, burning and discomfort in patients with an established lidocaine allergy?**
- (a) Tetracaine                      (b) Dibucaine
- (c) Pramoxine                      (d) Benzocaine
- 54. Which of the following agents is most useful for carcinoma of the liver?**
- (a) Vinblastine                      (b) Floxuridine (FUDR)
- (c) Vincristine                      (d) Cytarabine (Cytosar)
- (e) Mercaptopurine
- 55. All of the following vasoconstrictors are deemed safe and effective for the temporary relief of itching and swelling except**
- (a) ephedrine 0.1% – 1.25%
- (b) epinephrine 0.005% – 0.01%
- (c) phenylpropanolamine 1% – 10%
- (d) phenylephrine 0.25%
- 56. Bisacodyl frequently can cause**
- (a) Abdominal cramps
- (b) Constipation
- (c) Skin rashes
- (d) Dizziness
- (e) Nauseas



**ANSWERS**

1. c	2. c	3. b	4. b	5. e	6. d
7. a	8. d	9. e	10. b	11. d	12. c
13. b	14. d	15. d	16. d	17. c	18. b
19. b	20. b	21. c	22. e	23. d	24. c
25. a	26. d	27. d	28. a	29. e	30. d
31. c	32. d	33. b	34. b	35. d	36. d
37. b	38. e	39. d	40. d	41. a	42. b
43. b	44. a	45. d	46. c	47. c	48. b
49. b	50. c	51. 1.d, 2.a, 3.c, 4.e, 5.b		52. d	53. c
54. b	55. c	56. a			

**EXPLANATIONS FOR THE ANSWERS**

1. c Glycerin and the bisacodyl suppository all produce stools in one-half hour to a few hours, whereas psyllium, a bulk-forming laxative, produces stool in 24–72 hours in the same manner as a normal bolus of food or fiber.
8. d The popular sodium phosphate enemas (e.g., fleet) are very effective but have resulted in hyperphosphatemia, hypocalcemia (tetany), hypokalemia, metabolic acidosis and cardiac death usually due to conduction abnormalities in very small children. This has mainly occurred in children younger than 2 years of age or between 2 and 5 years of age with predisposing factors. These factors include chronic renal disease, anorectal disease, anorectal malformations, and/or Hirschsprung's disease, which allow phosphate blood concentrations to become abnormally
10. b Stimulant products result in a quicker, more complete and often more violent evacuation of the bowel than do the bulk-forming agents. Bulk forming agents are developed from complex sugars, similar to fiber, that provide bulk to increase gastrointestinal motility and water absorption into the bowel. However, patients must drink plenty of water to facilitate the absorption of water into the bowel, or they may become more constipated.
13. b Treating acute diarrhea is the replacement of lost fluids. If severe vomiting persists, then patients may need intra-venous rehydration.
- Earlier Parents were told that children should not receive food, milk-products or breast milk for 6–68 hours after the onset of diarrhea, but recent information shows that children should remain on their normal diet or breast feeding during episodes of diarrhea because these do not make the diarrhea worse and may actually improve the diarrhea.
19. b Replacement fluids for diarrhea should contain the appropriate amount of electrolytes ( $K^+$ ,  $Na^+$ ,  $Cl^-$ , citrate) and glucose per specified amount of water as found in commercially available oral-rehydration. The World Health Organization (WHO) solution can provide necessary ingredients. In addition, one-half-strength Gatorade will provide necessary electrolytes and glucose. Kool-Aid does not contain potassium. Carbonated beverages are low in potassium, and some are too high in glucose.
23. d Adsorbents are not effective for severe diarrhea because they simply cannot adsorb enough water and do not reverse the cause of the diarrhea. Large doses may decrease symptoms. Of all the adsorbents, kaolin is the most effective and is now recognized by the FDA as safe and effective. All adsorbents are safe because they are not adsorbed systemically.
28. a Traveler's diarrhea (TD) primarily is caused by bacteria. Prophylaxis and treatment regimens include oral antibiotics and bismuth subsalicylate. *Helicobacter pylori* is the organisms shown to contribute to refractory peptic ulcer disease.



36. d The ideal laxative is natural and produces stool on a regular basis. The product produces stool quickly without adverse effects such as abdominal cramping or the formation of a hard stool, which may be difficult to pass. Products such as fiber or bulk-forming agents produce a stool similar to a bolus of food, without adverse effects. Emollient laxatives produce soft stools without difficult defecation. Stimulants produce a stool quickly, but patients often experience severe abdominal cramping and hard stools.
40. d Stool softeners are safe and do not produce any adverse systemic effects. Because stool softeners work as surfactants, they allow absorption of water into the stool, which makes stool softer and easier to pass. These products are useful in patients who should avoid.
41. a Stimulant products result in a quicker, more complete and often more violent evacuation of the bowel than do the bulk-forming agents are developed from complex sugars, similar to fiber, that provide bulk to increase gastrointestinal motility and increase water absorption into the bowel. However, patients must drink plenty of water to facilitate the absorption of water into the bowel, or they may become more constipated.
48. b Giving highly osmotic solutions of glucose can result in more water absorbed into the intestinal tract and, thus further diarrhea. Many cases of diarrhea resolve within 48 hours without treatment. People with diarrhea can avoid food for at least 6 hours, then increase their fluid intake slowly. Severe cases of infectious diarrhea can be treated with antibiotic or antiprotozoals, depending on the organism that caused the episode.
53. c Due to its chemically distinct structure, promoxine exhibits less cross-sensitivity when compared to the other anesthetics and should be used in patients with a lidocaine allergy.
55. c Vasoconstrictors deemed safe and effective by the FDA are ephedrine HCl 0.1% – 1.25%, epinephrine HCl 0.005% – 0.01% and phenylephrine HCl 0.25%.

# CHAPTER 10

## OXYTOCICS & UTERINE MUSCLE RELAXANTS

- 1. A 29-year-old woman who was in her 41<sup>st</sup> week of gestation had been in labor for 12 hours. Although her uterine contractions had been strong and regular initially, they had diminished in force during the past hour. Which of the following drugs would be administered to facilitate this woman's labor and delivery?**
  - (a) Dopamine
  - (b) Leuprolide
  - (c) Oxytocin
  - (d) Prolactin
  - (e) Vasopressin
- 2. Which one of the following agents is not used in oral or implantable contraceptives?**
  - (a) Clomiphene
  - (b) Ethinyl estradiol
  - (c) Mestranol
  - (d) Norethindrone
  - (e) Norgestrel
- 3. All of the following are recognized effects of combined oral contraceptives except**
  - (a) Breakthrough bleeding
  - (b) Decreased risk of endometrial cancer
  - (c) Increased risk of ischemic stroke
  - (d) Increased risk of ovarian cancer
  - (e) Nausea
- 4. A 50-year-old woman with a positive mammogram undergoes lumpectomy and a small carcinoma is removed. Bio-chemical analysis of the cancer reveals the presence of estrogen and progesterone receptors. After this procedure, she will probably receive**
  - (a) Danazol
  - (b) Flutamide
  - (c) Leuprolide
  - (d) Mifepristone
  - (e) Tamoxifen
- 5. A young woman complains of severe abdominal pain at the time of menstruation. Careful evaluation indicates the presence of significant endometrial deposits on the pelvic peritoneum. The most appropriate therapy for this patient would be**
  - (a) Flutamide, orally
  - (b) Medroxyprogesterone acetate by intramuscular injection
  - (c) Norgestrel as an implant
  - (d) Oxandrolone by intramuscular injection
  - (e) Raloxifene orally
- 6. Diethylstilbestrol should never be used in pregnant women because it is associated with**
  - (a) Development of deep vein thrombosis in the pregnant woman
  - (b) Feminization of the external genitalia of male offspring
  - (c) Infertility and development of vaginal cancer in female offspring
  - (d) Miscarriage
  - (e) Virilization of the external genitalia of female offspring

- 7. Finasteride has efficacy in the prevention of male-pattern baldness by virtue of its ability to**
- Competitively antagonize androgen receptors
  - Decrease the release of gonadotropins
  - Increase the serum concentration of SHBG
  - Inhibit the synthesis of testosterone
  - Reduce the production of dihydrotestosterone
- 8. A 52-year-old postmenopausal patient has evidence of low bone mineral density. She and her physician are considering therapy with raloxifene or a combination of conjugated estrogens and medroxyprogesterone acetate. Which of the following patient characteristics is most likely to lead them to select raloxifene?**
- Previous hysterectomy
  - Recurrent vaginitis
  - Rheumatoid arthritis
  - Strong family history of breast cancer
  - Troublesome hot flashes
- 9. Following delivery of a healthy baby, a young woman begins to bleed extensively because her uterus has failed to contract. Which one of the following drugs should be administered to this woman?**
- Desmopressin
  - Octreotide
  - Oxytocin
  - Prolactin
  - Triamcinolone
- 10. Raloxifene is a selective estrogen receptor modulator (SERM). Its characteristic properties make the drug most suitable for treatment of a female patient who**
- Decides to start using an oral contraceptive
  - Has postmenopausal osteoporosis and is at risk for breast cancer
  - Needs postcoital contraception
  - Suffers from hirsutism
  - Wants a therapeutic abortion
- 11. Select the drug which can improve urinary flow rate in benign prostatic hypertrophy without affecting prostate size**
- Amphetamine
  - Prazosin
  - Finasteride
  - Goserelin
- 12. The drug used for cervical priming to facilitate labour is**
- Oxytocin
  - Stillboestrol
  - Progesterone
  - Prostaglandin E<sub>2</sub>

## ANSWERS

- |      |      |      |       |       |       |
|------|------|------|-------|-------|-------|
| 1. c | 2. a | 3. d | 4. e  | 5. b  | 6. c  |
| 7. e | 8. d | 9. c | 10. b | 11. b | 12. d |

# CHAPTER 11

## CHEMOTHERAPY

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- 1. Twenty months after finishing her chemotherapy, the woman had a relapse of breast cancer. The cancer was now unresponsive to standard doses of chemotherapy. The decision was made to treat the patient with high-dose chemotherapy followed by autologous stem cell transplantation. Which of the following drugs is most likely to be used to mobilize the peripheral blood stem cells for the patient's autologous stem cell transplantation?**
  - Erythropoietin
  - G – CSF
  - Interleukin - 11
  - Intrinsic factor
  - Thrombopoietin
- 2. The combination of trimethoprim and sulfamethoxazole is effective against which one of the following opportunistic infections in the AIDS patient?**
  - Disseminated herpes simplex
  - Cryptococcal meningitis
  - Toxoplasmosis
  - Oral candidiasis
  - Tuberculosis
- 3. The top four most commonly diagnosed cancers include all of the following except**
  - Lung
  - Prostate
  - Colon and rectum
  - Thyroid
  - Breast
- 4. A 31-year-old man has gonorrhea. He has no drug allergies, but he recalls that a few years ago while in Africa he had acute hemolysis following use of an antimalarial drug. The physician is concerned that the patient has an accompanying urethritis due to *C trachomatis*, though no cultures or enzyme tests have been performed. Which of the following drugs is most likely to be effective against gonococci and to eradicate *C trachomatis* in this patient?**
  - Cefixime
  - Ciprofloxacin
  - Ofloxacin
  - Spectinomycin
  - Sulfamethoxazole
- 5. The mechanism by which sulfasalazine exerts its primary action in ulcerative colitis is inhibition of**
  - Folic acid synthesis
  - The formation of leukotrienes and prostaglandins
  - Phospholipase C
  - Proton pump activity
  - The formation of interleukin
- 6. Which one of the following adverse effects is most likely to occur with sulfonamides?**
  - Neurologic effects, including headache, dizziness, and lethargy
  - Hematuria
  - Fanconi's aminoaciduria syndrome
  - Kernicterus in the newborn
  - Skin reaction

- 7. This drug is the preferred agent for treatment of nocardiosis and, in combination with pyrimethamine, is prophylactic against pneumocystis carinii infections in AIDS patients.**
- (a) Ampicillin (b) Clindamycin  
(c) Norfloxacin (d) Sulfadiazine  
(e) Trimethoprim
- 8. Supplementary folic acid may prevent anemia in folate-deficient persons who use this drug; it is a weak base, and achieves tissue levels similar to those in plasma**
- (a) Ciprofloxacin (b) Norfloxacin  
(c) Sulfacetamide (d) Trimethoprim  
(e) Trovafloxacin
- 9. It is now recommended that trovafloxacin be reserved for treatment of life-threatening infections because**
- (a) Bacterial resistance to the drug is very common  
(b) Complete liver failure has occurred  
(c) It is very expensive  
(d) Its use is associated with torsade de pointes  
(e) Nephrotoxicity is dose-limiting
- 10. The primary reason for the use of drug combinations in the treatment of tuberculosis is to**
- (a) Ensure patient compliance with the drug regimen  
(b) Reduce the incidence of adverse effects  
(c) Enhance activity against metabolically inactive mycobacteria  
(d) Delay or prevent the emergence of resistance  
(e) Provide prophylaxis against other bacterial infections
- 11. The mechanism of high - level INH resistance of *M tuberculosis* is**
- (a) Formation of drug-inactivating N-acetyltransferase  
(b) Reduced expression of the katG gene  
(c) Decreased intracellular accumulation of INH  
(d) Mutation in the inhA gene  
(e) Change in the pathway of mucolic acid synthesis
- 12. A patient with AIDS and a CD4 cell count of 100/ $\mu$ L has persistent fever and weight loss associated with invasive pulmonary disease that is due to *M avium* complex. Optimal management of this patient is to**
- (a) Treat with rifabutin, since it prevents the development of MAC bacteremia  
(b) Select an antibiotic regimen based on drug susceptibility of the cultured organism  
(c) Start treatment with INH and pyrazinamide  
(d) Treat the patient with clarithromycin, ethambutol, and rifabutin  
(e) Treat with trimethoprim – sulfamethoxazole
- 13. This drug has been used prophylactically in contacts of children with infection due to *Haemophilus influenzae* type B. It is also prophylactic in meningococcal and staphylococcal carrier states. While the drug eliminates a majority of meningococci from carriers, highly resistant strains may be selected out during treatment**
- (a) Ciprofloxacin (b) Clofazimine  
(c) Dapsone (d) Rifampin  
(e) Streptomycin
- 14. Once-weekly administration of this antibiotic has prophylactic activity against bacteremia due to *M avium* complex in AIDS patients.**
- (a) Azithromycin (b) Clarithromycin  
(c) Isoniazid (d) Kanamycin  
(e) Rifabutin
- 15. Which one of the following drugs is most likely to cause loss of equilibrium and auditory damage?**
- (a) Amikacin  
(b) Ethambutol  
(c) Isoniazid  
(d) Para-aminosalicylic acid  
(e) Rifabutin
- 16. Chemical interactions between this drug and cell membrane components can result in the formation of pores lined by hydrophilic groups present in the drug molecule.**

- (a) Dactinomycin      (b) Griseofluvin  
(c) Fluconazole      (d) Nystatin  
(e) Terbinafine
- 17. Which one of the following statements about fluconazole is most accurate?**
- (a) It is highly effective in treatment of aspergillosis  
(b) It does not penetrate the blood – brain barrier  
(c) Its oral bioavailability is less than that of ketoconazole  
(d) It inhibits demethylation of lanosterol  
(e) It is potent inhibitor of hepatic drug-metabolizing enzymes
- 18. Which one of the following drugs is least likely to be effective in the treatment of esophageal candidiasis, it is used by the oral route?**
- (a) Amphotericin B      (b) Clotrimazole  
(c) Fluconazole      (d) Griseofulvin  
(e) Ketoconazole
- 19. Which one of the following statements about flucytosine is accurate?**
- (a) It is bioactivated by fungal cytosine deaminase  
(b) It does not cross the blood–brain barrier  
(c) It inhibits cytochrome P450  
(d) It is useful in esophageal candidiasis  
(e) It has a wide spectrum of antifungal activity
- 20. Which one of the following drugs is most appropriate for oral use in vaginal candidiasis?**
- (a) Clotrimazole      (b) Griseofluvin  
(c) Fluconazole      (d) Flucytosine  
(e) Nystatin
- 21. Which one of the following statements about the mechanisms of action of antiviral drugs is least accurate?**
- (a) The initial step in activation of famciclovir in HSV-infected cells is its phosphorylation by viral thymidine kinase  
(b) The reverse transcriptase of HIV is 30–50 times more sensitive to inhibition by indinavir than host cell DNA polymerases  
(c) Ganciclovir inhibits viral DNA polymerase but does not cause chain termination  
(d) Increased activity of host cell phosphodiesterases that degrade tRNA is one of the antiviral actions of interferons  
(e) Foscarnet has no requirement for activation by phosphorylation
- 22. Which of the following drugs is most likely to cause additive anemia and neutropenia if administered to an AIDS patient taking zidovudine?**
- (a) Acyclovir      (b) Amantadine  
(c) Ganciclovir      (d) Pentamidine  
(e) Stavudine
- 23. The antiviral actions of this drug include inhibition of both RNA and DNA synthesis. The drug is used for the treatment of severe respiratory syncytial virus infections in neonates.**
- (a) Amantadine      (b) Amprenavir  
(c) Foscarnet      (d) Ribavirin  
(e) Ritonavir
- 24. Regarding interferon alpha, which one of the following statements is least accurate?**
- (a) At the start of treatment, most patients experience flu-like symptoms  
(b) Indications include treatment of genital warts  
(c) It is used in the management of hepatitis C  
(d) Lamivudine interferes with its activity against hepatitis B  
(e) Toxicity includes bone marrow suppression
- 25. Over 90% of this drug is excreted in the urine in intact form. Because its urinary solubility is low, patients should be well hydrated to prevent nephrotoxicity**
- (a) Acyclovir      (b) Amantadine  
(c) Indinavir      (d) Zanamivir  
(e) Zidovudine
- 26. Used in the prophylaxis and treatment of infection due to influenza viruses, this drug facilitates clumping of mature virions and their adhesion to infected cells.**
- (a) Amantadine      (b) Efavirenz  
(c) Oseltamivir      (d) Rimantadine  
(e) Saquinavir

- 27. Which statement regarding phase-specific chemotherapeutic agents is correct? They**
- Are most effective in one phase of the cell cycle
  - Effective in all phases of the cell cycle
  - Are only effective in  $G_0$  phase
  - Include the alkylating agents
  - Include the antituber antibiotics
- 28. Infections due to gram-negative bacilli have occurred when this agent has been used as a skin antiseptic**
- Acetic acid
  - Benzalkonium chloride
  - Hexachlorophene
  - Merbromin
  - Thimerosal
- 29. Which one of the following compounds is used topically to treat scabies and pediculosis?**
- Lindane
  - Mupirocin
  - Nitrofurazone
  - Polymyxin B
  - Silver sulfadiazine
- 30. Methenamine salts are used as urinary antiseptics. The reason why they lack systemic antibacterial action is that they are**
- Not absorbed into the systemic circulation following oral ingestion
  - Rapidly metabolized by liver drug-metabolizing enzymes
  - Converted to formaldehyde only at low urinary pH
  - Substrates for active tubular secretion
  - Over 90% bound to plasma proteins
- 31. Which one of the following antiseptics promotes wound healing?**
- Cetylpyridium
  - Chlorhexidine
  - Hexachlorophene
  - Iodine
  - None of the above
- 32. A patient with AIDS has an extremely high viral RNA titer. While blood is being drawn from this patient, the syringe is accidentally dropped, contaminating the floor, which is made of porous material. The best way to deal with this is to**
- Completely replace the contaminated part of the floor
  - Clean the floor with soap and water
  - Seal the room and decontaminate with ethylene oxide
  - Clean the floor with a 10% solution of household bleach
  - Neutralize the spill with a solution of potassium permanganate
- 33. Certain anaerobic protozoan parasites lack mitochondria and generate energy-rich compounds, such as acetyl-CoA, by means of enzymes present in organelles called hydrogenosomes. An important enzyme involved in this process is**
- Cytochrome P450
  - Glycerol - 3 - phosphate oxidase
  - Hypoxanthine - guanine phosphoribosyltransferase
  - Pyruvate - ferredoxin oxidoreductase
  - Thymidylate synthase
- 34. Which of the following compounds is a good substrate for hypoxanthine-guanine phosphoribosyltransferase in trypanosomes (but not mammals) and is eventually converted into metabolites that are incorporated into RNA?**
- Allopurinol
  - Alpha - difluoromethylornithine
  - Glycerol
  - Mebendazole
  - Salicylhydroxamic acid
- 35. One chemotherapeutic strategy used to eradicate the blood-stream form of African trypanosomes is based on the absolute dependence of the organism on**
- Cytochrome - dependent electron transfer
  - Dihydropteroate synthesis
  - Glycolysis



- (d) Lactate dehydrogenase  
(e) Mitochondrial respiration
- 36. Which of the following drugs enhances GABA actions on the neuromuscular junctions of nematodes and arthropods?**
- (a) Glutamic acid (b) Ivermectin  
(c) Picrotoxin (d) Pyrantel pamoate  
(e) Pyrimethamine
- 37. Which of the following drugs is an anti-metabolite that inhibits a trypanosomal enzyme involved in putrescine synthesis?**
- (a) Alpha - difluoromethylornithine  
(b) Alpha - fluorodeoxyuridine  
(c) Metronidazole  
(d) Polymyxin  
(e) Thiopurinol riboside
- 38. Which one of the following enzymes is not unique to parasites?**
- (a) Dihydropteridine pyrophosphokinase  
(b) Hypoxanthine-guanine phosphoribosyltransferase  
(c) Lanosterol demethylase  
(d) Purine nucleoside phosphotransferase  
(e) Trypanothione reductase
- 39. Which of the following antimalarial drugs causes a dose-dependent toxic state that includes flushed and sweaty skin, dizziness, nausea, diarrhea, tinnitus, blurred vision, and impaired hearing?**
- (a) Amodiaquine (b) Primaquine  
(c) Pyrimethamine (d) Quinine  
(e) Sulfadoxine
- 40. Plasmodial resistance to chloroquine is due to**
- (a) Change in receptor structure  
(b) Decreased carrier-mediated drug transport  
(c) Increase in the activity of DNA repair mechanisms  
(d) Induction of inactivating enzymes  
(e) Inhibition of dihydrofolate reductase
- 41. This drug is the antimalarial agent most commonly associated with causing an acute hemolytic reaction in patients with glucose - 6 - phosphate dehydrogenase deficiency.**
- (a) Chloroquine (b) Clindamycin  
(c) Mefloquine (d) Primaquine  
(e) Quining
- 42. This drug can clear trypanosomes from the blood and lymph nodes and is active in the late CNS stages of African sleeping sickness.**
- (a) Emetine (b) Melarsoprol  
(c) Nifurtimox (d) Pentamidine
- 43. Which one of the following drugs is recommended as a single agent for oral treatment of uncomplicated malaria due to chloroquine-resistant P falciparum strains?**
- (a) Doxycycline (b) Iodoquinol  
(c) Primaquine (d) Proguanil  
(e) Quinine
- 44. A missionary from Chicago is sent to work in a geographic region of a Central American country where onchocerca volvulus is endemic. Infections due to this tissue nematode (onchocerciasis) are a major cause of "river blindness", since microfilariae migrate through subcutaneous tissues and concentrate in the eyes. Which one of the following drugs can be used prophylactically to prevent onchocerciasis?**
- (a) Bithionol (b) Ivermectin  
(c) Niclosamide (d) Oxamniquine  
(e) Suramin
- 45. In a patient with diffuse lymphoma, the oncologist suggests a treatment strategy that involves the initial administration of doxorubicin to obtain a significant log-kill, followed by the cell cycle-specific drugs cytarabine and vincristine. This therapeutic strategy is called**
- (a) Pulse therapy  
(b) Recruitment  
(c) Rescue therapy  
(d) Sequential blockade  
(e) Synchrony

- 46. Which one of the following statements about the mechanisms of action of drugs used in cancer chemotherapy is least accurate?**
- Alkylating agents commonly attack the nucleophilic N-7 position in guanine
  - Anthracyclines intercalate with base pairs to block nucleic acid synthesis
  - In steady doses, leuprolide inhibits the release of pituitary gonadotropins
  - Mercaptopurine is an irreversible inhibitor of HGPRT ase
  - Paclitaxel acts mainly in the M phase of the cell cycle
- 47. Which of the following agents used in drug combination regimens to treat testicular carcinoma is not likely to cause nephrotoxicity?**
- Bleomycin
  - Cisplatin
  - Etoposide
  - Leuprolide
  - Vinblastine
- 48. Which one of the following is least likely to be a mechanism of cancer cell resistance to antineoplastic drugs?**
- Change in properties of a target enzyme
  - Decreased activity of activating enzymes
  - Increase in drug-metabolizing cytochrome P450
  - Increase in DNA repair
  - Increase in production of drug-trapping molecules
- 49. All of the following agents have been used in drug regimens for the treatment of breast carcinoma. Which one has specific activity in a subset of female breast cancers?**
- Anastrozole
  - Doxorubicin
  - Fluoxymesterone
  - Methotrexate
  - Trastuzumab
- 50. Which cell involved in immune function recognizes foreign peptides bound of MHC class II molecules on the surface of APC cells, secretes interleukin-2, and initiates the cell-mediated immunity reaction responsible for host-versus-graft reactions?**
- B lymphocyte
  - Cytotoxic T lymphocyte
  - Dendritic cell
  - Macrophage
  - TH lymphocyte
- 51. Cyclosporine is effective in organ transplantation. The immunosuppressant action of the drug appears to be due to**
- Activation of natural killer (NK) cells
  - Blockade of tissue responses to inflammatory mediators
  - Increased catabolism of IgG antibodies
  - Inhibition of the gene transcription of interleukins
  - Interference with antigen recognition
- 52. Azathioprine**
- Binds avidly to a cytoplasmic immunophilin
  - Blocks formation of tetrahydrofolic acid
  - Is a precursor of cytarabine
  - Is markedly hematotoxic and has caused neoplasms
  - Is a metabolite of mercaptopurine
- 53. Body Surface Area (BSA) is used in calculating chemotherapy doses because**
- BSA is an indicator of tumor cell mass
  - BSA correlates with cardiac output
  - BSA correlates with gastrointestinal transit time
  - the National Cancer Institute requires that BSA be used
  - the Food and Drug Administration requires that BSA be used
- 54. Which one of the following agents acts at the step of antigen recognition?**
- Cyclosporine
  - Cyclophosphamide
  - Methotrexate
  - Rh<sub>0</sub>(D)immune globulin
  - Tacrolimus
- 55. Tumor necrosis factor -  $\alpha$  - appears to play an important role in autoimmunity and inflammatory diseases. Which of the following is a humanized monoclonal**

**antibody that binds to TNF -  $\alpha$  and inhibits its action?**

- (a) Etanercept
- (b) Infliximab
- (c) Muromonab - CD3
- (d) Sirolimus
- (e) Thalidomide

**56. Which one of the following agents is able to suppress both B and T lymphocytes via its inhibition of de novo synthesis of purines?**

- (a) Cyclophosphamide
- (b) Methotrexate
- (c) Mycophenolate mofetil
- (d) Prednisone
- (e) Tacrolimus

**57. Which one of the following agents increases phagocytosis by macrophages in patients with chronic granulomatous disease?**

- (a) Aldesleukin
- (b) Interferon -  $\gamma$
- (c) Lymphocyte immune globulin
- (d) Prednisone
- (e) Trastuzumab

**58. A young woman employed as a dental laboratory technician complains of conjunctivitis, skin irritation, and hair loss. On examination, she has perforation of the nasal septum and a "milk and roses" complexion. These signs and symptoms are most likely to be due to**

- (a) Acute mercury poisoning
- (b) Chronic inorganic arsenic poisoning
- (c) Chronic mercury poisoning
- (d) Excessive use of supplementary iron tablets
- (e) Lead poisoning

**59. In the treatment of acute inorganic arsenic poisoning, the most likely drug to be used is**

- (a) Deferoxamine
- (b) Dimercaprol
- (c) EDTA
- (d) Penicillamine
- (e) Succimer

**60. Which of the following drugs or drug groups is not useful in the prevention of nausea and vomiting included by cancer chemotherapy ?**

- (a) Dexamethasone
- (b) Dronabinol
- (c) Ketaserin
- (d) Ondansetron
- (e) Phenothiazines

**61. Passive immunization involves**

- (a) Live immunogens
- (b) Polysaccharide vaccines
- (c) Stimulation of antibody formation
- (d) Use of antigens
- (e) Use of preformed antibodies

**62. A businessman intends to travel abroad in a geographical region where several diseases are endemic. He would not be able to be vaccinated against**

- (a) Cholera
- (b) Malaria
- (c) Meningococcal infection
- (d) Typhoid fever
- (e) Yellow fever

**63. Which of the following is used in active immunization of children and combines bacterial toxoids with a bacterial antigen?**

- (a) BCG
- (b) BSA
- (c) DTP
- (d) ISG
- (e) Rh<sub>0</sub>(D)

**64. Which of the following is a polysaccharide used for active immunization in patients with chronic cardiorespiratory ailments?**

- (a) Antilymphocyte immune serum
- (b) BCG vaccine
- (c) Mumps virus vaccine
- (d) Pertussis immune globulin
- (e) Pneumococcal vaccine

**65. A needlestick injury is sustained by a health care worker, and the blood is known to contain HBV surface antigens. The health care worker should be given**

- (a) Nothing
- (b) Immune globulin
- (c) Hepatitis B immune globulin

- (d) Hepatitis B vaccine  
(e) Hepatitis B vaccine and hepatitis B immune globulin
- 66. Which one of the following compounds enhances immune function in vitro and in clinical trials decreases the symptoms of the common cold?**
- (a) Echinacea  
(b) Feverfew  
(c) Garlic  
(d) Melatonin  
(e) Milk Thistle
- 67. An important therapeutic or toxic effect of loop diuretics is**
- (a) Decreased blood volume  
(b) Decreased heart rate  
(c) Increased serum sodium  
(d) Increased total body potassium  
(e) Metabolic acidosis
- 68. The most appropriate drug for reversing myasthenic crisis in a patient who is experiencing diplopia, dysarthria, and difficulty swallowing is**
- (a) Neostigmine (b) Pilocarpine  
(c) Pralidoxime (d) Succinylcholine  
(e) Tubocurarine
- 69. In the management of patients with AIDS, the sulfonamides are often used in combination with inhibitors of folate reductase. However, such combinations have minimal activity against**
- (a) *Escherichia coli*  
(b) *Nocardia* species  
(c) *Pneumocystis carinii*  
(d) *Toxoplasma gondii*  
(e) *Treponema pallidum*
- 70. Chemoprophylaxis for travelers to geographic regions where chloroquine-resistant *P falciparum* is endemic is best provided by**
- (a) Atovaquone  
(b) Mefloquine  
(c) Primaquine  
(d) Pyrimethamine plus sulfadoxine  
(e) Quinine
- 71. This agent, which is used in the chemotherapy of Hodgkin's lymphoma, is potentially leukemogenic**
- (a) Dacarbazine (b) Doxorubicin  
(c) Prednisone (d) Procarbazine  
(e) Vinblastine
- 72. A 54-year-old farmer has a 5-year history of frequent, recurrent, and very painful kidney stones. Appropriate chronic therapy for this man is**
- (a) Furosemide  
(b) Hydrochlorothiazide  
(c) Morphine  
(d) Spironolactone  
(e) Triamterene
- 73. A 55-year-old executive has cardiomyopathy and congestive heart failure. He is being treated with diuretics. The mechanism of action of furosemide is best described as**
- (a) Interference with  $H^+/HCO_3^-$  exchange  
(b) Blockade of a  $Na^+/K^+/2Cl^-$  transporter  
(c) Blockade of a  $Na^+/Cl^-$  cotransporter  
(d) Blockade of carbonic anhydrase  
(e) Inhibition of genetic expression of DNA in the kidney
- 74. Which one of the following peptides is not a vasodilator?**
- (a) Atrial natriuretic factor (ANF)  
(b) Calcitonin gene-related peptide  
(c) Endothelin  
(d) Substance P  
(e) Vasoactive intestinal peptide
- 75. A young female patient using an oral contraceptive is to be treated for pulmonary tuberculosis. She is advised to use an additional method of contraception since the efficacy of the oral agents is commonly decreased if her drug regimen includes**
- (a) Amikacin (b) Ethambutol  
(c) Isoniazid (d) Pyrazinamide  
(e) Rifampin

- 76. Which one of the following drugs is most likely to be effective in the treatment of gonorrhoea in this patient and safe to use?**
- (a) Amoxicillin - clavulanate
  - (b) Ceftriaxone
  - (c) Clarithromycin
  - (d) Ofloxacin
  - (e) Tetracycline
- 77. The rationale for combination chemotherapy includes all of the following except**
- (a) Biochemical enhancement of effect
  - (b) rescue of normal cells
  - (c) overcoming or preventing resistance
  - (d) biochemical nullification of effect
  - (e) cytotoxic to both resting and dividing cells
- 78. This compound reduces the need for platelet transfusions in patients undergoing cancer chemotherapy**
- (a) Cyanocobalamin
  - (b) Erythropoietin
  - (c) Interleukin - II
  - (d) Iron dextran
  - (e) Tranexamic acid
- 79. Which one of the following anticancer drugs acts in the M-phase of the cell cycle to prevent disassembly of the mitotic spindle?**
- (a) Dactinomycin
  - (b) Etoposide
  - (c) Paclitaxel
  - (d) Procarbazine
  - (e) Vinblastine
- 80. While colchicine has been used in acute gout, the drug often causes severe gastrointestinal distress. Consequently, many authorities now consider that the drug of choice for acute gout is**
- (a) Acetaminophen
  - (b) Aspirin
  - (c) Indomethacin
  - (d) methotrexate
  - (e) Sulfapyridine
- 81. Relative to Lugol's solution propylthiouracil has**
- (a) A faster onset of antithyroid action
  - (b) A greater inhibitory effect on the proteolytic release of hormones from the thyroid gland
  - (c) Increased likelihood of causing exophthalmos during the first week of treatment
  - (d) Increased risk of fetal toxicity
  - (e) More sustained antithyroid activity when used continuously for several months
- 82. In antiviral immunity, what directly recognized and kills viral-infected cells?**
- (a) Cytotoxic T cells (CTLs)
  - (b) Antiviral antibodies
  - (c) Interferons
- 83. An organ donor who is human leukocyte antigen (HLA)- matched with the recipient of a graft is sought. Which individual is at least somewhat likely to provide a total HLA match?**
- (a) A sibling of the graft recipient
  - (b) A parent of the graft recipient
  - (c) A cadaver
- 84. Graft-versus-host (GVH) disease is associated primarily with which type of transplantation?**
- (a) Kidney
  - (b) Heart
  - (c) Bone marrow
- 85. Which is a valid comparison of live, attenuated and killed, inactivated active vaccines?**
- (a) Replication of the organisms in a live, attenuated vaccine increases the stimulation of the immune system, and a lower dose is often required
  - (b) Attenuated vaccines often require multiple doses
  - (c) A killed, inactivated vaccine probably produces life-long immunity in one or two doses
- 86. Which type of cell does not contain double standard deoxyribonucleic acid (DNA)?**
- (a) Human cells
  - (b) Bacteria cells
  - (c) Human immunodeficiency virus (HIV) cells
- 87. Which enzyme is used by the Human Immunodeficiency Virus (HIV) to form**

**deoxyribonucleic acid (DNA) in the host cell?**

- (a) Restrictive endonuclease
- (b) DNA-directed polymerase
- (c) Reverse transcriptase
- (d) Both (a) and (b)
- (e) None of the above

**88. Gamma immunoglobulin is considered**

- (a) Deoxyribonucleic acid (DNA)
- (b) Ribonucleic acid (RNA)
- (c) Protein
- (d) None of the above

**89. Glycoprotein is considered a protein linked to**

- (a) A carbohydrate
- (b) A hormone
- (c) A lipid
- (d) A deoxyribonucleic acid (DNA)
- (e) None of the above

**90. An enzyme that cleaves deoxyribonucleic acid (DNA) at a specific site is called**

- (a) Restrictive endonuclease
- (b) Restrictive ribonuclease
- (c) Trypsin
- (d) None of the above

**91. An example of a cytokine is**

- (a) Interleukin
- (b) Insulin
- (c) Gonadotropin
- (d) Thyroxine
- (e) None of the above

**92. A common storage condition for most biotechnology products after reconstitution is**

- (a) Room temperature
- (b) Cool place
- (c) Warm place
- (d) No excessive heat
- (e) Freezer

**93. What base is found in deoxyribonucleic acid (DNA)?**

- (a) Cytosine

- (b) Adenine
- (c) Guanine
- (d) Thymine
- (e) All of the above

**94. Which of the following statements regarding signal transduction is incorrect?**

- (a) Thyroxine-bound receptors act on DNA and regulate specific transcription of genes.
- (b) Cyclic adenosine monophosphate can act as second messenger.
- (c) The level of drug receptors at the cell surface increases with chronic stimulation by receptor agonists
- (d) Binding of ligand to cell-surface receptors can lead to synthesis of proteins
- (e) Antacids act by interacting with small ions normally found in the gastrointestinal tract.

**95. All of the following chemotherapy agents can be administered intrathecally except**

- (a) Methotrexate
- (b) Cytrabine
- (c) Hydrocortisone
- (d) Thiotepa
- (e) Vincristine

**96. The efficacy rates for nonprescription antifungal agents for vaginal yeast infections is**

- (a) 50%
- (b) 60%
- (c) 70%
- (d) 80%

**97. The best product to treat vulvar pruritus in a woman with a vaginal yeast infection is**

- (a) External miconazole (Monistat)
- (b) External miconazole and intravaginal miconazole (Monistat-7 combination pack)
- (c) Intravaginal tioconazole (Vagistat 1)
- (d) Intravaginal butoconazole (Femstat 3)

**98. Which of the following patients complaining of vaginal yeast infection symptoms should be referred to a physician?**

- (a) If there is a history of recurrent vaginal yeast infection
- (b) If she is pregnant
- (c) If she is less than age 12
- (d) All of the above

**99. Which of the following herbs is known to cause cancer?**



- (a) Chaparral
- (b) Comfrey
- (c) Ma huang
- (d) Licorice
- (e) St. John's wort

**100. Which of the following herbs should be used with caution while driving or performing other tasks that require alertness and coordination?**

- (a) Valerian
- (b) Echinacea
- (c) Dong quai
- (d) Feverfew
- (e) Saw palmetto

**101. Tom would like to try Echinacea to prevent colds and flus during the winter months. Which of the following statements is true about Echinacea?**

- (a) It is contraindicated in patients allergic to parsley
- (b) It should only be taken continuously for three months
- (c) It is contraindicated in patients with lupus and leucosis
- (d) Prolonged use of Echinacea will upregulate the immune system
- (e) Side effects include headache, rash, and dizziness

**102. Hematological testing of a patient with acquired immune deficiency syndrome (AIDS) is most likely to show which of the following abnormalities?**

- (a) Basophilia
- (b) Eosinophilia
- (c) Lymphopenia
- (d) Reticulocytosis
- (e) Agranulocytosis

**103. Hematological studies are most likely to show a low reticulocyte count in a patient who has which one of the following abnormalities ?**

- (a) Aplastic anemia secondary to cancer chemotherapy
- (b) Acute hemolytic anemia secondary to quinidine treatment
- (c) Severe bleeding secondary to an automobile accident
- (d) Iron deficiency anemia 1 week after treatment with ferrous sulfate
- (e) Megaloblastic anemia due to folate deficiency 1 week after treatment with folic acid

**104. Cisapride should not be used in combination with either fluconazole or indinavir because of increased potential for**

- (a) Atrial fibrillation
- (b) Atrial flutter
- (c) Ventricular fibrillation
- (d) Torsades de pointes
- (e) Angina pectoris

**105. Which statement regarding phase-specific chemotherapeutic agents is correct? They**

- (a) Are most effective in one phase of the cell cycle
- (b) Are effective in all phases of the cell cycle
- (c) Are only effective in  $G_0$  phase
- (d) Include the alkylating agents
- (e) Include the antitumor antibiotics

**106. Body surface area (BSA) is used in calculating chemotherapy doses because**

- (a) BSA is an indicator of tumor cell mass
- (b) BSA correlates with cardiac output
- (c) BSA correlates with gastrointestinal transit time
- (d) The National Cancer Institute requires that BSA be used
- (e) The Food and Drug Administration (FDA) requires that BSA be used

**107. The rationale for combination chemotherapy includes all of the following except**

- (a) Biochemical enhancement of effect
- (b) Rescue of normal cells
- (c) Overcoming or preventing resistance
- (d) Biochemical nullification of effect
- (e) Cytotoxic to both resting and dividing cells

**108. Which of the following chemotherapeutic agents is classified as an alkylating agent?**

- (a) Cyclophosphamide
- (b) Etoposide
- (c) Mechlorethamine
- (d) Paclitaxel
- (e) Cyclophosphamide and mechlorethamine



- 109. Which of the following chemotherapy agents acts by intercalation?**
- Vincristine
  - Paclitaxel
  - Doxorubicin
  - Vincristine and paclitaxel
  - Topotecan
- 110. How do antimetabolites exert their cytotoxic effect?**
- Inhibiting DNA synthesis by sliding between DNA base pairs
  - Inhibiting RNA synthesis by sliding between RNA base pairs
  - Acting as false metabolites in the microtubules
  - Acting as false substitutions in the production of nucleic acids
  - Promoting microtubule assembly and stabilization
- 111. Which of the following chemotherapy agents are correctly paired according to their mechanism of action?**
- Vincristine and paclitaxel
  - Etoposide and paclitaxel
  - Docetaxel and paclitaxel
  - Docetaxel and etoposide
  - Vincristine and etoposide
- 112. When does not neutrophil nadir associated with chemotherapy agents generally occur?**
- During administration of the chemotherapy
  - 1–2 days after therapy
  - 10–14 days after therapy
  - 1 month after therapy
  - When the platelet count begins to rise
- 113. N-acetylcysteine is classified as a (an)**
- Analgesic
  - Antitussive
  - Mucolytic agent
  - Antitubercular agent
  - Protein hydrolysate
- 114. Procarbazine (Matulane) is used primarily to treat**
- Ovarian carcinoma
  - Psoriasis
  - Breast carcinoma
  - Melanoma
  - Hodgkin's disease
- 115. The principal active alkaloid of ipecac is**
- Yohimbine
  - Caffeine
  - Apomorphine
  - Lobeline
  - Emetine
- 116. Emetine is used in the treatment of**
- Malalaria
  - Schistosomiasis
  - Tuberculosis
  - Amebiasis
  - None of the above
- 117. The therapeutic use of neostigmine bromide is as a**
- Miotic
  - CNS depressant
  - Treatment of curare poisoning
  - Neuromuscular blocker
  - Muscle relaxant
- 118. Ethylenediamine-tetracetic acid is an antidote for which of the following?**
- Sodium secobarbital
  - Aspirin
  - Paris green
  - Phosphorus
  - Lead
- 119. Which of the following chemotherapeutic agents is classified as an alkylating agent?**
- Cyclophosphamide
  - Etoposide
  - Mechlorethamine
  - Paclitaxel
  - Cyclophosphamide and mechlorethamine
- 120. Which of the following is a gametocidal agent in malaria?**
- Atabrine
  - Quinine
  - Paludrine
  - Primaquine
  - Aralen
- 121. Which of the following is contraindicated in the presence of active tuberculosis?**

- (a) Hydrocortisone (b) Streptomycin  
(c) INH (d) PAS  
(e) PABA
- 122. A drug that is very effective in the treatment of tinea versicolor is**
- (a) Undecylenic acid  
(b) Clotrimazole (Lotrimin)  
(c) Acrisorcin (Akrinol)  
(d) Penicillin G  
(e) Prednisolone
- 123. Which of the following is a first-line drug to treat tuberculosis?**
- (a) PAS (b) Rifampin  
(c) Ethionamide (d) Cycloserine  
(e) Ethambutol
- 124. Yellow pigmentation of the skin is most common with**
- (a) Chloroquine (b) Pamaquin  
(c) Quinacrine (d) Quinine  
(e) Atabrine
- 125. The most effective single chemotherapeutic agent of those indicated, in the treatment of tuberculosis is**
- (a) Neomycin (b) Sulfones  
(c) Streptomycin (d) Penicillin  
(e) Terramycin
- 126. Which is an antidote for malathion poisoning?**
- (a) Vitamin K  
(b) Protamine sulfate  
(c) Nalorphine (Nalline)  
(d) Pralidoxine (Protopam)  
(e) Edrophonium (Tensilon)
- 127. Antimicrobial treatment does not alter the course of the following diarrhoeas except**
- (a) Mild enterotoxigenic E.coli diarrhoea  
(b) Campylobacter diarrhoea  
(c) Coeliac disease diarrhoea  
(d) Food poisoning diarrhoea
- 128. Which of the following diarrhoeas is consistently benefited by antimicrobial therapy**
- (a) Irritable bowel syndrome  
(b) Cholera  
(c) Salmonella diarrhoeas  
(d) Traveller's diarrhoea
- 129. The therapeutic effect of sulfasalazine in ulcerative colitis is exerted by**
- (a) Inhibitory action of the unabsorbed drug on the abnormal colonic flora  
(b) Breakdown of the drug in colon to release 5-aminosalicylic acid which suppresses inflammation locally  
(c) Release of sulfapyridine having antibacterial property  
(d) Systemic immunomodulatory action of the drug
- 130. The preferred drug for controlling an acute exacerbation of ulcerative colitis is**
- (a) Prednisolone (b) Sulfasalazine  
(c) Mesalazine (d) Vancomycin
- 131. To be effective in ulcerative colitis, 5-aminosalicylic acid has to be given as**
- (a) Acrylic polymer coated tablet which releases the drug only in the lower bowel  
(b) A complex of two molecules joined together by azo bond  
(c) A retention enema  
(d) All of the above
- 132. A small amount of atropine is added to the diphenoxylate tablet/syrup to**
- (a) Suppress associated vomiting of gastroenteritis  
(b) Augment the antiperistalsis action of diphenoxylate  
(c) Block side effects of diphenoxylate  
(d) Discourage overdose and abuse of diphenoxylate
- 133. Select the sulfonamide drug which is active against pseudomonas and is used by topical application for prophylaxis of infection in burn cases**
- (a) Sulfadiazine  
(b) Silver sulfadiazine  
(c) Sulfadoxine  
(d) Sulfamethoxazole

- 134. The drug of choice for prophylaxis of meningococcal meningitis during an epidemic is**
- Phenoxymethyl penicillin
  - Tetracycline
  - Rifampin
  - Ciprofloxacin
- 135. Trimethoprim inhibits bacteria without affecting mammalian cells because**
- It does not penetrate mammalian cells
  - It has high affinity for bacterial but low affinity for mammalian dihydrofolate reductase enzyme
  - It inhibits bacterial folate synthetase as well as dihydrofolate reductase enzymes
  - All of the above
- 136. Trimethoprim is combined with sulfamethoxazole in a ration of 1:5 to yield a steady state plasma concentration ratio of**
- Trimethoprim 1:Sulfamethoxazole 5
  - Trimethoprim 1:Sulfamethoxazole 10
  - Trimethoprim 1:Sulfamethoxazole 20
  - Trimethoprim 1:Sulfamethoxazole 1
- 137. Indicate the condition in which neither trimethoprim nor sulfamethoxazole alone are effective, but their combination cotrimoxazole is**
- Prostatitis
  - Lymphogranuloma venereum
  - Pneumocystis carinii pneumonia
  - Bacillary dysentery
- 138. Select the antimicrobial drug which is used orally only for urinary tract infection for bacterial diarrhoeas**
- Pefloxacin
  - Azithromycin
  - Bacampicillin
  - Nalidixic acid
- 139. Nalidixic acid is primarily active against**
- Cocci
  - Bacilli
  - Gram-positive bacteria
  - Gram-negative bacteria
- 140. Indicate the drug which attain therapeutic antibacterial concentration in the urinary tract but not in other tissues**
- Sulfasomidine
  - Piperacillin
  - Nitrofurantoin
  - Both (b) and (c)
- 141. Acidic urine augments the antibacterial action of the following drug**
- Sulfadiazine
  - Cotrimoxazole
  - Gentamicin
  - Nitrofurantoin
- 142. Which of the following is not a first line antitubercular drug ?**
- Ciprofloxacin
  - Streptomycin
  - Pyrazinamide
  - Ethambutol
- 143. The intermittently multiplying (spurter) tubercle bacilli present within caseous material having low oxygen tension are most susceptible to**
- Ethambutol
  - Rifampin
  - Streptomycin
  - Pyrazinamide
- 144. Occurrence of the following adverse reaction absolutely contraindicates further use of rifampin in the treatment of tuberculosis**
- Respiratory syndrome
  - Cutaneous syndrome
  - Flu syndrome
  - Abdominal syndrome
- 145. Which of the following chemotherapy agents acts by intercalation?**
- Vincristine
  - Paclitaxel
  - Doxorubicin
  - Vincristine and paclitaxel
  - Topotecan
- 146. Ethambutol is not used in children below 6 years of age because**
- Young children are intolerant to ethambutol
  - Ethambutol causes growth retardation in young children
  - It is difficult to detect ethambutol induced visual impairment in young children
  - In young children visual toxicity of ethambutol is irreversible

- 147. In a patient of pulmonary tuberculosis, pyrazinamide is most active on the following subpopulation of tubercle bacilli**
- Rapidly multiplying bacilli located on cavity walls
  - Slow growing bacilli within macrophages and at sites showing inflammatory response
  - Intermittently multiplying bacilli within caseous material
  - Dormant bacilli
- 148. The most important reason for using a combination of chemotherapeutic agents in the treatment of tuberculosis is**
- To obtain bactericidal effect
  - To prevent development of resistance to the drugs
  - To broaden the spectrum of activity
  - To reduce adverse effects of the drugs
- 149. Addition of pyrazinamide and ethambutol for the first two months to the isoniazid + rifampin therapy of tuberculosis serves the following purpose(s)**
- Reduces the total duration of therapy to 6 months
  - Produces more rapid sputum conversion
  - Permits reduction of rifampin dose
  - Both (a) and (b)
- 150. What is true of short course DOTS(WHO) strategy for treatment of tuberculosis ?**
- It consists of an initial intensive phase and a later continuation phase
  - The dose of antitubercular drugs is reduced after clinical response occurs
  - The patient himself is made responsible for administering antitubercular drugs
  - All of the above
- 151. According to the current WHO guidelines new (untreated) sputum smear positive cases of pulmonary tuberculosis are to be treated with the following regimen**
- Isoniazid + Rifampin + Pyrazinamide for 6 months
  - Isoniazid + Thiacetazone + Rifampin for 2 months followed by isoniazid + thiacetazone for 6 months
  - Isoniazid + Rifampin for 6 months with additional Pyrazinamide + Ethambutol/ Streptomycin during the initial 2 months
  - Isoniazid + Rifampin for 6 months with additional Pyrazinamide during the initial 2 months
- 152. Corticosteroids are absolutely contraindicated in which of the following types of tuberculosis**
- Miliary
  - Meningeal
  - Intestinal
  - Renal
- 153. Multi Drug Resistant (MDR) tuberculosis is defined as resistance to**
- Any two or more antitubercular drugs
  - Isoniazid + any other antitubercular drug
  - Isoniazid + Rifampin ± any one or more antitubercular drugs
  - All five first line antitubercular drugs
- 154. Mycobacter tuberculosis infection in a HIV infected patient is treated with**
- The same antitubercular regimen as HIV negative patient
  - Four first line antitubercular drugs for 2 months followed by a longer continuation phase of 7 months with rifampin + isoniazid
  - All five first line antitubercular drugs for nine months
  - Clarithromycin + Ciprofloxacin + Rifabutin for 12 months
- 155. The most important dose dependent toxicity of dapsone is**
- Methemoglobinemia
  - Haemolysis
  - Hepatitis
  - Dermatitis
- 156. The tetracycline with highest antileprotic activity is**
- Minocycline
  - Docycycline
  - Methacycline
  - Oxytetracycline
- 157. Multidrug therapy with dapsone, rifampin and clofazimine is the treatment of choice of**
- Multibacillary leprosy
  - Paucibacillary leprosy
  - Dapsone resistant leprosy
  - All forms of leprosy

- 158. The newer lipid formulations of amphotericin B differ from the conventional formulation in the following respects except**
- They are more efficacious
  - They produce milder acute reaction
  - They are less nephrotoxic
  - They produce milder anaemia
- 159. The drug of choice for monilial diarrhoea is**
- Flucytosine
  - Nystatin
  - Natamycin
  - Ketoconazole
- 160. Griseofulvin is indicated in.**
- All types of tinea infection
  - Onychomycosis
  - Pityriasis versicolor
  - Both (b) and (c)
- 161. Choose the azole antifungal drug which is used only topically**
- Ketoconazole
  - Fluconazole
  - Itraconazole
  - Econazole
- 162. Fluconazole differs from ketoconazole in that**
- It is not active by the oral route
  - It is a more potent inhibitor of drug metabolism
  - It is not effective in cryptococcal meningitis
  - It is unlikely to produce anti-androgenic side effects
- 163. The only antifungal drug which has some activity against moulds like Mucor and Aspergillus is**
- Itraconazole
  - Fluconazole
  - Miconazole
  - Ketoconazole
- 164. Idoxuridine is indicated in**
- Herpes simplex keratitis
  - Herpes zoster
  - Chicken pox
  - All of the above
- 165. Which of the following viruses is most susceptible to acyclovir ?**
- Herpes simplex type I virus
  - Herpes simplex type II virus
  - Varicella-zoster virus
  - Epstein-Barr virus
- 166. Which of the following is true of acyclovir treatment of genital herpes simplex ?**
- Topical treatment affords symptomatic relief in primary as well as recurrent disease
  - Oral therapy for 10 days affords symptomatic relief as well as prevents recurrences
  - Oral therapy for 10 days affords symptomatic relief but does not prevent recurrences
  - Continuous long-term topical therapy is recommended to prevent recurrences
- 167. The virus directed reverse transcriptase enzyme is inhibited by**
- Amantadine
  - Zidovudine
  - Vidarabine
  - Acyclovir
- 168. How do antimetabolites exert their cytotoxic effect?**
- Inhibiting DNA synthesis by sliding between DNA base pairs
  - Inhibiting RNA synthesis by sliding between RNA base pairs
  - Acting as false metabolites in the microtubules
  - Acting as false substitutions in the production of nucleic acids
  - Promoting microtubule assembly and stabilization
- 169. Antiretroviral therapy is not recommended in asymptomatic HIV infected subjects because of the following reason(s).**
- All antiretroviral drugs lose efficacy after some time
  - Adverse effects of antiretroviral drugs compromise the quality of life of asymptomatic subjects
  - The treated subjects may produce and transmit drug resistant virus
  - All of the above
- 170. Choose the correct statement about amantadine**
- It is an antimetabolite used for viral infections
  - It prevents penetration of the virus into the host cell

- (c) Concurrent administration of amantadine prevents antibody response to influenzavaccine
- (d) It is used to protect high risk subjects during an influenza A<sub>2</sub> epidemic

**171. The antiviral action of amantadine is exerted through**

- (a) Interaction with a virus directed thymidine kinase
- (b) Interaction with a viral M2 protein
- (c) Inhibition of a viral protease enzyme
- (d) Inhibition of viral RNA mediated DNA synthesis

**172. Erythrocytic schizonticide antimalarial drugs are used as**

- (a) Suppressive prophylactic
- (b) Clinical curative
- (c) Radical curative for P. Vivax
- (d) Both (a) and (b)

**173. Which of the following drugs is a causal prophylactic for falciparum malaria and suppressive prophylactic for vivax malaria**

- (a) Chloroquine      (b) Mepacrine
- (c) Quinine          (d) Chloroguanide

**174. Recrudescence of malaria refers to recurrence of malarial fever due to**

- (a) Reinfection of the patient by mosquito bite
- (b) Reinfection of blood by exoerythrocytic hyponozoites
- (c) Incomplete clearance of schizonts from blood
- (d) Reinfection of blood by sporozoites

**175. If a drug is active against the preerythrocytic stage of the malarial parasite it will be useful as a**

- (a) Suppressive prophylactic
- (b) Causal prophylactic
- (c) Clinical curative
- (d) Radical curative

**176. Chemoprophylaxis of malaria is recommended for the following category of subjects**

- (a) Residents of nonendemic areas

- (b) Residents of endemic areas
- (c) Travellers from nonendemic to endemic areas
- (d) Travellers from endemic to nonendemic areas

**177. Radical cure of vivax malaria should be attempted in**

- (a) Areas where only sporadic cases occur
- (b) Endemic areas with effective vector control measures
- (c) Endemic areas not covered by vector control
- (d) Both (a) and (b)

**178. Chloroquine acts as**

- (a) Preerythrocytic schizonticide for both P. falciparum and P. vivax
- (b) Erythrocytic schizonticide for both P. falciparum and P. vivax
- (c) Exoerythrocytic schizonticide for P. vivax
- (d) Gametocidal for P. falciparum

**179. Which of the following drugs is suitable for treatment of malaria during pregnancy**

- (a) Quinine
- (b) Chloroquine
- (c) Pyrimethamine
- (d) Primaquine

**180. Amodiaquine differs from chloroquine in the following respect(s)**

- (a) It is currently not recommended for treatment of clinical attacks of malaria
- (b) Its used as a suppressive prophylactic is prohibited
- (c) It is less bitter and causes less itching
- (d) Both (b) and (c)

**181. Choose the correct statement about mefloquine**

- (a) In a single dose it affords clinical cure in all types of malaria
- (b) It is selectively active against chloroquine resistant P. falciparum but not the chloroquine sensitive Strains
- (c) It is recommended only in areas where chloroquine resistant P.falciparum is prevalent
- (d) Both (a) and (c)



- 182. The drug of choice for cerebral malaria due to *P. falciparum* is**
- Quinine
  - Mefloquine
  - Chloroguanide
  - Pyrimethamine + Sulfadoxine
- 183. Intravenous injection of quinine produces**
- Rise in blood pressure
  - Neuromuscular block
  - Hyperglycaemia
  - Hypoglycaemia
- 184. The following is true of quinine**
- It has a longer elimination half-life than chloroquine
  - It is not to be used for prophylaxis of malaria
  - It is not active against *P. vivax*
  - It should not be used along with sulfapyrimethamine
- 185. The fastest acting schizontocidal drug among the following is**
- Artemether
  - Melfoquine
  - Chloroquine
  - Pyrimethamine
- 186. Pyrimethamine + sulfadoxine should be used as a**
- Clinical curative in areas with chloroquine resistance
  - Clinical curative in areas without chloroquine resistance
  - Prophylactic in areas with or without chloroquine resistance
  - All of the above
- 187. Which of the following antimalarial drugs is more active against pre-and exoerythrocytic stages of the malarial parasite than against the erythrocytic stage ?**
- Chloroguanide
  - Primaquine
  - Pyrimethamine
  - Quinine
- 188. Use of the following antimalarial drug carries high risk of adverse effect in subjects with G-6-PD deficiency.**
- Pyrimethamine
  - Artemisinin
  - Primaquine
  - Mefloquine
- 189. All of the following chemotherapy agents work through affecting microtubule function except**
- Docotaxel
  - Vinblastine
  - Mitoxantrone
  - Vincristine
  - Vinorelbine
- 190. Choose the correct statement(s) about metronidazole**
- It is a drug of choice for amoebic dysentery as well as amoebic liver abscess
  - It affords the most rapid symptom relief in amoebi dysentery
  - It is the most effective drug in eradicating amoebic cysts from the colon
  - All of the above
- 191. Metronidazole is used for**
- Round worm infestation
  - Hook worm infestation
  - Kala-azar
  - Giardiasis
- 192. In addition to having antiamoebic activity, tinidazole inhibits**
- Anaerobic bacillin
  - Aerobic bacilli
  - Gram-positive cocci
  - Gram-negative cocci
- 193. Tinidazole differs from metronidazole in that**
- It is not active against anaerobic bacteria
  - It has a broader spectrum of activity
  - It has a longer elimination half life
  - It has better oral absorption
- 194. Emetine is now used only as a reserve drug for amoebiasis because**
- It is less effective than metronidazole
  - It produces a slower response than metronidazole
  - It has cardiotoxic potential
  - It does not clear stools of amoebic cysts



- 195. Choose the most effective drug for mild intestinal amoebiasis and asymptomatic cyst passers**
- (a) Metronidazole (b) Emetine  
(c) Quiniodochlor (d) Diloxanide furoate
- 196. The following antiamoebic drug should not be used in children because of risk of causing blindness**
- (a) Quiniodochlor (b) Diloxanide furoate  
(c) Tinidazole (d) Secnidazole
- 197. After treating intestinal amoebiasis with metronidazole, a course of diloxanide furoate is often advised to**
- (a) Cure any subclinical hepatic involvement  
(b) Suppress the symbiotic intestinal flora  
(c) Eradicate luminal cyst forming trophozoites  
(d) Both (b) and (c)
- 198. The following drug is used for oral treatment of trichomonas vaginitis**
- (a) Diiodohydroxyquin  
(b) Tinidazole  
(c) Clotrimazole  
(d) Natamycin
- 199. The drug of choice for Kala Azar is**
- (a) Pentamidine  
(b) Amphotericin B  
(c) Sodium stibogluconate  
(d) Ketoconazole
- 200. Pentamidine + contrimoxazole is the treatment of choice for the following disease**
- (a) Toxoplasmosis  
(b) Pneumocystis carinii pneumonia  
(c) Actinomycosis  
(d) Schistosomiasis
- 201. Leishmania donovani is susceptible to certain antifungal drugs because both fungi and Leishmania**
- (a) Utilize purine salvage pathway  
(b) Utilize similar glycolytic mechanisms  
(c) Have similar topoisomerase II enzyme  
(d) Have ergosterol in their cell membranes
- 202. Albendazole is less effective than mebendazole in the following helminthic infestation**
- (a) Hydatid disease (b) Trichuriasis  
(c) Strongyloidosis (d) Ascariasis
- 203. The following helminthic disease can be treated by albendazole but not by mebendazole**
- (a) Hook worm infestation  
(b) Thread worm infestation  
(c) Trichuriasis  
(d) Neurocysticercosis
- 204. Piperazine antagonizes the anthelmintic action of the following drug**
- (a) Pyrantel pamoate (b) Mebendazole  
(c) Albendazole (d) Niclosamide
- 205. The following anthelmintic has been found to be safe during pregnancy**
- (a) Thiabendazole (b) Piperazine  
(c) Albendazole (d) Pyrantel pamoate
- 206. A child has been brought with intestinal obstruction due to clumping of round worms. Which of the following anthelmintics administered by intragastric tube can relax the ascarids and relieve the obstruction**
- (a) Levamisole (b) Mebendazole  
(c) Pyrantel pamoate (d) Piperazine
- 207. Thiabendazole is rarely used now because**
- (a) It is not active against round worm and hook worm  
(b) It produces lower cure rates in intestinal helminthiasis than mebendazole or albendazole  
(c) It needs pretreatment fasting and post treatment purgative  
(d) It frequently produces incapacitating side effects
- 208. Select the drug used in the treatment of filariasis**
- (a) Diethyl carbamazine citrate  
(b) Thiabendazole

- (c) Levamisole  
(d) Piperazine citrate
- 209. Diethyl carbamazine citrate has the following action in filariasis**
- (a) Rapidly kills adult filarial worms and stops production of microfilariae  
(b) Kills circulating microfilariae  
(c) Kills microfilariae present in nodules and serous fluids  
(d) Promotes phagocytosis of circulating microfilariae
- 210. Hormonal agents that are useful in the treatment of cancer include**
- (a) Tamoxifen  
(b) Prednisone  
(c) Flutamide  
(d) Tamoxifen and flutamide  
(e) Tamoxifen, prednisone and flutamide
- 211. Praziquantel is preferred over niclosamide for Taenia solium infestation because**
- (a) It achieves higher cure rates  
(b) It produces fewer side effects  
(c) It does not lead to digestion of worm and kills encysted larvae, so that chances of cysticercosis are minimized  
(d) Both (a) and (b)
- 212. For the treatment of Hymenolepis nana infestation, praziquantel has the following advantage(s) over niclosamide**
- (a) It is better tolerated  
(b) It requires single dose treatment against 5 days treatment with niclosamide  
(c) A purgative is required after niclosamide but not after praziquantel  
(d) All of the above
- 213. Praziquantel is effective against the following helminth(s)**
- (a) Taenia saginata  
(b) Diphyllbothrium latum  
(c) Schistosomes  
(d) All of the above
- 214. The following anticancer drug has high emetogenic potential**
- (a) Vincristine  
(b) Chlorambucil  
(c) 6-Mercaptopurine  
(d) Cisplatin
- 215. The most important target of action of chlorambucil is**
- (a) Myeloid tissue (b) Lymphoid tissue  
(c) Neural tissue (d) Skin
- 216. Which of the following antineoplastic drugs is a mitotic inhibitor and causes metaphase arrest?**
- (a) Busulfan (b) Vincristine  
(c) Cytarabine (d) Procarbazine
- 217. Vinca alkaloids exert antitumor activity by**
- (a) Activating topoisomerase II to cause breaks in DNA strands  
(b) Crosslinking DNA strands  
(c) Inhibiting DNA mediated RNA synthesis  
(d) Inhibiting polymerization of tubulin to form intracellular microtubules
- 218. Vincristine differs from vinblastine in the following respect(s)**
- (a) Its prominent adverse effect is neuropathy  
(b) It frequently produces alopecia  
(c) It does not significantly depress bone marrow  
(d) All of the above
- 219. Patients treated with the following anticancer drug are likely to develop a disulfiram like reaction on taking alcohol.**
- (a) Dacarbazine (b) Procarbazine  
(c) Melphalan (d) Hydroxyurea
- 220. Select the cell cycle nonspecific antineoplastic drug.**
- (a) Vincristine (b) Bleomycin  
(c) Methotrexate (d) 5-Fluorouracil
- 221. Biological response modifiers like GM-CSF are used in conjunction with anticancer drugs for the following purpose(s).**
- (a) To enhance antitumour activity of the drug  
(b) To prevent hypersensitivity reactions to the drug

- (c) To hasten recovery from drug-induced myelosuppression  
(d) Both (a) and (c)
- 222. Select the drug which is used exclusively in organ transplantation and autoimmune diseases, but not in cancers**
- (a) Cyclophosphamide  
(b) Cyclosporine  
(c) Methotrexate  
(d) 6-Mercaptopurine
- 223. The following drug(s) is/are effective in reducing the occurrence of embolic stroke in auricular fibrillation patients**
- (a) Aspirin (b) Warfarin  
(c) Digoxin (d) Both (a) and (c)
- 224. Sulfonamide used in treatment of ulcerative colitis is**
- (a) Sulfasalazine  
(b) Sulfacetamide  
(c) Silver sulfadiazine  
(d) Mafenide
- 225. The cephalosporin that is active against pseudomonas aeruginosa is**
- (a) Cephalexin (b) Cephalothin  
(c) Cefuroxime (d) Ceftazidime
- 226. To increase its blood concentration, imipenem is combined with**
- (a) Clavulanic acid (b) Sulbactam  
(c) Probenecid (d) Cilastatin
- 227. Characteristic toxicity of ethambutol is**
- (a) Hepatitis  
(b) Renal damage  
(c) Vestibular damage  
(d) Visual defects
- 228. Pyridoxine given to a patient of tuberculosis prevents**
- (a) INH induced peripheral neuritis  
(b) Rifampicin induced hepatotoxicity  
(c) Ethambutol induced visual defects  
(d) Streptomycin induced nephrotoxicity
- 229. Isoniazid is ineffective in**
- (a) Treatment of *M. avium* complex  
(b) Chemoprophylaxis of tuberculosis in HIV-infected persons  
(c) Chemoprophylaxis of tuberculosis in children  
(d) Multi-drug resistant tuberculosis
- 230. The agent useful in prevention of MAC infection in HIV infected individuals is**
- (a) Isoniazid (b) Pyrazinamide  
(c) Rifabutin (d) Streptomycin
- 231. Dose of rifampicin recommended in multibacillary leprosy is 600 mg**
- (a) Once daily  
(b) Once in a week  
(c) Twice weekly  
(d) Once in a month
- 232. The antimalarial agent that can be used during pregnancy is**
- (a) Halofantrine (b) Chloroguanide  
(c) Mefloquine (d) Primaquine
- 233. The anti-fungal agent amphotericin B is also active against**
- (a) Anaerobic bacteria  
(b) *Giardia lamblia*  
(c) *Leishmania*  
(d) *Rickettsiae*
- 234. The anti amoebic agent implicated in causing subacute myelo-optic neuropathy (SMON) is**
- (a) Diloxanide furoate  
(b) Iodochlorohydroxyquin  
(c) Emetine  
(d) Metronidazole
- 235. The drug of choice for tropical eosinophilia is**
- (a) Niridazole  
(b) Niclosamide  
(c) Diethyl carbamazine citrate  
(d) Tetramisole
- 236. The agent used to treat tapeworm infestations is**
- (a) Praziquantel (b) Diloxanide furoate  
(c) Pentamidine (d) Thiabendazole

**237. Methotrexate**

- (a) Is useful in choriocarcinoma
- (b) Is safe in patients with renal dysfunction
- (c) Induced neurotoxicity is reversed by leucovorin
- (d) Is not used in children

**238. Prolactin**

- (a) Has somatotropic activity
- (b) If low can cause infertility in women
- (c) Can suppress menstrual cycle in lactating women
- (d) Levels are increase by dopamine

**239. Thioamide drugs**

- (a) Aggravate endocrine exophthalmos
- (b) Are safe in children
- (c) Produce irreversible hypothyroidism
- (d) Do not produce relapse

**240. Liothyronine is the drug of choice in treatment of**

- (a) Myxoedema coma
- (b) Cretinism
- (c) Iodine deficiency goiter
- (d) Non-resectable cases of papillary thyroid carcinoma

**241. When does the neutrophil nadir associated with chemotherapy agents generally occur?**

- (a) During administration of the chemotherapy
- (b) 1–2 days after therapy
- (c) 10–14 days after therapy
- (d) 1 month after therapy
- (e) When the platelet count begins to rise

**242. Which of the following are the principal organisms in superinfection?**

- (a) Salmonella, shigella
- (b) Candida, albicans, proteus and staphylococci
- (c) E. Coli, Mycobacterium tuberculosis
- (d) None of the above

**243. In tuberculosis combination of antimicrobials is used**

- (a) To delay the development of drug resistance
- (b) To reduce severity of adverse reactions

- (c) To broaden the spectrum of antimicrobial activity
- (d) All of the above

**244. The bactericidal drugs act most effectively on**

- (a) The toxin liberated by organisms
- (b) Preventing liberation of toxins from organisms
- (c) Slowly dividing organisms
- (d) Rapidly dividing organisms

**245. Most of the laboratory sensitivity tests for antimicrobials are conducted at pH**

- (a) 4.6–4.8
- (b) 8.4–8.6
- (c) 3.2–3.6
- (d) 7.2–7.4

**246. Sulphonamides prevent the synthesis of folic acid in bacterial cells because**

- (a) They compete with PABA which is a precursor of folic acid
- (b) They potentiate action of PABA which is natural antagonist of folic acid
- (c) They bind to PABA and form a complex
- (d) None of the above

**247. Sulphonamide-trimethoprim combination becomes bactericidal because**

- (a) Sulphonamide inhibits conversion of folic acid to folinic acid, and trimethoprim from PABA to folic acid
- (b) Sulphonamide inhibits conversion of PABA to folic acid and trimethoprim from folic acid to folinic acid
- (c) Trimethoprim increases the free drug concentration of sulphonamide
- (d) Sulphonamide increases the free drug concentration of trimethoprim

**248. Sulphonamide given in late pregnancy or to new born can result in kernicterus because**

- (a) It stimulates synthesis of bilirubin
- (b) It displaces bilirubin from plasma protein and results in high free bilirubin concentration
- (c) It prevents the metabolism of bilirubin
- (d) It is metabolized in bilirubin

**249. Concentration of sulphonamides in C.S.F. is about 40 to 80% of that in blood because**

- (a) In C.S.F. there is no protein to bind the drug
- (b) C.S.F. has higher protein content than the blood
- (c) C.S.F. has low protein content than the blood
- (d) In C.S.F. sulphonamides are quickly destroyed

**250. Sulphonamides are primarily metabolized by**

- (a) Acetylation
- (b) Glucuronidation
- (c) Etheral sulphate formation
- (d) None of the above

**251. In an alkaline urine sulphonamides are**

- (a) Less soluble
- (b) More soluble
- (c) Not at all soluble
- (d) No effect of pH on stability of sulphonamides

**252. The risk of crystalluria by sulphonamides can be reduced by**

- (a) Giving more soluble sulphonamides
- (b) Making urine alkaline
- (c) Ensuring urinary volume at least 2 liters a day
- (d) All of the above

**253. Sulphamethizole is principally used for**

- (a) Topical application
- (b) Systemic infection
- (c) Occular infection
- (d) Urinary infection

**254. Stomatitis is characterized by all of the following signs and symptoms except**

- (a) headache
- (b) erythema
- (c) bleeding
- (d) ulcerations
- (e) dryness of mouth

**255. In co-trimoxazole, sulphamethoxazole and trimethoprim are in ratio of**

- (a) 2 : 1
- (b) 1 : 5
- (c) 1 : 1
- (d) 5 : 1

**256. Pyrimethamine and proguanil act by**

- (a) Interfering with parasite's ability to digest Hb
- (b) Inhibiting dihydrofolate reductase which converts folic acid to folinic acid

- (c) Interfering with plasmodium mitochondria
- (d) By all of the above mechanisms

**257. Drug resistance develops**

- (a) More readily to pyrimethamine than chloroquin
- (b) More readily to chloroquin than pyrimethamine
- (c) In both cases resistance does not develop
- (d) In both cases resistance develops readily

**258. For suppressive prophylaxis of malaria the drug used is**

- (a) Pyrimethamine 25 mg. once a week
- (b) Pyrimethamine 250 mg. once a week
- (c) Primaquine 15 mg daily for 2 days
- (d) All of the above drug can be used

**259. For radical cure of malaria the drug of choice is**

- (a) Primaquine 25 mg bd. × 7 days
- (b) Primaquine 15 mg once daily × 14 days
- (c) Chloroquine 400 mg. once is a month
- (d) None of the above

**260. Which of the following statements describe hemorrhagic cystitis? It**

- (a) Is caused by excretion of tumor cell breakdown products
- (b) Is associated with iforamide or cyclophosphamide administration
- (c) Is caused by the administration of mesna
- (d) Can be prevented or treated with acrolein
- (e) Can be treated with G-CSF

**261. The less common causative organism in urinary tract infection is**

- (a) E. Coli
- (b) Pseudomonas
- (c) Tubercular bacilli
- (d) Proteus

**262. In an acute U.T.I. with alkaline urine and unidentified organism, the treatment should begin with**

- (a) Co-trimoxazole
- (b) Sulphonamide
- (c) Nitrofurantoin
- (d) Mendallic acid

**263. Nitrofurantion is useful only in urinary tract infection because**

- (a) It is rapidly excreted and concentrated in urine
- (b) It is rapidly metabolized in liver which prevents effective plasma concentration

- (c) It's concentration in renal tissue is high because of renal tubular reabsorption  
 (d) It is effective against common organisms of U.T.I e.g. proteins, and E. Coli  
 (e) All above reasons
- 264. Hexamine mandelate is only effective in U.T.I. and not in systemic infection because**
- (a) It is only concentrated in urine  
 (b) In urine at pH less than 5.5, it liberates active antibacterials  
 (c) For systemic infection dose required is too high which is toxic  
 (d) Organisms in systemic infection are not sensitive to it
- 265. All of the following chemotherapy agents are vesicants except**
- (a) Doxorubicin (b) Mechlorethamine  
 (c) Vincristine (d) Methotrexate  
 (e) Idarubicin
- 266. Which of the following is most effective antitubercular drug?**
- (a) INH (b) Thioactazone  
 (c) PAS (d) Pyrazinamide
- 267. Which of the following drugs is effective against intracellular organism of tuberculosis?**
- (a) INH (b) Streptomycin  
 (c) PAS (d) Ethambutol
- 268. Isoniazid may cause peripheral neuropathy and anaemia as its side effects because**
- (a) It is toxic to nerves and to R.B.C  
 (b) It interferes with pyridoxin metabolism and induces its deficiency  
 (c) It prevents absorption of iron and ascorbic acid  
 (d) It is a type of hypersensitivity reaction
- 269. Rifampicin has gained significance in antitubercular therapy because**
- (a) It is the cheapest and effective drug  
 (b) It is least toxic, so suitable for chronic use  
 (c) It potentiates the antitubercular effect of other drugs  
 (d) It has reduced the duration of antitubercular therapy
- 270. In cell targeted suicide mode of gene therapy for cancer the prodrug used is**
- (a) Gancyclovir (b) Acyclovir  
 (c) Ara c/m (d) All of the above
- 271. Drug of choice for guinea worm infestation is**
- (a) Digoxin (b) Furosemide  
 (c) Enalapril (d) Amrinone
- 272. Which of the following can not be treated with danzol ?**
- (a) Endometriosis  
 (b) Menorrhagia  
 (c) Fibrocystic disease  
 (d) Hirsutism
- 273. Melphalan is the drug of choice in**
- (a) Leukemia  
 (b) Multiple myeloma  
 (c) Hodgkin's disease  
 (d) Osteosarcoma
- 274. Prolonged chlorpromazine therapy results in**
- (a) Osteomalacta  
 (b) Photosensitivity  
 (c) Yellowish discolouration  
 (d) Altered renal function
- 275. Drug of choice for actinomycosis is**
- (a) Penicillin (b) Tetracycline  
 (c) Sulfonamide (d) Dapsone
- 276. Match each of the following toxicities to the agent most likely to cause the toxicity**
- (a) Cardiotoxicity (1) Vincristine  
 (b) Hypersensitivity (2) Irinotecan  
 (c) Diarrhea (3) Doxorubicin  
 (d) Pulmonary toxicity (4) Paclitaxel  
 (e) Constipation (5) Bleomycin

**ANSWERS**

1. d	2. c	3. b	4. c	5. b	6. e
7. d	8. d	9. b	10. d	11. b	12. d
13. d	14. a	15. a	16. d	17. d	18. d
19. a	20. c	21. b	22. c	23. d	24. d
25. a	26. c	27. a	28. b	29. a	30. c
31. e	32. d	33. d	34. a	35. c	36. b
37. a	38. b	39. d	40. b	41. d	42. b
43. e	44. b	45. b	46. d	47. b	48. c
49. e	50. e	51. d	52. d	53. b	54. d
55. b	56. c	57. b	58. b	59. b	60. c
61. e	62. b	63. c	64. e	65. e	66. a
67. a	68. a	69. e	70. b	71. d	72. b
73. b	74. c	75. e	76. d	77. d	78. c
79. c	80. c	81. e	82. a	83. a	84. c
85. a	86. c	87. c	88. c	89. a	90. a
91. a	92. b	93. e	94. c	95. e	96. d
97. b	98. d	99. b	100. a	101. b	102. c
103. a	104. d	105. a	106. b	107. d	108. e
109. c	110. d	111. c	112. c	113. c	114. e
115. e	116. d	117. c	118. e	119. e	120. d
121. a	122. c	123. b	124. e	125. c	126. d
127. b	128. c	129. b	130. a	131. d	132. d
133. b	134. c	135. b	136. c	137. c	138. d
139. d	140. c	141. d	142. a	143. b	144. a
145. c	146. c	147. b	148. b	149. d	150. a
151. c	152. c	153. c	154. b	155. b	156. a
157. d	158. a	159. b	160. b	161. d	162. d
163. a	164. a	165. a	166. c	167. b	168. d
169. d	170. d	171. b	172. d	173. d	174. c
175. b	176. c	177. d	178. b	179. b	180. d
181. d	182. a	183. d	184. b	185. a	186. a
187. b	188. c	189. c	190. a	191. d	192. a
193. c	194. c	195. b	196. a	197. c	198. b
199. c	200. b	201. d	202. b	203. d	204. a
205. b	206. d	207. d	208. a	209. d	210. e
211. c	212. b	213. d	214. d	215. b	216. b
217. d	218. d	219. b	220. d	221. c	222. b
223. d	224. a	225. d	226. d	227. d	228. a
229. a	230. c	231. d	232. b	233. c	234. b
235. c	236. a	237. a	238. c	239. b	240. a
241. c	242. b	243. a	244. d	245. d	246. a



247. b	248. b	249. c	250. a	251. b	252. a
253. d	254. b	255. d	256. b	257. a	258. a
259. b	260. b	261. c	262. a	263. e	264. b
265. d	266. a	267. a	268. b	269. d	270. d
271. a	272. d	273. b	274. a	275. a	
276. a.3, b.4, c.2, d.5, e.1					

### EXPLANATIONS FOR THE ANSWERS

1. d Prostate cancer is the most common cancer in men, breast cancer is the most common cancer in women, followed by lung, then colon and rectum for both men and women.
27. a Phase-specific agents are most active in one specific phase of the cell cycle. These agents have no activity against cell in  $G_0$ , the resting phase. Examples of phase-specific agents include the mitotic inhibitors, asparaginase, the antimetabolites and etoposides.
53. b BSA correlates with cardiac output, which determines renal and hepatic blood flow and thus affects drug elimination.
77. d Combination chemotherapy has been developed to have maximum cytotoxicity to tumor cells and minimal toxicity to normal cells. The drugs are dosed and scheduled such that maximal cell kill and occurs, while sparing normal cells as much as possible. Combination regimens often contain agents with different spectrums of toxicity.
- 95 e Intrathecally administered vincristine is fatal. All syringes of vincristine must be labeled "Fatal if given intrathecally. For intravenous use only."
119. e Cyclophosphamide and mechlorethamine are nitrogen mustards, a subgroup of the alkylating agents. Etoposide is a topoisomerase II inhibitor and paclitaxel is a mitotic inhibitor.
145. c Doxorubicin is an antitumor antibiotic that inhibits DNA synthesis by intercalation. Vincristine and paclitaxel are mitotic inhibitors that act on microtubule assembly. Topotecan inhibits topoisomerase I.
168. d Antimetabolites are structural analogues of naturally occurring substrates for biochemical reactions. They inhibit DNA synthesis by acting as false substitutions in the production of DNA.
189. c Docetaxel is a taxane, which works by promoting microtubule assembly and stabilization, resulting in inhibition of cell division. Vincristine, vinblastine and vinorelbine are vinca alkaloids, which work by preventing microtubule formation. Mitoxantrone is an antitumor antibiotic that works by DNA intercalation.
210. e Tamoxifen is an antiestrogen used in the treatment of breast cancer. Prednisone is used for its antilymphocytic. Properties in the treatment of non-Hodgkin's lymphoma. Flutamide is an antiandrogen used in the treatment of prostate cancer.
241. c Bone marrow suppression, particularly of the neutrophils, usually is the most profound 10–14 days after chemotherapy.
252. a Stomatitis, or mucositis, is an inflammation of the mucous membranes, particularly the oral mucosa. Although the symptoms generally are limited to the mouth and throat, stomatitis may affect any part of the gastrointestinal tract, potentially causing diarrhea and anal fissures.
260. b Hemorrhagic cystitis results from irritation of the lining of the bladder by acrolein, a metabolite of ifosfamide and cyclophosphamide. Mesna may be used to inactivate the acrolein, thus preventing hemorrhagic cystitis.
265. d Vesicant chemotherapy agents may cause local necrosis if extravasated outside the vein. Doxorubicin, idarubicin, mechlorethamine and vincristine are all classified as vesicants.
276. a. 3, b. 4, c. 2, d. 5, e. 1: Cardiotoxicity is associated with cumulative doses of doxorubicin and other antitumor antibiotics. Hypersensitivity from paclitaxel may be due to its cremophor diluent. Severe diarrhea, requiring treatment with atropine, is associated with irinotecan. Pulmonary toxicity is associated with cumulative doses of bleomycin. Severe constipation and paralytic ileus is associated with the use of vincristine.

# Chapter 12

## DRUGS USED IN ENDOCRINE DISORDERS (HORMONES)

- 1. Which one of the following compounds is not a hormone?**
  - (a) Bromocriptine
  - (b) Somatostatin
  - (c) Somatotropin
  - (d) Thyroxine
  - (e) Vasopressin
- 2. Which one of the following hormones not synthesized in the hypothalamus?**
  - (a) Corticotropin-releasing hormone
  - (b) Luteinizing hormone
  - (c) Oxytocin
  - (d) Thyrotropin-releasing hormone
  - (e) Vasopressin
- 3. An important difference between leuprolide and the new drug ganirelix is that ganirelix**
  - (a) Can be administered as an oral formulation
  - (b) Can be used alone to restore fertility to hypogonadal men and women
  - (c) Immediately reduces gonadotropin secretion
  - (d) Initially stimulates pituitary production of LH and FSH
  - (e) Must be administered in a pulsatile fashion
- 4. A 27-year-old woman with amenorrhea, infertility, and galactorrhea was treated with a drug that successfully restored ovulation and menstruation. Before being given the drug, the woman was carefully questioned about previous mental health problems, which she did not have. She was advised to take the drug orally. The drug used to treat this patient was probably.**
  - (a) Bromocriptine
  - (b) Desmopressin
  - (c) Human gonadotropin hormone
  - (d) Leuprolide
  - (e) Octreotide
- 5. Who is least likely to be treated with somatotropin?**
  - (a) A 3-year-old cow on a dairy farm
  - (b) A 4-year-old girl with an XO genetic genotype
  - (c) A 4-year-old boy with chronic renal failure and growth deficiency
  - (d) A 10-year-old boy with polydipsia and polyuria
  - (e) A 37-year-old AIDS patient who is 180 cm tall and weighs 52 Kg
- 6. Hormones that are useful in the diagnosis of endocrine insufficiency include**
  - (a) Corticotropin-releasing hormone
  - (b) Cosyntropin
  - (c) Gonadotropin-releasing hormone
  - (d) Thyrotropin-releasing hormone
  - (e) All of the above
- 7. All of the following substances are endogenous pituitary hormones secreted by the pituitary gland except**
  - (a) Somatotropin
  - (b) Human chorionic gonadotropin (HCG)

- (c) Follicle-stimulating hormone (FSH)  
(d) Thyroid-stimulating hormone (TSH)  
(e) Adrenocorticotrophic hormone (ACTH)
- 8. Which of the following drugs is least likely to be used as part of a controlled ovarian hyperstimulation protocol?**
- (a) Human chorionic gonadotropin  
(b) Leuprolide  
(c) Menotropins  
(d) Pergolide  
(e) Urofollitropin
- 9. Actions of thyroxine do not include**
- (a) Acceleration of cardiac rate  
(b) Decreased glomerular filtration rate  
(c) Fine tremor of skeletal muscles  
(d) Increased appetite  
(e) Stimulation of oxygen consumption
- 10. Effects of iodide salts given in large doses do not include**
- (a) Decreased size of the thyroid gland  
(b) Decreased vascularity of the thyroid gland  
(c) Decreased hormone release  
(d) Decreased iodination of tyrosine  
(e) Increased <sup>131</sup>I uptake
- 11. Symptoms of hypothyroidism (myxedema) do not include**
- (a) Dry, puffy skin  
(b) Increased appetite  
(c) Large tongue and drooping of the eyelids  
(d) Lethargy, sleepiness  
(e) Slow heart rate
- 12. When initiating thyroxine therapy for an elderly patient with long-standing hypothyroidism, it is important to begin with small doses to avoid**
- (a) A flare of exophthalmos  
(b) Acute renal failure  
(c) Hemolysis  
(d) Overstimulation of the heart  
(e) Seizures
- 13. A 46-year-old male patient has Cushing's syndrome that is due to the presence of an adrenal tumor. Which of the following drugs would be expected to reduce the signs and symptoms of this man's disease?**
- (a) Betamethasone (b) Cortisol  
(c) Fludrocortisone (d) Ketoconazole  
(e) Triamcinolone
- 14. In the treatment of congenital adrenal hyperplasia in which there is excess production of cortisol precursors due to a lack of 21 $\beta$ -hydroxylase activity, the purpose of administration of a synthetic glucocorticoid is**
- (a) Inhibition of aldosterone synthesis  
(b) Normalization of renal function  
(c) Prevention of hypoglycemia  
(d) Recovery of normal immune function  
(e) Suppression of ACTH secretion
- 15. Glucocorticoids have not been proved to be effective in the treatment of**
- (a) Acute lymphocytic leukemia  
(b) Addison's disease  
(c) Asthma  
(d) Chemotherapy-induced vomiting  
(e) Osteoporosis
- 16. For patients who have been on long-term therapy with a glucocorticoid and who now wish to discontinue the drug, gradual tapering of the glucocorticoid is needed to allow recovery of**
- (a) Depressed release of insulin from pancreatic B cells  
(b) Hematopoiesis in the bone marrow  
(c) Normal osteoblast function  
(d) The control by vasopressin of water excretion  
(e) The hypothalamic-pituitary-adrenal system
- 17. A 24-year-old woman with type 1 diabetes wishes to try tight control of her diabetes to improve her long-term prognosis. Which of the following regimens is most appropriate?**
- (a) Morning injections of mixed lente and ultralente insulins  
(b) Evening injections of mixed regular and lente insulin



- 27. A 42-year-old woman requires treatment for diabetes insipidus following surgical removal of part of her pituitary gland. The advantage of treating this patient with desmopressin instead of vasopressin is that desmopressin**
- Causes less formation of factor VIII
  - Causes less hypernatremia
  - Causes less hyperprolactinemia
  - Is more selective for the  $V_2$  receptor subtype
  - Provides greater relief of the excessive thirst the patient experiencing
- 28. All of the following substances are endogenous tropic hormones secreted by the pituitary gland except**
- Somatotropin
  - Human Chorionic Gonadotropin (HCG)
  - Follicle-stimulating hormone (FSH)
  - Thyroid-stimulating hormone (TSH)
  - Corticotropin (ACTH)
- 29. Which of the following substances when present in urine is the most likely positive sign of pregnancy?**
- Thyroid-stimulating hormone (TSH)
  - Corticotropin (ACTH)
  - Human chorionic gonadotropin (HCG)
  - Interstitial cell-stimulating hormone (ICSH)
  - Protamine zinc insulin (PZI)
- 30. Which of the following glucocorticoids produces the least sodium retention?**
- Corticosone
  - Hydrocorticosone
  - Prednisolone
  - Dexamethasone
  - Fludrocortisone
- 31. Which of the following glucocorticoids produces the least sodium retention?**
- Cortisone
  - Hydrocortisone
  - Prednisolone
  - Dexamethasone
  - Fludrocortisone
- 32. Which of the following insulins can be administered intravenously?**
- Regular insulin
  - Isophane insulin (NPH)
  - Protamine zinc insulin (PZI)
  - Semilente insulin
  - Ultralente insulin
- 33. Which of the following classes of compounds stimulates the release of insulin from pancreatic  $\beta$ -cells?**
- Progestins
  - Biguanides
  - $\alpha$ -Glucosidase inhibitors
  - Thioureylenes
  - Sulfonylureas
- 34. Insulin preparations that contain a modifying protein include**
- Lente insulin
  - Regular insulin
  - Isophane insulin (NPH)
- 35. Metabolic reactions likely to be affected by a protein-deficient diet include**
- Glycine conjugation
  - Hydrolysis
  - Glucuronidation
- 36. What is the correct formula to use for calculating the free thyroxine index (FTI)?**
- $T_4 \times RT_3 \text{ U}/\text{mean serum } RT_3 \text{ U}$
  - $T_3 \times T_3/\text{mean serum } RT_3 \text{ U}$
  - $T_3 \times RT_3 \text{ U}/\text{mean serum } RT_3 \text{ U}$
  - $T_4 \times RT_3 \text{ U} \times \text{mean serum } RT_3 \text{ U}$
  - $T_3 \times RT_3 \text{ U} \times \text{mean serum } RT_3 \text{ U}$
- 37. Which of the following insulins can be administered intravenously?**
- Regular insulin
  - Isophane insulin (NPH)
  - Protamine zinc insulin (PZI)
  - Semilente insulin
  - Ultralente insulin
- 38. All of the following conditions are causes of hyperthyroidism except**
- Graves' disease
  - Hashimoto's thyroiditis
  - Toxic multinodular goiter
  - Triiodothyronine toxicosis
  - Plummer's disease

- 39. Which of the following preparations is used to attain remission of thyrotoxicosis?**
- (a) Propranolol (b) Liotrix  
(c) Levothyroxine (d) Propylthiouracil  
(e) Desiccated thyroid
- 40. The thyroid gland normally secretes which of the following substances into the serum?**
- (a) Thyrotropin-releasing hormone (TRH)  
(b) Thyrotropin (thyroid-stimulating hormone)  
(c) Diiodothyronine (DIT)  
(d) Thyroglobulin  
(e) Thyroxine ( $T_4$ )
- 41. All of the following conditions are causes of hypothyroidism except**
- (a) Endemic goiter  
(b) Surgical excision  
(c) Hashimoto's thyroiditis  
(d) Goitrin-induced iodine deficiency  
(e) Graves's disease
- 42. Common tests to monitor patients receiving replacement therapy for hypothyroidism include all of the following except**
- (a) Thyrotropin (TSH) stimulation test  
(b) Sensitive TSH assay  
(c) Free thyroxine index (FTI)  
(d) Resin triiodothyronine uptake ( $RT_3U$ )  
(e) Total thyroxine ( $TT_4$ )
- 43. Which of the following pairs of preparations has been studied for bioequivalence?**
- (a) Levoxyl-Thyrolar  
(b) Thyroglobulin - Proloid  
(c) Levothroid - Synthroid  
(d) Cytomel - Synthroid  
(e) Desiccated thyroid-Armour thyroid
- 44. The inhibition of pituitary thyrotropin secretion is controlled by which of the following?**
- (a) Free thyroxine ( $T_4$ )  
(b) Thyroid-releasing hormone (TRH)  
(c) Free thyroxine index (FTI)  
(d) Reverse triiodothyronine ( $rT_3$ )  
(e) Total thyroxine
- 45. Which of the following agents has been shown to interact with oral thyroxine ( $T_4$ ) replacement therapy?**
- (a) Propylthiouracil (b) Cholestyramine  
(c) Thyrotropin (d) Levothyroxine  
(e) Lovastatin
- 46. What laboratory tests are currently recommended by the Thyroid association to diagnose thyroid disease?**
- (a) Resin triiodothyronine uptake ( $RT_3U$ ) and total thyroxine ( $TT_4$ )  
(b) Thyrotropin (TSH) and free thyroxine index (FTI)  
(c) Total thyroxine ( $TT_4$ ) and sensitive TSG assay  
(d) Free  $T_4$  and sensitive TSH assay  
(e) Free  $T_4$  and  $RT_3U$
- 47. What patient population should be screened for thyroid disease?**
- (a) Hospitalized patients  
(b) Elderly patients with chronic disease  
(c) Elderly hospitalized patients  
(d) College students  
(e) Women over 20 years old
- 48. What is the average replacement dose of levothyroxine for an otherwise healthy adult?**
- (a) 25–50  $\mu\text{g}/\text{day}$   
(b) 50–100  $\mu\text{g}/\text{day}$   
(c) 75–150  $\mu\text{g}/\text{day}$   
(d) 100–200  $\mu\text{g}/\text{day}$   
(e) 200–400  $\mu\text{g}/\text{day}$
- 49. In comparing levothyroxine to liothyronine, which of the following statements is not correct?**
- (a) Both levothyroxine and liothyronine are naturally occurring thyroid hormones  
(b) Liothyronine can be converted in the peripheral circulation to levothyroxine.  
(c) Liothyronine is more potent than levothyroxine  
(d) The plasma concentration of liothyronine is less than that of levothyroxine.  
(e) Liothyronine has a shorter duration of action than levothyroxine.



- 50. Which of the values represents the lower level of detection for the fourth generation sensitive TSH assay as established by the Thyroid Association?**
- 0.5–5 mIU/L
  - 1–2 mIU/L
  - 0.01–0.02 mIU/L
  - 0.0001–0.002 mIU/L
  - 0.0001–0.0002 mIU/L
- 51. In which of the following clinical presentations should the sensitive TSH assay be used?**
- Population screening for thyroid disease
  - Screening hospitalized patients
  - Patients receiving thyroid replacement after 6 to 8 weeks of therapy
  - Patients who are human immunodeficiency virus (HIV) positive
  - Screening patients with psychiatric illness
- 52. Which of the following classes of compounds stimulates the release of insulin from pancreatic  $\beta$ -cells?**
- Progestins
  - Biguanides
  - $\alpha$ -Glucosides inhibitors
  - Thiourylenes
  - Sulfonylureas
- 53. Which of the following is not an estrogenic substance?**
- Estradiol
  - Premarin
  - Theelin
  - Follicle-stimulating hormone
  - Stilbesterol
- 54. Propylthiouracil is useful in the treatment of**
- Derangement toxicosis
  - Hypothyroidism
  - Hypoparathyroidism
  - Hyperthyroidism
  - Thyroiditis
- 55. Which of the following is an idiosyncratic adverse drug reaction ?**
- Muscle dystonia caused by triflupromazine
  - Insomnia after taking pentobarbitone
  - Precipitation of asthma by morphine
  - Gum hyperplasia caused by phenytoin
- 56. An immunologically mediated reaction to a drug producing stereotyped symptoms unrelated to its pharmacodynamic actions is**
- Hypersensitivity
  - Supersensitivity
  - Intolerance
  - Idiosyncrasy
- 57. Drugs producing allergic reactions generally act as**
- Complete antigens
  - Haptenes
  - Antibodies
  - Mediators
- 58. Which of the following allergic drug reaction is caused by circulating antibodies ?**
- Serum sickness
  - Anaphylactic shock
  - Systemic lupus erythematosus
  - Angioedema
- 59. The essential feature in drug addiction is**
- Physical dependence
  - Psychological dependence
  - Both (a) and (b)
  - Psychiatric abnormality
- 60. Adaptive neurophysiological changes produced by repeated administration of a drug, which result in the appearance of characteristic withdrawal syndrome on discontinuation of the drug is called**
- Drug addiction
  - Drug abuse
  - Psychological dependence
  - Physical dependence
- 61. What constitutes 'drug abuse'?**
- Physician prescribed use of penicillin G for the cure of viral fever
  - Self administration of aspirin to relieve headache
  - Repeated self administration of morphine to derive euphoria
  - All of the above



- 62. Under physiological conditions the rate limiting enzyme in the generation of angiotensin II is**
- Renin
  - Angiotensin converting enzyme
  - Aminopeptidase
  - Angiotensinase
- 63. Angiotensin II causes rise in blood pressure by**
- Direct vasoconstriction
  - Releasing adrenaline from adrenal medulla
  - Increasing central sympathetic tone
  - All of the above
- 64. Which of the following is a pressor peptide that can be generated both in circulation as well as locally in certain tissues ?**
- Bradykinin
  - Angiotensin
  - Kallidin
  - Plasmin
- 65. Angiotensin II plays a key role in the following risk factor for ischaemic heart disease**
- Hypercholesterolemia
  - Ventricular hypertrophy
  - Carbohydrate intolerance
  - Cardiac arrhythmia
- 66. Several actions of growth hormone are exerted through the elaboration of**
- Cyclic AMP
  - Cyclic GMP
  - Somatostatin
  - Insulin like growth factor – 1
- 67. Somatostatin inhibits the release of**
- Growth hormone
  - Insulin
  - Thyrotropin
  - All of the above
- 68. For therapeutic use, growth hormone is obtained from**
- Recombinant DNA technique
  - Human cadaver pituitaries
  - Porcine pituitaries
  - Chemical synthesis
- 69. Which of the following compounds is incorrectly matched with its mechanism of action?**
- Flutamide: Competitively blocks the binding of androgens to their receptor
  - Finasteride: Inhibits 5 $\alpha$ -reductase
  - Miglitol: Inhibits  $\alpha$ -glucosidase
  - Pioglitazone: Competitively blocks the binding of estrogens to their receptor
  - Anastrozole: Inhibits aromatase
- 70. The most prominent action of bromocriptine is**
- Dopamine D2 agonism
  - Dopamine D2 antagonism
  - Dopamine D1 antagonism
  - $\alpha$  adrenergic antagonism
- 71. Gynaecomastia can be treated with**
- Chlorpromazine
  - Cimetidine
  - Bromocriptine
  - Metoclopramide
- 72. Menotropins is a preparation of**
- FSH + LH obtained from urine of menstruating women
  - LH obtained from urine of pregnant women
  - FSH + LH obtained from urine of menopausal women
  - LH obtained from serum of pregnant mare
- 73. Serum TSH levels are high in most cases of**
- Myxoedema
  - Grave's disease
  - Carcinoma thyroid
  - Toxic nodular goiter
- 74. Adrenocorticotrophic hormone is primarily used for**
- Treatment of Addison's disease
  - Treatment of congenital adrenal hyperplasia
  - Treatment of autoimmune disease
  - Diagnosis of pituitary-adrenal axis disorders
- 75. Which of the following compounds is incorrectly matched with one of its therapeutic uses?**
- Raloxifene: Advanced breast cancer
  - Metformin: Non-insulin dependent diabetes mellitus (NIDDM)

- (c) Finasteride : Benign prostatic hyperplasia  
 (d) Propylthiouracil: Hyperthyroidism  
 (e) Tamoxifen : Estrogen-dependent breast cancer
- 76. Metabolic rate of the following organ is not significantly affected by thyroxine**  
 (a) Brain (b) Heart  
 (c) Liver (d) Skeletal muscle
- 77. Actions of thyroxine include the following except**  
 (a) Rise in blood sugar level  
 (b) Reduction in plasma cholesterol level  
 (c) Fall in plasma free fatty acid level  
 (d) Induction of negative nitrogen balance
- 78. Triiodothyronine is preferred over thyroxine in the treatment of**  
 (a) Endemic goiter  
 (b) Cretinism  
 (c) Papillary carcinoma of thyroid  
 (d) Myxoedema coma
- 79. Carbimazole acts by inhibiting**  
 (a) Iodide trapping  
 (b) Oxidation of iodide  
 (c) Proteolysis of thyroglobulin  
 (d) Synthesis of thyroglobulin protein
- 80. Antithyroid drugs exert the following action.**  
 (a) Block the action of thyroxine on peripheral tissues  
 (b) Block the action of thyroxine on pituitary  
 (c) Block the action of TSH on thyroid  
 (d) Inhibit thyroxine synthesis
- 81. A 60-year-old male presents with severe hyperthyroidism and multinodular goiter. It was decided to treat him with  $^{131}\text{I}$ . The most appropriate course of treatment would be**  
 (a) Immediate  $^{131}\text{I}$  dosing with no other drug before or after  
 (b) Propranolol for 1 week followed by  $^{131}\text{I}$   
 (c) Propranolol + carbimazole till severe thyrotoxicosis controlled – 1 week gap –  $^{131}\text{I}$  – resume carbimazole after 1 week for 2 – 3 months  
 (d) Propranolol + Lugol's iodine for 2 weeks –  $^{131}\text{I}$  – continue Lugol's iodine for 2 – 3 months
- 82. The thyroid inhibitor which produces the fastest response is**  
 (a) Radioactive iodine  
 (b) Lugol's iodine  
 (c) Propylthiouracil  
 (d) Lithium carbonate
- 83. In the treatment of hyperthyroidism, carbimazole has the following advantage over radioactive iodine.**  
 (a) cost of treatment is lower  
 (b) It is preferable in uncooperative patient  
 (c) It is better tolerated by the patients  
 (d) Hypothyroidism when induced is reversible
- 84. Glucose entry into the cells of the following organ/ tissue is highly dependent on the presence of insulin.**  
 (a) Brain (b) Liver  
 (c) Adipose tissue (d) Kidney tubules
- 85. Prolonged testosterone therapy can cause**  
 (a) Hypertrophy of seminiferous tubules of testes  
 (b) Hypertrophy of interstitial cells of testes  
 (c) Atrophy of interstitial cells of testes  
 (d) Both (a) and (b)
- 86. Testosterone therapy started in a boy of 8 years and continued till puberty is likely to**  
 (a) Increase adult stature  
 (b) Reduce adult stature  
 (c) Have no effect on adult stature  
 (d) Cause hypertrophy of penis
- 87. Which of the following is true of anabolic steroids ?**  
 (a) They are testosterone congeners having anabolic but no androgenic activity  
 (b) They are androgens with relatively selective anabolic activity  
 (c) They are suitable for long-term therapy in children  
 (d) Both (b) and (c)

- 88. Which of the following drugs has potent antiandrogenic and weak progestational activity ?**
- (a) Digoxin                      (b) Furosemide  
(c) Enalapril                    (d) Amrinone
- 89. Which of the following is a non-steroidal antiandrogen that has been found to be palliative in advanced carcinoma prostate ?**
- (a) Cyproterone acetate  
(b) Danazol  
(c) Finasteride  
(d) Flutamide
- 90. Hormones that form lipophilic esters without prior structural modifications include**
- I. Hydrocortisone  
II. Testosterone  
III. Progesterone
- (a) I only is correct  
(b) III only is correct  
(c) I and II are correct  
(d) II and III are correct  
(e) I, II and III are correct
- 91. Finasteride acts by**
- (a) Blocking testosterone receptors in the prostate gland  
(b) Reducing testosterone secretion from testes  
(c) Reducing LH secretion from pituitary  
(d) Reducing circulating as well as prostatic dihydrotestosterone concentration
- 92. Transdermal estradiol differs from oral estrogen therapy in that it**
- (a) FSH + LH obtained from urine of menstruating women  
(b) LH obtained from urine of pregnant women  
(c) FSH + LH obtained from urine of menopausal women  
(d) LH obtained from serum of pregnant mare
- 93. In which of the following conditions estrogen is not the primary drug but is added to progestin as adjuvant ?**
- (a) Dysfunctional uterine bleeding  
(b) Menopausal syndrome  
(c) Osteoporosis  
(d) Atrophic vaginitis
- 94. Addition of a progestin for 10-12 days each month to estrogen replacement therapy in menopausal women is recommended because the progestin**
- (a) Blocks the increased risk of myocardial infarction due to estrogen  
(b) Blocks the increased risk of endometrial carcinoma due to estrogen  
(c) Reverses vulval atrophy occurring in postmenopausal women  
(d) Enhances the metabolic benefits of estrogen treatment
- 95. The preferred estrogen for hormone replacement therapy in menopausal women is**
- (a) Ethinylestradiol  
(b) Estradiol benzoate  
(c) Diethylstilbestrol  
(d) Conjugated estrogens
- 96. Select the compound which used for hormone replacement therapy in postmenopausal women serves the purpose of both estrogen and progestin with weak androgenic activity.**
- (a) Digoxin                      (b) Furosemide  
(c) Enalapril                    (d) Amrinone
- 97. Estrogen replacement therapy for postmenopausal women is contraindicated in subjects with**
- (a) Leg vein thrombosis  
(b) Undiagnosed vaginal bleeding  
(c) Migraine  
(d) All of the above
- 98. Clomiphene citrate is indicated for the following condition/conditions**
- (a) Female infertility due to anovular cycles  
(b) Male infertility due to oligozoospermia  
(c) Endometriosis  
(d) Both (a) and (b)
- 99. Which of the following is an orally active ovulation inducing agent ?**
- (a) Menotropin                (b) Mifepristone  
(c) Danazol                      (d) Clomiphene citrate

- 100. Insulin preparations that contain a modifying protein include**
- I. Lente insulin
  - II. Regular insulin
  - III. Isophane insulin (NPH)
- (a) I only is correct
  - (b) III only is correct
  - (c) I and II are correct
  - (d) II and III are correct
  - (e) I, II and III are correct
- 101. Progesterone administration**
- (a) Suppresses onset of menstruation
  - (b) Induces watery cervical secretion
  - (c) Sensitizes the uterus to oxytocin
  - (d) Cornifies vaginal epithelium
- 102. Select the indication for which a progestin is used alone without combining with an estrogen.**
- (a) Threatened abortion
  - (b) Dysfunctional uterine bleeding
  - (c) Hormone replacement therapy
  - (d) Premenstrual tension
- 103. Mifepristone possesses the following activities**
- (a) Potent antiprogestin + weak androgenic
  - (b) Potent antiprogestin + weak antiglucocorticoid
  - (c) Potent antiestrogenic + weak antiprogestin
  - (d) Potent antiestrogenic + weak glucocorticoid
- 104. Which of the following drugs is an anti-progestin**
- (a) Gemeprost
  - (b) Megestrol
  - (c) Mifepristone
  - (d) Tamoxifen
- 105. The most important indication of mifepristone is**
- (a) Endometriosis
  - (b) Cushing's syndrome
  - (c) First term abortion
  - (d) Second term abortion
- 106. Which of the following can act as a single dose postcoital contraceptive ?**
- (a) Clomiphene citrate
  - (b) Mifepristone
  - (c) Danazol
  - (d) Medroxyprogesterone acetate
- 107. Which hormone is secreted by pancreatic  $\beta$  cells to facilitate glucose and amino acid transport for normal cellular metabolic processes ?**
- (a) Testosterone
  - (b) Insulin
  - (c) Corticotropin
  - (d) Estradiol
  - (e) Vasopressin
- 108. The purpose/purposes served by the progestin component of the combined estrogen + progestin contraceptive pill is/are**
- (a) Suppression of ovulation
  - (b) Prompt bleeding at the end of the course
  - (c) Blockade of increased risk of endometrial carcinoma
  - (d) All of the above
- 109. In which of the following forms of oral contraception, pills are taken continuously without interruption ?**
- (a) Combined pill
  - (b) Sequential pill
  - (c) Minipill
  - (d) Phased pill
- 110. A progestin and an estrogen are combined in oral contraceptive pill because**
- (a) The estrogen blocks the side effects of the progestin
  - (b) The progestin blocks the side effects of the estrogen
  - (c) Both synergise to suppress ovulation
  - (d) Both synergise to produce hostile cervical mucus
- 111. The most common and important undesirable effect of injectable contraceptive depot medroxyprogesterone acetate is**
- (a) Nausea and vomiting
  - (b) Disruption of cyclic menstrual bleeding
  - (c) Venous thrombosis
  - (d) Hypertension
- 112. The primary mechanism of action of the combined estrogen-progestin oral contraceptive pill is**

- (a) Production of cervical mucus hostile to sperm penetration
- (b) Suppression of FSH and LH release
- (c) Making endometrium unsuitable for implantation
- (d) Enhancing uterine contractions to dislodge the fertilized ovum

**113. Which of the following is advised when a woman on combined oral contraceptive pill misses a dose**

- (a) Continue with the course without regard to the missed dose
- (b) Take 2 pills the next day and continue with the course
- (c) Take 2 pills every day for the remaining part of the course
- (d) Discontinue the course and use alternative method of contraception

**114. Which side effect effect of the oral contraceptive subsides after 3-4 cycles of continued use**

- (a) Glucose intolerance
- (b) Rise in blood pressure
- (c) Headache
- (d) Fluid retention

**115. Concurrent use of the following drug is likely to cause failure of oral contraception**

- (a) Isoniazid                      (b) Rifampicin
- (c) Cimetidine                    (d) Propranolol

**116. On stoppage of the combined estrogen-progestin contraceptive pill, fertility returns after**

- (a) 1–2 months                    (b) 4–6 months
- (c) 6–12 months                (d) Uncertain period

**117. Which hormone promotes the resorption of water at the renal distal convoluted tubule**

- (a) Testosterone                (b) Insulin
- (c) Corticotropin                (d) Estradiol
- (e) Vasopressin

**118. Which of the following has been found to act as a male contraceptive without affecting libido or potency**

- (a) Cyproterone acetate
- (b) Goserelin
- (c) Centchroman
- (d) Gossypol

**119. Which of the following tissues is most sensitive to oxytocin.**

- (a) Myometrium
- (b) Myoepithelium of mammary alvioli
- (c) Vascular smooth muscle
- (d) Renal collecting ducts

**120. Which class of drug closely relates to : "Peptic ulceration and gastrointestinal hemorrhage; hyperglycemia, hypertension, and edema; "buffalo hump" and "moon face"; psychological disturbances; and increased susceptibility to infection ?**

- (a) Antithyroid agents
- (b) Sulfonylurea oral hypoglycemics
- (c) Adrenocorticosteroids
- (d) Progestins
- (e) Androgens

**121. Oxytocin is preferred over ergometrine for augmenting labour because**

- (a) It has brief and titratable action
- (b) It is less likely to cause foetal anoxia
- (c) It is less likely to impede foetal descent
- (d) All of the above

**122. The drug of choice for controlling post-partum haemorrhage is**

- (a) Oxytocin
- (b) Methylergometrine
- (c) Dihydroergotamine
- (d) Prostaglandin E<sub>2</sub>

**123. Ergometrine stops post partum haemorrhage by**

- (a) Causing vasoconstriction of uterine arteries
- (b) Increasing tone of uterine muscle
- (c) Promoting coagulation
- (d) Inducing platelet aggregation

**124. Bone resorption is accelerated by**

- (a) Estrogens                      (b) Parathormone
- (c) Bisphosphonates            (d) Calcitonin

- 125. The primary action of parathormone is**
- To increase intestinal calcium absorption
  - To increase calcium reabsorption in kidney tubules
  - To promote calcium deposition in extraosseous tissues
  - To increase resorption of calcium from bone
- 126. The drug of choice for hypoparathyroidism is**
- Parathormone
  - Calcium lactate
  - Vitamin D
  - Pamidronate
- 127. The most suitable Vitamin D preparation for vitamin D dependent rickets is**
- Calciferol
  - Cholecalciferol
  - Calcifediol
  - Calcitriol
- 128. The vitamin that is regarded to be a hormone is**
- Vitamin D
  - Vitamin C
  - Vitamin B<sub>12</sub>
  - Vitamin A
- 129. Which of the following drugs can cause rickets in children by interfering with Vitamin D action ?**
- Tetracycline
  - Phenylbutazone
  - Phenytoin
  - Ciprofloxacin
- 130. Estrogens**
- Block bone resorption
  - Maintain negative calcium balance
  - Decrease HDL levels
  - Increase bile acid secretion
- 131. Which class of drug closely relates to: "Agranulocytosis and other blood dyscrasias, cholestatic jaundice, nausea and vomiting, hypoglycemia and photosensitivity" ?**
- Antithyroid agents
  - Sulfonylurea oral hypoglycemics
  - Adrenocorticosteroids
  - Progestins
  - Androgens
- 132. The principle source of circulating estrogen in menstruating women is**
- Granulosa cells
  - Breast cells
  - Placenta
  - Gonadotropes
- 133. Progesterone**
- Increases muscular contractility of fallopian tubes
  - Decreases the frequency of LH pulses
  - Increases the myometrial contractions
  - Increases the thickness of the endometrium
- 134. Feminization is not a side effect of**
- Mesterolone
  - Testosterone cypionate
  - Testosterone
  - Testosterone propionate
- 135. Anabolic steroids are contraindicated in**
- Prostatic carcinoma
  - Carcinoma of the breast in females
  - Promoting growth in hypogonadal children
  - Refractory anaemias associated with hypoplastic bone marrow
- 136. Potassium iodide**
- Increases bronchial secretions
  - On prolonged use may result in hyperthyroidism
  - Is useful in inflammation of the bronchi
  - Is contraindicated in thyroid storm
- 137. Which of the following is physiological role of vasopressin ?**
- Smooth muscle vasoconstriction
  - Neurotransmission/neuromodulation
  - Increased factor VIII concentration
  - All of the above
- 138. Angiotensin increases peripheral resistance by**
- Direct vasoconstriction
  - Catecholamine release from adrenal medulla
  - Noradrenaline release from sympathetic nerve terminals
  - All of the above
- 139. The drug of choice for hypoparathyroidism is**



- (a) Parathormone (b) Pamidronate  
(c) Calcium (d) Vitamin D

**140. Which class of drug closely relates to: "Hepatotoxicity and jaundice, urinary retention and azoospermia, prostatic hypertrophy and priapism and paradoxical gynecomastia."**

- (a) Antithyroid agents  
(b) Sulfonylurea oral hypoglycemics  
(c) Adrenocorticosteroids  
(d) Progestins  
(e) Androgens

## ANSWERS

- |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|
| 1. a   | 2. b   | 3. c   | 4. a   | 5. d   | 6. e   |
| 7. b   | 8. d   | 9. b   | 10. e  | 11. b  | 12. d  |
| 13. d  | 14. e  | 15. e  | 16. e  | 17. d  | 18. c  |
| 19. d  | 20. a  | 21. b  | 22. b  | 23. c  | 24. c  |
| 25. a  | 26. e  | 27. d  | 28. b  | 29. c  | 30. d  |
| 31. d  | 32. a  | 33. e  | 34. c  | 35. a  | 36. a  |
| 37. a  | 38. b  | 39. d  | 40. e  | 41. e  | 42. a  |
| 43. c  | 44. a  | 45. b  | 46. d  | 47. e  | 48. c  |
| 49. b  | 50. d  | 51. c  | 52. e  | 53. d  | 54. d  |
| 55. b  | 56. a  | 57. b  | 58. a  | 59. b  | 60. d  |
| 61. c  | 62. a  | 63. d  | 64. b  | 65. b  | 66. d  |
| 67. d  | 68. a  | 69. d  | 70. a  | 71. c  | 72. c  |
| 73. a  | 74. d  | 75. a  | 76. a  | 77. c  | 78. d  |
| 79. b  | 80. d  | 81. c  | 82. b  | 83. d  | 84. c  |
| 85. c  | 86. b  | 87. b  | 88. c  | 89. d  | 90. c  |
| 91. d  | 92. a  | 93. a  | 94. b  | 95. d  | 96. a  |
| 97. d  | 98. d  | 99. d  | 100. b | 101. a | 102. a |
| 103. b | 104. c | 105. c | 106. b | 107. b | 108. d |
| 109. c | 110. c | 111. b | 112. b | 113. b | 114. c |
| 115. b | 116. a | 117. a | 118. d | 119. b | 120. c |
| 121. d | 122. b | 123. b | 124. b | 125. d | 126. c |
| 127. d | 128. a | 129. c | 130. a | 131. b | 132. a |
| 133. b | 134. a | 135. a | 136. a | 137. d | 138. d |
| 139. d | 140. e |        |        |        |        |

## EXPLANATIONS FOR THE ANSWERS

7. b Human chorionic gonadotropin (hCG) is produced by placental tissue and serves to stimulate the secretion of progesterone during pregnancy. Growth hormone (somatotropin), follicle-stimulating hormone (FSH), thyroid-stimulating hormone (TSH) and corticotropin (ACTH) are all secreted by the anterior pituitary gland.
18. c Human chorionic gonadotropin (hCG) is a proteinaceous tropic hormone that is secreted by chorionic (e. g., placental) tissue. Thus, hCG is present in the urine only after conception has occurred.
24. c Liothyronine is a thyroid hormone. Thyroid hormones consist of iodinated aromatic amino acids and are not steroidal in nature. Ethinyl



- estradiol is a steroidal estrogen, norethindrone is a steroidal 19-norprogesterin, prednisolone is an adrenocorticosteroid and fluoxymesterone is a steroidal adrogen.
30. d Glucocorticoids have varying degrees of mineralocorticoid activity. This mineralocorticoid activity, which can result in sodium and fluid retention, can be blocked by the introduction of a methyl or hydroxyl group in position 16 of the steroidal nucleus. Dexamethasone has a 16  $\beta$ -methyl substituent.
37. a Most insulin preparation are suspensions; thus, they contain particulate matter. Only clear solutions may be administered intravenously. Regular insulin, which consists of water-soluble crystalline zinc insulin is therefore suitable for intravenous administration. Insulin preparations are normally injected subcutaneously.
49. b The thyroid gland produces both levothyroxine (T4) and liothyronine (T3). The natural ratio of these compounds is 4 to 1 in favor of levothyroxine; therefore, liothyronine is normally present at a lower concentration than levothyroxine. Liothyronine is more potent than levothyroxine, but has a shorter duration of action. Peripheral conversion involves deiodination, thus levothyroxine is converted to liothyronine. The reverse process is not possible.
52. e Of the five classes of compounds listed, only biguanides,  $\alpha$ -glucosidase inhibitors, and sulfonylureas are used in the treatment of non-insulin-dependent mellitus (NIDDM). These classes provide their beneficial effects through different mechanism of action. Biguanides enhance the peripheral use of insulin, suppress gluconeogenesis, and are often referred to as antihyperglycemic agents.  $\alpha$ -Glucosidase inhibitors decrease the absorption of glucose. sulfonylureas and the structurally unrelated compounds, repaglinide and nateglinide, stimulate the secretion of insulin from pancreatic  $\beta$ -cells.
69. d Pioglitazone does not interact with estrogen receptors. It is an oral hypoglycemic agent that produces its effects by binding to nuclear peroxisome proliferator-activated receptors (PPARs) involved in transcription of insulin-responsive genes and in regulation of adipocyte differentiation and lipid metabolism. The other four agents are correctly matched to their mechanisms.
75. a Raloxifene is a selective estrogen receptor modulator (SERM) and is not used to treat breast cancer. Instead, because of its ability to reduce bone resorption and decrease bone turnover, it is used for the prevention of osteoporosis. All of the other four compounds are correctly matched to their therapeutic use. Finasteride is also used to treat androgenic alopecia.
90. c Hydrocortisone has a 21-hydroxyl group, and testosterone has a 17-hydroxyl group; therefore, both of these agents can form esters (e.g., hydrocortisone acetate, testosterone propionate). Progesterone does not have any alcohol groups in its molecule; therefore, it cannot directly form any esters.
100. b Regular insulin, which is a rapid-acting insulin preparation, contains only zinc insulin crystals. All lente insulins are free of modifying proteins, which contributes to their hypoallergenic properties. Isophane insulin is NPH insulin, which contains protamina, a strongly basic protein. The protamine reduces the water solubility of zinc insulin and lengthens its duration of action. Isophane insulin is classified as an intermediate-acting insulin preparation, having a duration of action of about 24 hours.
- Common explanation for 107. b, 117. a:  
Insulin is required for the proper utilization of glucose and the transport of glucose and amino acids across cell membranes. Testosterone, which is produced principally from the Leydig cells of the testes, is responsible for male sexual characteristics. Vasopressin is secreted from the posterior pituitary and is sometimes referred to as an antidiuratic hormone.
- Common explanation for 120. c, 131. b and 118. e:  
Exogenously administered adrenocorticosteroids are effective anti-inflammatory agents but give rise to a wide range of metabolic and immunosuppressive effects that result in severe adverse effects. Oral antidiabetic agents of the sulfonylurea type can cause blood dyscrasias, impaired liver function, and photosensitivity. Exogenously administered adrogens suppress sperm formation and cause paradoxical gynecomastia. Most significant is the hepatotoxicity produced by alkyl-substituted adrogen compounds.

# CHAPTER 13

## ANTIDIABETICS

- 1. Current criteria used in the diagnosis of diabetes mellitus (DM) include all of the following symptoms except**
  - (a) Fasting hyperglycemia
  - (b) Polyuria
  - (c) Polydipsia
  - (d) Tinnitus
  - (e) Weight loss
- 2. The most useful glucose test used in monitoring diabetes mellitus (DM) therapy is**
  - (a) Urine monitoring
  - (b) Blood monitoring
  - (c) Renal function monitoring
  - (d) Cardiovascular monitoring
  - (e) Vascular monitoring
- 3. Which of the following statements concerning insulin replacement therapy is most accurate?**
  - (a) Most commercial insulin products vary little with respect to time, course, and duration of hypoglycemic activity
  - (b) Regular insulins cannot be mixed with NPH (isophane insulin suspension)
  - (c) Regular insulin cannot be given intravenously
  - (d) Counting or regulating carbohydrate consumption is a necessity for all diabetic patients
  - (e) Insulin therapy does not have to be monitored closely
- 4. A mass of adipose tissue that develops at the injection site is usually due to the**

**patients neglect in rotating the insulin injection site. This is known as**

  - (a) Lipoatrophy
  - (b) Hypertrophic degenerative adiposity
  - (c) Lipohypertrophy
  - (d) Atrophic skin lesion
  - (e) Dermatitis
- 5. Sulfonylureas are a primary mode of therapy in the treatment of**
  - (a) Insulin-dependent (type 1) diabetes mellitus (DDM) patients
  - (b) Diabetic patients experiencing severe hepatic or renal dysfunction
  - (c) Diabetic pregnant women
  - (d) Patient with diabetic ketoacidosis
  - (e) Non-insulin-dependent (type 2) DM patients
- 6. Patients taking chlorpropamide should avoid products containing**
  - (a) Acetaminophen
  - (b) Ethanol
  - (c) Vitamin A
  - (d) Penicillins
  - (e) Milk products
- 7. The standard recommended dose of glyburide is**
  - (a) 0.5–2 mg/day
  - (b) 1.25–20mg/day
  - (c) 50–100 mg/day
  - (d) 200 mg/day
  - (e) 200–1000 mg/day

- 8. Which of the following may increase the insulin need of diabetics?**
- (a) Isoniazid
  - (b) Penicillin
  - (c) Glyceryl guaiacolate
  - (d) Aspirin
  - (e) Prednisone
- 9. Excessive use of tolbutamide will lead to**
- (a) Diarrhea
  - (b) Prolonged hypoglycemia
  - (c) Tolerance to alcohol
  - (d) Acidosis
  - (e) Glycosuria
- 10. The insulin receptor is a**
- (a) Ion channel regulating receptor
  - (b) Tyrosine protein kinase receptor
  - (c) G-protein coupled receptor
  - (d) None of these
- 11. The duration of action of insulin–zinc suspension (lente insulin) is**
- (a) 2–4 hours
  - (b) 8–10 hours
  - (c) 20–24 hours
  - (d) 30–36 hours
- 12. The most common adverse reaction to insulin is**
- (a) Hypoglycaemia
  - (b) Lipodystrophy
  - (c) Urticaria
  - (d) Angioedema
- 13. Which of the following is a neuroglucopenic symptom of hypoglycaemia ?**
- (a) Sweating
  - (b) Palpitation
  - (c) Tremor
  - (d) Abnormal behavior
- 14. There is no alternative to insulin therapy for**
- (a) All insulin dependent diabetes mellitus (IDDM) patients
  - (b) All noninsulin dependent diabetes mellitus (NIDDM) patients
  - (c) NIDDM patients not controlled by a sulfonylurea drug
  - (d) NIDDM patients not controlled by a biguanide drug
- 15. In a patient of diabetes mellitus maintained on insulin therapy, administration of the following drug can vitiate glycaemia control.**
- (a) Prednisolone
  - (b) Prazosin
  - (c) Paracetamol
  - (d) Phenytoin
- 16. The insulin preparation of choice in diabetic ketoacidosis is**
- (a) Regular insulin
  - (b) Lente insulin
  - (c) Isophane insulin
  - (d) Monocomponent insulin
- 17. Insulin resistance can be overcome by the use of**
- (a) Corticosteroids
  - (b) Tolbutamide
  - (c) Protamine
  - (d) Monocomponent insulin preparations
- 18. Human insulins are obtained by the following sources/methods except**
- (a) Cadaver pancreas
  - (b) Proinsulin recombinant bacterial
  - (c) Precursor yeast recombinant
  - (d) Enzyme modification of prok insulin
- 19. Compared to pork/beef insulins, the human insulins**
- (a) Are more potent
  - (b) Have a faster kinetics of absorption and elimination
  - (c) Have longer biological action half-life
  - (d) Penetrated blood-brain barrier more efficiently
- 20. The second generation sulfonylurea hypoglycaemics differ from the first generation one in that they**
- (a) Are more potent
  - (b) Are longer acting
  - (c) Do not lower blood sugar in nondiabetics subject
  - (d) Are less prone to cause hypoglycaemic reaction
- 21. Metformin is preferred over phenformin because**
- (a) It is more potent
  - (b) It is less liable to cause lactic acidosis
  - (c) It does not interfere with vitamin B<sub>12</sub> absorption
  - (d) It is not contraindicated in patients with kidney disease
- 22. Sulfonylureas do not lower blood sugar level in**
- (a) Nondiabetics
  - (b) Noninsulin dependent diabetics

- (c) Insulin dependent diabetics
- (d) None of these

**23. Sulfonylurea hypoglycaemics act by**

- (a) Reducing intestinal absorption of glucose
- (b) Increasing insulin secretion from pancreas
- (c) Reversing down-regulation of insulin receptors
- (d) Both (b) and (c)

**24. The hypoglycaemic action of sulfonylureas is likely to be attenuated by the concurrent use of**

- (a) Hydrochlorothiazid
- (b) Propranolol
- (c) Chloramphenicol
- (d) Aspirin

**25. Sulfonylureas are more commonly used than biguanides as oral hypoglycaemics because**

- (a) Biguanides are less efficacious
- (b) Sulfonylureas lower blood sugar in both IDDM and NIDDM patients
- (c) Sulfonylureas also aid weight reduction in obese diabetics
- (d) Biguanides are prone to precipitate ketoacidosis

**26. The present status of oral hypoglycaemics in diabetes mellitus is**

- (a) They are the first choice drugs in all cases
- (b) They should be prescribed only if the patient refuses insulin injections
- (c) They are used only in type I diabetes mellitus
- (d) They are used first in most uncomplicated mild to moderate type II diabetics

**27. Which of the following features disfavors use of oral hypoglycaemics in diabetes mellitus ?**

- (a) Age at onset of disease over 40 years
- (b) Insulin requirement more than 40 U/day
- (c) Fasting blood sugar level between 100–200 mg/dl
- (d) Associated obesity

**28. Which of the following is true of acarbose ?**

- (a) It reduces absorption of glucose from intestines
- (b) It produces hypoglycaemia in normal as well as diabetic subjects
- (c) It limits postprandial hyperglycaemia in diabetis

- (d) It raises circulating insulin levels

**29. Guar gum limits post-prandial glycaemia by**

- (a) Inhibiting intestinal brush border  $\alpha$ -glucosidases
- (b) Slowing carbohydrate absorption from intestine
- (c) Releasing incretins from the intestine
- (d) Promoting uptake of glucose into skeletal muscles

**30. Select the drug which tends to reverse insulin resistance by increasing cellular glucose transporters.**

- (a) Glibenclamide
- (b) Troglitazone
- (c) Acarbose
- (d) Prednisolone

**31. Glucagon release from pancreas is stimulated by**

- (a) High blood glucose level
- (b) Insulin
- (c) Somatostatin
- (d) Adrenaline

**32. Aldosterone enhances  $\text{Na}^+$  reabsorption in renal tubules by**

- (a) Stimulating carbonic anhydrase
- (b) Inhibiting  $\text{Na}^+$   $\text{K}^+$  ATP ase
- (c) Inducing the synthesis of  $\text{Na}^+$   $\text{K}^+$  ATP ase
- (d) Promoting  $\text{K}^+$  secretion

**33. Nephrogenic diabetes insipidus is seen with**

- (a) Demeclocycline
- (b) Doxycycline
- (c) Minocycline
- (d) Oxytetracycline

**34. The antidiabetic agent most likely to cause lactic acidosis is**

- (a) Chlorpropamide
- (b) Phenformin
- (c) Glipizide
- (d) Metformin

**35. The treatment of gestational diabetes would comprise of**

- (a) Glibenclamide
- (b) Chlorpropamide
- (c) Glipizide
- (d) Insulin

**36. Diabetic ketoacidosis is best managed by**

- (a) Crystalline insulin given intravenously
- (b) Human insulin given intramuscularly
- (c) Lente insulin given subcutaneously
- (d) Isophane insulin given intradermally

- 37. The sulfonylurea with a relatively longer duration of action is**  
 (a) Chlorpropamide (b) Tolbutamide  
 (c) Glibenclamide (d) Glipizide
- 38. Insulin**  
 (a) Release is enhance by somatostatin  
 (b) Has an identical chemical structure in all the species  
 (c) Release from the pancreas occurs only in the postprandial state  
 (d) Promotes synthesis of triglycerides
- 39. Metformin**  
 (a) Does not cause hypoglycemia even in large doses  
 (b) Should not be combined with glipizide  
 (c) Is contraindicated in obese NIDDM patients  
 (d) Causes release of insulin from the pancreas
- 40. The agent with negligible mineralocorticoid effect is**  
 (a) Prednisone (b) Betamethasone  
 (c) Fludrocortisone (d) Cortisol
- 41. Preferred route of insulin is**  
 (a) Oral (b) Subcutaneous  
 (c) Sublingual (d) Enteric coated tabs
- 42. Incorporation of vasoconstrictor substance in a solution of a drug to be injected subcutaneously retards absorption. This principal is utilized in combination of**  
 (a) Epinephrine with local anaesthetics  
 (b) Epinephrine with I.V. glucose  
 (c) With vaccines  
 (d) With insulin
- 43. A diabetic on oral hypoglycaemic drug chlorpropamide, suffered from enteric fever and was prescribed chloramphenicol. He developed severe hypoglycaemia. This is because**  
 (a) Chloramphenicol itself has mild hypoglycaemic effect  
 (b) Chloramphenicol increases the absorption of chlorpropamide  
 (c) Chloramphenicol causes release of insulin  
 (d) Chloramphenicol inhibits the metabolism of chlorpropamide
- 44. For increasing the excretion of weakly acidic drugs, urine should be made**  
 (a) Alkaline  
 (b) At neutral pH  
 (c) Acidic  
 (d) pH does not effect the urinary excretion of acidic drugs
- 45. Longest acting insulin is**  
 (a) Insulin zinc suspension  
 (b) Isophane insulin  
 (c) Globin zinc insulin  
 (d) protamine zinc insulin
- 46. Diuretic effective in diabetes insipidus is**  
 (a) Thiazides  
 (b) Loop diuretic  
 (c) Mercurial diuretic  
 (d) Carbonic anhydrase inhibitor
- 47. The insulin receptor is**  
 (a) Tyrosine protein kinase receptor  
 (b) G protein coupled receptor  
 (c) Ion channel regulating receptor  
 (d) None of these

## ANSWERS

- |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 1. d  | 2. b  | 3. d  | 4. c  | 5. e  | 6. b  |
| 7. b  | 8. e  | 9. b  | 10. b | 11. c | 12. a |
| 13. d | 14. a | 15. a | 16. a | 17. d | 18. a |
| 19. b | 20. a | 21. b | 22. c | 23. d | 24. a |
| 25. a | 26. d | 27. b | 28. c | 29. b | 30. b |
| 31. d | 32. c | 33. a | 34. b | 35. d | 36. a |
| 37. a | 38. d | 39. a | 40. b | 41. b | 42. a |
| 43. d | 44. a | 45. d | 46. a | 47. a |       |

# CHAPTER 14

## ANTICOAGULANTS

- 1. Which preparation of Vitamin K should not be injected in the new born ?**
  - (a) Phytonadione
  - (b) Menadione
  - (c) Menadione sod.diphosphate
  - (d) Both (b) and (c)
- 2. Unfractionated heparin binds to anti-thrombin III and inactivates clotting factor(s).**
  - (a) Xa
  - (b) Ixa
  - (c) Iia
  - (d) All of the above
  - (e) None of these
- 3. Low concentrations of heparin selectively interfere with the following coagulation pathway(s)**
  - (a) Intrinsic pathway
  - (b) Extrinsic pathway
  - (c) Common pathway
  - (d) Both (a) and (c)
- 4. Low doses of heparin prolong**
  - (a) Bleeding time
  - (b) Activated partial thromboplastin time
  - (c) Prothrombin time
  - (d) Both (b) and (c)
- 5. Low molecular weight heparins differ from conventional heparin in that**
  - (a) They selectively inhibit factor Xa
  - (b) They do not significantly prolong clotting time
  - (c) They are metabolized slowly and have longer duration of action
  - (d) All of the above
- 6. Initiation of unfractionated heparin therapy for the patient in question 1 would best be achieved with**
  - (a) 5000-unit loading dose followed by 1000 units/hr
  - (b) 5000-unit loading dose followed by 1800 units/hr
  - (c) 8000-unit loading dose followed by 1800 units/hr
  - (d) 8000-unit loading dose followed by 1000 units/hr
- 7. Which of the following can be used to antagonize the action of heparin in case of overdose ?**
  - (a) Heparin sulfate
  - (b) Dextran sulfate
  - (c) Protamine sulfate
  - (d) Ancrod
- 8. Blood level of which clotting factor declines most rapidly after the initiation of warfarin therapy**
  - (a) Factor VII
  - (b) Factor IX
  - (c) Factor X
  - (d) Prothrombin
- 9. The following drug reduces the effect of oral anticoagulants**
  - (a) Broad spectrum antibiotic
  - (b) Cimetidine

- (c) Aspirin  
(d) Oral contraceptive
- 10. The most definite beneficial results are obtained in the use of anticoagulants for the following purpose**
- (a) Prevention of recurrences of myocardial infarction  
(b) Prevention of venous thrombosis and pulmonary embolism  
(c) Cerebrovascular accident  
(d) Retinal artery thrombosis
- 11. Anticoagulants are indicated in**
- (a) Immobilized elderly patients  
(b) Buerger's disease  
(c) Stroke due to cerebral thrombosis  
(d) All of these
- 12. Which of the following tests are used to monitor antithrombotic therapy?**
- I. International normalized ratio (INR)  
II. Activated partial thromboplastin time (APTT)  
III. Heparin assay
- (a) If I only is correct  
(b) If III only is correct  
(c) If I and II are correct  
(d) If II and III are correct  
(e) If I, II, and III are correct
- 13. Which fibrinolytic drug(s) is/are antigenic**
- (a) Streptokinase      (b) Urokinase  
(c) Alteplase          (d) Both (a) and (b)
- 14. The most important complication of streptokinase therapy is**
- (a) Hypotension      (b) Bleeding  
(c) Fever              (d) Anaphylaxis
- 15. A patient to be commenced on oral anticoagulant therapy for DVT would be treated with:**
- I. Oral anticoagulant therapy with warfarin for a goal international normalized ratio (INR) of 2–3  
II. Oral anticoagulant therapy with warfarin for a goal INR of 2.5–3.5  
III. Oral anticoagulant therapy with aspirin for a goal INR of 2–3
- (a) If I only is correct  
(b) If III only is correct  
(c) If I and II are correct  
(d) If II and III are correct  
(e) If I, II, and III are correct
- 16. Thrombolytic therapy instituted within 3–6 hours of onset of acute myocardial infarction affords the following benefit(s)**
- (a) Reduces mortality  
(b) Reduces area of myocardial necrosis  
(c) Preserves ventricular function  
(d) All of these
- 17. The preferred route of administration of streptokinase in acute myocardial infarction is**
- (a) Intravenous      (b) Subcutaneous  
(c) Intracoronary    (d) Intracardiac
- 18. A patient on oral anticoagulant therapy is commenced on sulfamethoxazole-trimethoprim, double-strength twice daily. One may expect to see the INR**
- I. Increase  
II. Decrease  
III. Remain unchanged
- (a) If I only is correct  
(b) If III only is correct  
(c) If I and II are correct  
(d) If II and III are correct  
(e) If I, II, and III are correct
- 19. Aspirin prolongs bleeding time by inhibiting the synthesis of**
- (a) Clotting factors in liver  
(b) Prostacyclin in vascular endothelium  
(c) Cyclic AMP in platelets  
(d) Thromboxane A<sub>2</sub> in platelets
- 20. Route of heparin administration is**
- (a) Oral                  (b) Subcutaneous  
(c) Intramuscular    (d) Sublingual
- 21. The anticoagulant effects of heparin can be promptly arrested by administration of**
- (a) Epsilon amino caproic acid  
(b) Protamine sulfate



- (c) Adrenaline
- (d) Vitamin K

**22. Severe cases of bleeding due to fibrinolytic agents are treated with**

- (a) Aspirin
- (b) Heparin
- (c) EACA (Epsilon Amino Caproic Acid)
- (d) Vitamin K

**23. If a patient has an INR greater than 20 and active bleeding that is clinically significant (i.e., hematuria), the pharmacist should**

- I. Hold the drug therapy
- II. Administer vitamin K
- III. Administer fresh frozen plasma
- (a) If I only is correct
- (b) If III only is correct
- (c) If I and II are correct
- (d) If II and III are correct
- (e) If I, II, and III are correct

### ANSWERS

- |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 1. d  | 2. b  | 3. a  | 4. b  | 5. d  | 6. a  |
| 7. c  | 8. a  | 9. d  | 10. b | 11. a | 12. c |
| 13. a | 14. b | 15. b | 16. d | 17. a | 18. a |
| 19. d | 20. b | 21. b | 22. c | 23. b |       |

### EXPLANATIONS FOR THE ANSWERS

2. d Unfractionated heparin acts as an anticoagulant by catalyzing the inactivation of thrombin (factor IIa), activated factor X (factor Xa), and activated factor IX (factor IXa) by antithrombin III.
6. c Varying nomograms for dosing continuous-infusion unfractionated heparin exist in the medical and pharmaceutical literature. The loading dose is typically 70–100 units/kg. In this case the loading dose is 80 units/kg. Maintenance doses of 15–25 units/kg/hr are typically used. In this case, the maintenance dose is 18 units/kg/hr.
12. d Unfractionated heparin may be appropriately monitored by either the activated partial thromboplastin time (aPTT) or heparin assay. Because different laboratories use APTT reagents with varying sensitivities, the APTT range and its corresponding ratio must be correlated to a heparin level of 0.2–0.4 units/ml; or 0.3–0.7 units/ml by plasma-amidolytic assay. The safety and efficacy of low-molecular-weight heparin (LMWH) cannot be reliably evaluated by APTT determinations. LMWH safety and efficacy can be evaluated by heparin assay. Because of the reliability of dose responsiveness seen with LMWH therapy, the need to perform heparin assays is controversial.
15. a Oral anticoagulant therapy is monitored by measuring the prothrombin time (PT). The PT is responsive to depression of three of the four vitamin K-dependent procoagulant clotting factors, these respective clotting factors take approximately 96 hours to be depleted, at which time the PT should be sufficient to arrive at an international normalized ratio (INR) of 2.0–3.0 for patients with deep venous thrombosis. Patients with mechanical prosthetic heart valves have INRs targeted in the 2.5–3.5 range. Aspirin therapy is not monitored by INR determinations.
18. a Oral anticoagulant therapy with warfarin may be complicated by a myriad of drug-drug interactions owing to the highly protein-bound state of warfarin. Such drug interactions may potentiate the prothrombin time/international normalized ratio (PT/INR), inhibit the anticoagulant effect of warfarin, or have no effect on the actions of warfarin. Sulfamethoxazole-trimethoprim and other antibiotics have the potential to augment the anticoagulant

- effect of warfarin by eliminating bacterial flora and thereby, producing vitamin – K deficiency.
23. e Pharmacists may be called on to offer advice regarding reversal of warfarin therapy or may be empowered using Pharmacy and Therapeutics Committee or Medical Board approved protocols to reverse warfarin's effect. In all instances, the pharmacist must critically and clinically evaluate the situations and communicate with the physician regarding management issue. A need for immediate surgery or invasive procedures will always hasten the urgency of warfarin reversal. In the setting of active bleeding, its clinical significance must be demonstrated by consultation with the patient's physician. If the international normalized ration is  $>20$  and the patient has active bleeding that is clinically significant, the pharmacist must hold drug therapy, consider the most appropriate dose and route of vitamin-K delivery and administer fresh frozen plasma to replete the vitamin-Kdependent clotting factors.

# Chapter 15

## ANTIHYPERLIPEDEMIC AGENTS

- 1. Inhibition of thromboxane synthesis by aspirin in platelets lasts for 5–7 days because**
  - (a) Aspirin persists in the body for 5–7 days
  - (b) Aspirin induced depletion of arachidonic acid lasts 5–7 days
  - (c) Regeneration of aspirin inhibited cyclooxygenase takes 5–7 days
  - (d) Platelets cannot generate fresh thromboxane synthetase and their turnover time is 5-7 days
- 2. Choose the drug which has a direct effect on platelet membrane to inhibit aggregation, release reaction and to improve platelet survival in extra-corporeal circulation**
  - (a) Dipyridamole
  - (b) Ticlopidine
  - (c) Aspirin
  - (d) Sulfinpyrazone
- 3. Combined therapy with dipyridamole and warfarin is recommended in subjects with the following**
  - (a) Risk factors for coronary artery disease
  - (b) prosthetic heart valves
  - (c) Chronic arteriovenous shunts for repeated haemodialysis
  - (d) Both (b) and (c)
- 4. Select the hypocholesterolemic drug which interferes with intestinal absorption of bile salts and cholesterol, and secondarily increases cholesterol turnover in the liver**
  - (a) Clofibrate
  - (b) Cholestyramine
  - (c) Lovastatin
  - (d) Bezafibrate
- 5. Select the most appropriate hypolipidemic drug for a patient with raised LDL-cholesterol level but normal triglyceride level**
  - (a) A HMG – CoA reductase inhibitor
  - (b) A fibric acid derivative
  - (c) Probucol
  - (d) Nicotinic acid
- 6. A patient with coronary artery disease has raised serum triglyceride (600 mg/dl) but normal total cholesterol level (150 mg/dl). Which hypolipidemic drug should be prescribed**
  - (a) Probucol
  - (b) Gemfibrozil
  - (c) Cholestyramine
  - (d) Lovastatin
- 7. Choose the correct statement about lovastatin**
  - (a) It markedly lowers plasma triglyceride with little effect on cholesterol level
  - (b) It is used as an adjuvant to gemfibrozil for type III hyperlipoproteinemia
  - (c) It is not effective in diabetes associated hypercholesterolemia
  - (d) It is a competitive inhibitor of the rate limiting step in cholesterol synthesis
- 8. Select the drug which reduces cholesterol synthesis in liver, increases expression of**

**LDL receptors on hepatocytes and has been found to reduce mortality due to coronary artery disease**

- (a) Simvastatin (b) Nicotinic acid  
(c) Probucol (d) Colestipol

**9. What is true of nicotinic acid as well as nicotinamide ?**

- (a) Both possess vitamin B<sub>3</sub> activity  
(b) Both cause cutaneous vasodilatation  
(c) Both lower plasma triglyceride and VLDL levels  
(d) Both cause hyperglycaemia after prolonged medication

**10. Which hypolipidemic drug has been used to control and prevent pancreatitis in familial hypertriglyceridemia ?**

- (a) Lovastatin (b) Clofibrate  
(c) Cholestyramine (d) Nicotinic acid

**11. The rare but characteristic adverse effect of HMGCoA reductase inhibitors is**

- (a) Onycholysis  
(b) Myopathy  
(c) Alopecia  
(d) Oculomucocutaneous syndrome

**12. In a 50-year-old male without any other coronary artery disease risk factor, hypocholesterolemic drugs are recommended only when the serum LDL cholesterol level is higher than**

- (a) 130 mg/dl (b) 160 mg/dl  
(c) 190 mg/dl (d) 240 mg/dl

**13. High molecular weight, pharmacodynamically inert, nonantigenic substances which form colloidal solution are used as**

- (a) Osmotic purgatives  
(b) Osmotic diuretics  
(c) Plasma expanders  
(d) All of the above

**14. Hydroxyethyl starch is a**

- (a) Plasma expander  
(b) Haemostatic  
(c) Heparin substitute  
(d) Bile acid sequestrant

**15. Cholestyramine resin**

- (a) Significantly lowers plasma triglyceride levels  
(b) Can enhance the oral absorption of digoxin  
(c) May enhance the absorption of fat-soluble vitamins  
(d) Is the drug of choice in type II hyperlipoproteinemia

**16. Clofibrate**

- (a) May reduce the action of warfarin  
(b) Can decrease gall stone formation  
(c) Can elevate plasma HDL cholesterol levels  
(d) Increases platelet aggregation

**17. Probucol**

- (a) Can lower HDL cholesterol levels  
(b) Reduces clearance of plasma LDL by the liver  
(c) Can produce constipation  
(d) Is beneficial in patients with recent myocardial infarction

**18. Nicotinic acid**

- (a) Reduces production of VLDL  
(b) Should not be used in combination with cholestyramine resin  
(c) Can lower HDL levels  
(d) Can increase serum triglyceride levels

**19. Which of the following statements is true regarding cholestyramine?**

- (a) It inhibits free fatty acid release from adipose tissue  
(b) It releases lipoprotein lipase  
(c) It blocks the final step in the synthesis of cholesterol in the body  
(d) When used in large doses, it decreases serum cholesterol

## ANSWERS

- |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 1. d  | 2. b  | 3. d  | 4. b  | 5. a  | 6. b  |
| 7. d  | 8. a  | 9. a  | 10. c | 11. b | 12. c |
| 13. c | 14. a | 15. d | 16. c | 17. a | 18. a |
| 19. d |       |       |       |       |       |

# Chapter 16

## ANTACIDS

- 1. For healing duodenal ulcer the usual duration of H<sub>2</sub> blocker therapy is**
  - (a) 4 weeks
  - (b) 6 weeks
  - (c) 8 weeks
  - (d) 12 weeks
- 2. What is true of acid control therapy with H<sub>2</sub> blockers ?**
  - (a) It generally heals duodenal ulcers faster than gastric ulcers
  - (b) It checks bleeding in case of bleeding peptic ulcer
  - (c) It prevents gastroesophageal reflux
  - (d) Both (a) and (b)
- 3. The 'acid neutralizing capacity' of an antacid is governed by**
  - (a) The equivalent weight of the antacid
  - (b) The pH of 1N solution of the antacid
  - (c) The rate at which the antacid reacts with HCl
  - (d) Both (a) and (c)
- 4. An antacid with the following property would be desirable in the treatment of peptic ulcer.**
  - (a) Which raises gastric pH to 4.0
  - (b) Which raises gastric pH to 7.0
  - (c) Which increases gastric motility and hastens gastric emptying
  - (d) Both (b) and (c)
- 5. Antacid combinations of magnesium and aluminium salts are superior to single component preparations because**
  - (a) They have rapid as well as sustained acid neutralizing action
  - (b) They are less likely to affect gastric emptying
  - (c) They are less likely to alter bowel movement
  - (d) All of the above
- 6. In peptic ulcer, antacids are now primarily used for**
  - (a) Prompt pain relief
  - (b) Ulcer healing
  - (c) Preventing ulcer relapse
  - (d) Control of bleeding from the ulcer
- 7. The following is a noncompetitive antagonist at the gastric parietal cell H<sub>2</sub> receptor.**

(a) Cimetidine	(b) Loxatidine
(c) Roxatidine	(d) Rantidine
- 8. Gynaecomastia can occur as a side effect of**

(a) Bromocriptine	(b) Levodopa
(c) Famotidine	(d) Cimetidine
- 9. Which histamine H<sub>2</sub> blocker has maximum inhibitory effect on microsomal cytochrome P-450 enzyme ?**

(a) Cimetidine	(b) Ranitidine
(c) Roxatidine	(d) Famotidine

- 10. Choose the correct statement about H<sub>2</sub> receptor blockers.**
- They are the most efficacious drugs in inhibiting gastric acid secretion
  - They cause fastest healing of duodenal ulcers
  - They are the most commonly used drugs for inhibiting gastric acid secretion
  - They afford most prompt relief of ulcer pain
- 11. Ranitidine is mostly given by intravenous infusion for the following indication.**
- Rapid relief of gastric ulcer pain
  - Prophylaxis of gastric erosion in patients with extensive burns
  - Zollinger Ellison syndrome
  - Reflux oesophagitis
- 12. Ranitidine differs from cimetidine in the following manner.**
- It is less potent
  - It is shorter acting
  - It does not have antiandrogenic action
  - It produces more CNS side effects
- 13. Eradication of H pylori along with gastric antisecretory drugs affords the following benefit(s).**
- Faster relief of ulcer pain
  - Faster ulcer healing
  - Reduced chance of ulcer relapse
  - Both (b) and (c)
- 14. The drugs employed for anti H pylori therapy include the following except**
- Ciprofloxacin
  - Clarithromycin
  - Tinidazole
  - Amoxicillin
- 15. The following class of gastric antisecretory drug have primary effect on juice volume, with less marked effects on acid and pepsin content, and also reduce gastric motility**
- Histamine H<sub>2</sub> blockers
  - Anticholinergics
  - Proton pump inhibitors
  - Prostaglandins
- 16. The following drug is an inhibitor of gastric mucosal proton pump.**
- Carbenoxolone sodium
  - Sucralfate
  - Famotidine
  - Lansoprazole
- 17. Omeprazole exerts practically no other action except inhibition of gastric acid secretion because**
- It transforms into the active cationic forms only in the acidic pH of the gastric juice
  - Its active forms have selective affinity for the H<sup>+</sup>K<sup>+</sup> ATP ase located in the apical canaliculi of gastric parietal cells
  - Its cationic forms are unable to diffuse out from the gastric parietal cell canaliculi
  - All of the above
- 18. The most efficacious drug for inhibiting round the clock gastric acid output is**
- Omeprazole
  - Cimetidine
  - Pirenzepine
  - Misoprostol
- 19. The primary mechanism by which prostaglandins promote ulcer healing is**
- Inhibition of gastric secretion
  - Augmentation of bicarbonate buffered mucus layer covering gastroduodenal mucosa
  - Increased bicarbonate secretion in gastric juice
  - Increased turnover of gastric mucosal cell
- 20. Which of the following statements is true about misoprostol ?**
- It relieves peptic ulcer pain, but does not promote ulcer healing
  - It heals nonsteroidal anti-inflammatory drug induced gastric ulcer not responding to H<sub>2</sub> blockers
  - It produces fewer side effects than H<sub>2</sub> blockers
  - It is the most effective drug for preventing ulcer relapse
- 21. Sucralfate promotes healing of duodenal ulcer by**
- Enhancing gastric mucus and bicarbonate secretion
  - Coating the ulcer and preventing the action of acid-pepsin on ulcer base

- (c) Promoting regeneration of mucosa
- (d) Both (a) and (b)

**22. Antacids administered concurrently reduce efficacy of the following antipeptic ulcer drug.**

- (a) Cimetidine            (b) Omeprazole
- (c) Sucralfate            (d) Pirenzepine

**23. The most important drawback of sucralfate in the treatment of duodenal ulcer is**

- (a) Low ulcer healing efficacy
- (b) Poor relief of ulcer pain
- (c) High incidence of side effects
- (d) Need for taking a big tablet four times a day

**24. The preferred regimen for preventing duodenal ulcer relapse is**

- (a) Maintenance antacid regimen
- (b) Maintenance H<sub>2</sub> blocker regimen
- (c) On demand intermittent H<sub>2</sub> blocker regimen
- (d) Maintenance sucralfate regimen

**25. Used as a laxative, liquid paraffin has the following drawbacks except**

- (a) It interferes with absorption of fat soluble vitamins
- (b) It is unpleasant to swallow
- (c) It causes griping
- (d) It may produce foreignbody granulomas

**26. Which of the following purgatives undergoes enterohepatic circulation to produce prolonged action ?**

- (a) Docusates            (b) Phenolphthalein
- (c) Castor oil            (d) Lactulose

**27. The following laxative lowers blood ammonia level in hepatic encephalopathy.**

- (a) Bisacodyl            (b) Liquid paraffin
- (c) Lactulose            (d) Magnesium sulfate

**28. Select the purgative that should not be taken at bed time.**

- (a) Ispaghula            (b) Bisacodyl

- (c) Senna                    (d) Magnesium sulfate

**29. Saline osmotic purgatives are used for**

- (a) Reatment of constipation
- (b) Prevention of constipation in patients of piles
- (c) Avoidance of straining at stools in patients of hernia
- (d) Tapeworm infestation: Following niclosamide administration

**30. The most suitable laxative for a patient of irritable bowel syndrome with spastic constipation is**

- (a) Dietary fibre            (b) Liquid paraffin
- (c) Bisacodyl            (d) Senna

**31. The success of oral rehydration therapy of diarrhoea depends upon the following process in the intestinal mucosa.**

- (a) Sodium pump mediated Na<sup>+</sup> absorption
- (b) Glucose coupled Na<sup>+</sup> absorption
- (c) Bicarbonate coupled Na<sup>+</sup> absorption
- (d) Passive Na<sup>+</sup> diffusion secondary to nutrient absorption

**32. Saline laxatives containing magnesium**

- (a) Reduce the secretion of cholecystokinin
- (b) Are more effective when administered on an empty stomach
- (c) Are commonly used in the treatment in functional constipation
- (d) Are safe in patients with impaired renal function

**33. Antimotility drugs are contraindicated in**

- (a) Mild traveler's diarrhoea
- (b) Acute infective diarrhoeas
- (c) Ileostomy patients
- (d) Patients after anal surgery

**34. Octreotide**

- (a) Has a short half-life of 2 minutes
- (b) Is given orally three times in a day
- (c) Is useful in carcinoid syndrome
- (d) Increases intestinal smooth muscle contractility



- 35. Therapy of choice in Zollinger Ellison syndrome is**  
 (a) Omeprazole  
 (b) Ranitidine  
 (c) Sucralfate  
 (d) Carbenoxolone sodium
- 36. Misoprostol**  
 (a) Is helpful in preventing ulcers induced by NSAIDs  
 (b) Can cause constipation  
 (c) Does not inhibit acid secretion  
 (d) Can delay labor in a pregnant woman
- 37. Ranitidine is a new histamine receptor blocker. It is**  
 (a) Less potent, non competitive but selective antagonist of histamine at gastric site than cimetidine  
 (b) More potent, non selective and most toxic histamine antagonist of histamine at gastric site  
 (c) More potent, competitive and selective antagonist of histamine at gastric site  
 (d) None of the above
- 38. Omeprazole is most useful in**  
 (a) Gastric ulcer  
 (b) Duodenal ulcer  
 (c) Reflux esophagitis  
 (d) Gastritis
- 39. Antacids should not be prescribed concurrently with**  
 (a) Ranitidine (b) Pirenzepine  
 (c) Sucralfate (d) Omeprazole
- 40. The antiulcer drug very helpful in preventing NSAID induced gastric ulcer is**  
 (a) Roxatidine (b) Furosemide  
 (c) Enalapril (d) Amrinone
- 41. In peptic ulcer, antacids do have a primary role in**  
 (a) Prompt relief of pain  
 (b) Ulcer healing  
 (c) Control of bleeding  
 (d) Prevention of ulcer relapse

## ANSWERS

- |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 1. c  | 2. a  | 3. d  | 4. a  | 5. d  | 6. a  |
| 7. b  | 8. d  | 9. a  | 10. c | 11. b | 12. c |
| 13. d | 14. a | 15. b | 16. d | 17. d | 18. a |
| 19. b | 20. b | 21. b | 22. c | 23. d | 24. b |
| 25. c | 26. b | 27. c | 28. d | 29. d | 30. a |
| 31. b | 32. b | 33. b | 34. c | 35. a | 36. a |
| 37. c | 38. b | 39. c | 40. c | 41. a |       |

# Chapter 17

## ANTIEMETICS

- 1. The most dependable emetic used to expel ingested poisons is**
  - (a) Intramuscular emetine
  - (b) Oral syrup ipecacuanha
  - (c) Intramuscular apomorphine
  - (d) Oral bromocriptine
- 2. The most effective antimotion sickness drug suitable for short brisk journeys is**
  - (a) Promethazine theoclate
  - (b) Cinnarizine
  - (c) Prochlorperazine
  - (d) Hyoscine
- 3. In case of hill journey, antimotion sickness drugs are best administered at**
  - (a) Twelve hours before commencing journey
  - (b) One hour before commencing journey
  - (c) Immediately after commencing journey
  - (d) At the first feeling of motion sickness
- 4. Metoclopramide blocks apomorphine induced vomiting, produces muscle dystonias and increases prolactin release indicates that it has**
  - (a) Anticholinergic action
  - (b) Antihistaminic action
  - (c) Anti  $5\text{-HT}_3$  action
  - (d) Antidopaminergic action
- 5. Which prokinetic drug(s) produce(s) extrapyramidal side effects ?**
  - (a) Metoclopramide
  - (b) Cisapride
  - (c) Domperidone
  - (d) All of these
- 6. A patient returning from dinner party meets with road accident and has to be urgently operated upon under general anaesthesia. Which drug can be injected intramuscularly to hasten his gastric emptying**
  - (a) Methypolysiloxane
  - (b) Promethazine
  - (c) Metoclopramide
  - (d) Apomorphine
- 7. Which antiemetic selectively blocks levodopa induced vomiting without blocking its antiparkinsonian action ?**
  - (a) Metoclopramide
  - (b) Cisapride
  - (c) Domperidone
  - (d) Ondansetron
- 8. The fastest symptomatic relief as well as highest healing rates in reflux esophagitis have been obtained with**
  - (a) Cisapride
  - (b) Ranitidine
  - (c) Omeprazole
  - (d) Sodium alginate
- 9. Cisapride enhances gastrointestinal motility by**
  - (a) Activating serotonin  $5\text{-HT}_4$  receptor
  - (b) Activating muscarinic  $M_3$  receptor

- (c) Blocking serotonin 5-HT<sub>3</sub> receptor  
(d) Blocking dopamine D2 receptor
- 10. The most effective antiemetic for controlling cisplatin induced vomiting is**  
(a) Prochlorperazine (b) Ondansetron  
(c) Metoclopramide (d) Promethazine
- 11. Ondansetron is a**  
(a) Second generation antihistaminic  
(b) Drug for peptic ulcer  
(c) New antiarrhythmic  
(d) Antiemetic for cancer chemotherapy
- 12. Ondansetron blocks emetogenic impulses at the following site(s).**  
(a) Vagal afferents in intestines  
(b) Nucleus tractus solitarius  
(c) Chemoreceptor trigger zone  
(d) All of the above
- 13. Cancer chemotherapy induced vomiting that is not controlled by metoclopramide alone can be suppressed by combining it with**  
(a) Amphetamine (b) Dexamethasone  
(c) Hyoscine (d) Cyclizine
- 14. Irrespective of the type, all laxatives exert the following action.**  
(a) Increase the content of solids in the faeces  
(b) Increase the water content of faeces  
(c) Reduce absorption of nutrients  
(d) Increase intestinal motility
- 15. For optimum rehydration, the molar concentration of glucose in ORS should be**  
(a) Equal to the molar concentration of Na<sup>+</sup>  
(b) Somewhat lower than molar concentration of Na<sup>+</sup>  
(c) Somewhat higher than the molar concentration of Na<sup>+</sup>  
(d) Three times the molar concentration of Na<sup>+</sup>
- 16. The concentration of sodium ions in WHO oral rehydration solution is**  
(a) 40 m moles/L (b) 60 m moles/L  
(c) 90 m moles/L (d) 110 m moles/L
- 17. The electrolyte composition of WHO oral rehydration solution is based upon that of**  
(a) Enterotoxigenic E. coli diarrhea stools  
(b) Cholera stools in adults  
(c) Cholera stools in children  
(d) Rotavirus diarrhea stools
- 18. A case of acute diarrhea presents with abdominal pain, fever, mucus and blood in stools and is suspected to be suffering from Shigella enteritis. What antimicrobial treatment would be most appropriate.**  
(a) No antimicrobial treatment  
(b) Metronidazole  
(c) Norfloxacin  
(d) Chloramphenicol
- 19. Ondansetron**  
(a) Can cause extrapyramidal side effects  
(b) Is not effective in control of acute emesis  
(c) Can prevent emesis due to radiation  
(d) Is not absorbed orally
- 20. The prokinetic effects of metoclopramide can be abolished by**  
(a) Vagotomy (b) Atropine  
(c) Bethanechol (d) Acetylcholine
- 21. The most potent drug for prevention of motion sickness is**  
(a) Dimenhydrinate (b) Tripelenamine  
(c) Scopolamine (d) Hydroxygene

## ANSWERS

- |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 1. c  | 2. d  | 3. b  | 4. d  | 5. a  | 6. c  |
| 7. c  | 8. c  | 9. a  | 10. b | 11. d | 12. d |
| 13. b | 14. b | 15. c | 16. c | 17. c | 18. c |
| 19. c | 20. b | 21. c |       |       |       |

# CHAPTER 18

## MATCH THE FOLLOWING

### 1. Match the correct mechanism of action for the diuretic agents mentioned below:

- |                    |  |
|--------------------|--|
| (1) Acetazolamide  | (a) Increases serum K <sup>+</sup> level   |
| (2) Chlorthiazide  | (b) Competitively antagonizes aldosterone  |
| (3) Spiranolactone | (c) Inhibits active Na <sup>+</sup> secretion, decreasing K <sup>+</sup> excretion in the distal nephron |
| (4) Triamterene    | (d) Inhibits carbonic anhydrase  |
|                    | (e) Inhibits electrolyte reabsorption in the distal portion of the ascending limb of the loop of Henle   |

### 2. Listed are some of the commonly used drugs. Their pharmacological actions are listed in A to E, match them.

- |                    |                                       |
|--------------------|---------------------------------------|
| (1) Aspirin        | (a) Rises body temperature            |
| (2) Acetaminophen  | (b) Non-analgesic anti-inflammatory   |
| (3) Phenylbutazone | (c) Non-anti-inflammatory analgesic   |
| (4) Probenacid     | (d) Increases of depth of respiration |
|                    | (e) Increases fluid retention         |

### 3. The following are the test animals or substances used for the biological assay of preparations listed in A to E. Match them correctly.

- |                 |                          |
|-----------------|--------------------------|
| (1) Mice        | (a) Vasopressin          |
| (2) Albino rats | (b) Diphtheria antitoxin |
| (3) Guinea pigs | (c) Insulin              |

- |                  |                                   |
|------------------|-----------------------------------|
| (4) Sheep plasma | (d) Human antihemophilic fraction |
|------------------|-----------------------------------|

### 4. The drug A to E are used as diuretics. Match them to their classes.

- |                                |                           |
|--------------------------------|---------------------------|
| (1) Osmotic diuretic           | (a) Spiranolactone        |
| (2) Loop diuretic              | (b) Isosorbide            |
| (3) Potassium sparing diuretic | (c) Merasaly theophylline |
| (4) Organomercurial diuretic   | (d) Furosemide            |
|                                | (e) Probenecid            |

### 5. Pharmacological activity of certain well known plant drugs are listed A to E. Match them.

- |                        |                             |
|------------------------|-----------------------------|
| (1) Papaverin          | (a) Weak analeptic          |
| (2) Camphor            | (b) Vasodilator             |
| (3) Veratrum alkaloids | (c) Antineoplastic          |
| (4) Vincristine        | (d) Central vasoconstrictor |
|                        | (e) Anxiolytic              |

### 6. Listed are drugs 1 to 4. Their appropriate antihypertensive mechanisms are given in A to F match them.

- |               |   |
|---------------|---|
| (1) Pindalol  | (a) Vasoilator                                  |
| (2) Minoxidil | (b) Angiotensin converting enzyme inhibitor     |
| (3) Captopril | (c) Diuretic                                    |
| (4) Amiloride | (d) Beta-blocker                                |
|               | (e) Centrally acting alpha adrenoceptor agonist |
|               | (f) Potassium induction                         |

**7. Symptoms for the following diseases are indicated from A to E. Match them.**

- |                        |                                      |
|------------------------|--------------------------------------|
| (1) Cushing's syndrome | (a) Hyperthyroidism                  |
| (2) Addison's disease  | (b) Inflammatory bowel               |
| (3) Grave's disease    | (c) Decreased production of cortisol |
| (4) Crohn's disease    | (d) Decreased production of cortisol |
|                        | (e) Increased production of cortisol |

**8. The undesirable effects of the antibiotics are listed in A to E. Match them.**

- |                     |                             |
|---------------------|-----------------------------|
| (1) Tetracycline    | (a) Gray-baby syndrome      |
| (2) Streptomycin    | (b) Discolouration of teeth |
| (3) Chloramphenicol | (c) Jaundice                |
| (4) Rifampicin      | (d) Obesity                 |

**9. Match the following terms with their respective definitions A to E:**

- |                       |   |
|-----------------------|---|
| (1) Achylia gastrica  | (a) Decrease in alkali contents   |
| (2) Acidosis          | (b) Absence of hydrochloric acid  |
| (3) Actinomycosis     | (c) A deficient disorder of adrenal cortex with anaemia, weakness, dyspepsia, hypotension |
| (4) Addison's disease | (d) A fungal disease caused by Actinomyces  |
|                       | (e) A state of psychic and physical drug dependence                                       |

**10. Match the following categories of Adrenocorticosteroids with their respective examples A to E:**

- |                          |                                      |
|--------------------------|--------------------------------------|
| (1) Glucocorticoids      | (a) Aldosterone, Fludrocortisone     |
| (2) Mineral corticoids   | (b) Ketokonazole, Metyapone          |
| (3) Receptor             | (c) Cholesterol, $\beta$ -Sitosterol |
| (4) Synthetic Inhibitors | (d) Cortisol, Triamcinolone          |
|                          | (e) Mifepristone, Spironolactone     |

**11. Match the following anaesthetics with their respective nature A to E:**

- |                    |  |
|--------------------|--|
| (1) Cocaine        | (a) Other anaesthetic                  |
| (2) Lignocaine     | (b) Synthetic non-nitrogenous compound |
| (3) Propanediol    | (c) Inhaled anaesthetic                |
| (4) Chlorpromazine | (d) Synthetic nitrogenous compound     |
|                    | (e) Natural alkaloid                   |

**12. Match the following antiemetic drugs with their respective categories A to E:**

- |                    |                  |
|--------------------|------------------|
| (1) Weak agonist   | (a) Pentazocine  |
| (2) Strong agonist | (b) Propoxyphene |
| (3) Antidiarrhea   | (c) Heroin       |

- |                 |                   |
|-----------------|-------------------|
| (4) Antitussive | (d) Diphenoxylate |
|                 | (e) Codeine       |

**13. Match the following antiarrhythmic drugs to the respective categories A to E:**

- |                |                               |
|----------------|-------------------------------|
| (1) Acebutalol | (a) Calcium channel blocker   |
| (2) Verapamil  | (b) Potassium channel blocker |
| (3) Kromakalem | (c) Sodium channel blocker    |
| (4) Phenytoin  | (d) Beta adrenoceptor blocker |
|                | (e) Chloride channel blocker  |

**14. Match the following categories of antibiotics with their respective examples A to E:**

- |                                  |                    |
|----------------------------------|--------------------|
| (1) Narrow spectrum              | (a) Neomycin       |
| (2) Broad - spectrum             | (b) Cephalosporins |
| (3) Acting on cell membrane      | (c) Streptomycin   |
| (4) Inhibiting protein synthesis | (d) Cycloserine    |

**15. Match the following penicillins with their respective categories A to E:**

- |                  |                             |
|------------------|-----------------------------|
| (1) Penicillin G | (a) Broad spectrum          |
| (2) Penicillin V | (b) Penicillinase resistant |
| (3) Methicillin  | (c) Natural                 |
| (4) Ampicillin   | (d) Semi-synthetic          |
|                  | (e) Anti-pseudomonas        |

**16. Match the following categories of anticancer hormones with their respective examples A to E:**

- |                            |                        |
|----------------------------|------------------------|
| (1) Androgens              | (a) Methoxyestradiol   |
| (2) Gonadotropin-releasing | (b) Prednisolone       |
| (3) Estrogens              | (c) Testosterone       |
| (4) Adrenocorticoids       | (d) Goserelin          |
|                            | (e) Diethylstilbestrol |

**17. Match the following antidepressant drugs with their respective categories A to E:**

- |                   |                                 |
|-------------------|---------------------------------|
| (1) Amitriptyline | (a) Non-specific                |
| (2) Nizoxetin     | (b) Tricyclic first generation  |
| (3) Caffeine      | (c) Tricyclic second generation |
| (4) Isoniazid     | (d) Psychomotor stimulant       |
|                   | (e) Heterocyclic                |

**18. Match the following antidiabetic drugs with their respective categories A to E:**

- |                 |                  |
|-----------------|------------------|
| (1) Phenformin  | (a) Long acting  |
| (2) Tolbutamide | (b) Rapid acting |

- (3) NPH Insulin (c) Intermediate acting  
 (4) Protamine zinc insulin (d) Biguanide suspension  
 (e) Sulphonylurea

**19. Match the following categories of antifungal drugs with their respective examples A to E:**

- (1) For superficial infection (a) Amphotericin B  
 (2) Topical (b) Nystatin  
 (3) For systemic mycoses (c) Undercyclic acid  
 (4) For vaginal candidiasis (d) Griseofulvin  
 (e) Nystatin

**20. Match the following antihyperlipidemic drugs with their respective categories A to E:**

- (1) Cholesteryl amine (a) Fibric acid derivative  
 (2) Clofibrate (b) Bile acid sequestrant  
 (3) Lovastation (c) VLDL secreting inhibitor  
 (4) Niacin (d) Antioxidant  
 (e) HMGCO – A reductase

**21. Match the following categories of antimalarial drugs with their respective examples A to E:**

- (1) Acridine dyes (a) Biguanide  
 (2) Cinchona alkaloid (b) Primaquine  
 (3) Aminoquinoline (c) Quinacrine  
 (4) Diaminopyrimidine (d) Quinine  
 (e) Mepacrine

**22. Match the following antiseptic drugs with their respective categories A to E:**

- (1) Halazone (a) Dye  
 (2) Thimerosal (b) Anionic surfactant  
 (3) Delqualinium (c) Halogen containing  
 (4) Proflavin (d) Heavy metals  
 (e) Cationic surfactant

**23. Match the following terms with their respective meaning A to E:**

- (1) Aphrodisiac (a) Pain in joint  
 (2) Arrhythmia (b) Loss of power of governing  
 (3) Arthralgia (c) Absence of spermatozoa in the sperm  
 (4) Ataxia (d) Exciting sexual desire  
 (e) Variation from the normal regular rhythm of the heart beat

**24. Match the following antiasthmatic drugs with their respective categories A to E:**

- (1) Ephedrine (a) Purine base bronchodilator  
 (2) Theophylline (b) Symathomimetic bronchodilator  
 (3) Ipratropium bromide (c) Polypeptide  
 (4) Disodium cromoglycate (d) Anticholinergics bronchodilator  
 (e) Anti-inflammatory

**25. Match the following terms with their respective meaning A to E:**

- (1) Bradycardia (a) Irritation of the mucous membrane  
 (2) Bronchitis (b) Feeble state produced by a serious disease  
 (3) Cachexia (c) Inflammation of mucous membrane  
 (4) Catarrh (d) Glowness of the heart beat  
 (e) Narrowing of the bronchi

**26. Match the following drugs with their respective mechanisms A to E:**

- (1) Methotrexate (a) Nucleic acid derivative binding to viral enzymes  
 (2) PAS (b) Inhibitor of dihydrofolate reductase  
 (3) Acyclovir (c) Competitive inhibition of PABA uptake  
 (4) Rifampicin (d) Reversible inhibition of protein synthesis  
 (e) Inhibition of DNA dependent RNA polymerase

**27. Match the following cholinceptor acting drugs their categories A to E:**

- (1) Pilocarpine (a) Nicotinic blockers  
 (2) Physostigmine (b) Cholinesterase regenerator  
 (3) Pirenzepine (c) Direct acting agonist  
 (4) Pralidoxine (d) Indirect acting carbamate  
 (e) Muscarinic blocker

**28. Match the following diseases with their respective diagnostic tests A to E:**

- (1) Leprosy (a) Shick test  
 (2) Scarlet Fever (b) Lepromin Test  
 (3) Syphilis (c) Dick test  
 (4) Typhoid (d) VDRL and Widal test  
 (e) Widal test

**29. Match the following drugs with their respective mechanisms of action from A to E:**

- |                        |   |
|------------------------|---|
| (1) Local anaesthetics | (a) Blocks calcium channels                     |
| (2) Minoxidil          | (b) Prevents synthesis of prothrombin           |
| (3) Proserpine         | (c) Blocks neuronal sodium channels             |
| (4) Warfarin           | (d) Vasodilation by blocking potassium channels |
|                        | (e) Depletes the catecholamine store in neurons |

**30. Match the following drugs of abuse with their respective categories A to E:**

- |                   |                        |
|-------------------|------------------------|
| (1) Scopolamine   | (a) Inhalant           |
| (2) Nitrous oxide | (b) Marijuana          |
| (3) Hashish       | (c) Hallucinogen       |
| (4) Cocaine       | (d) Sedative hyponotic |
|                   | (e) Stimulant          |

**31. Match the following enzymes inhibited by the corresponding agents A to E:**

- |   |                   |
|---|-------------------|
| (1) Acetylcholine esterase              | (a) Acetazolamide |
| (2) Carbonic anhydrase                  | (b) Methotrexate  |
| (3) Dihydrofolate reductase in human    | (c) Trimethoprim  |
| (4) Dihydrofolate reductase in microbes | (d) Physostigmine |
|   | (e) Primethamine  |

**32. Match the following neurotransmitters with their respective localizations A to E:**

- |                   |                                   |
|-------------------|-----------------------------------|
| (1) GABA          | (a) Neuromuscular junction        |
| (2) L - Glutamate | (b) Hypothalamus                  |
| (3) Neuropeptide  | (c) Substantia nigra and striatum |
| (4) Dopamine      | (d) Cerebral cortex               |
|                   | (e) Cerebral nerve                |

**33. Match the following drugs used in Parkinsonism with their respective categories A to E:**

- |                   |                                  |
|-------------------|----------------------------------|
| (1) Levodopa      | (a) Dopa decarboxylase inhibitor |
| (2) Carbidopa     | (b) MAU inhibitor                |
| (3) Biperiden     | (c) Used in Wilson's disease     |
| (4) Penicillamine | (d) Dopamine prodrug             |
|                   | (e) Used in Tremor               |

**34. Match the following drugs with their respective usual doses A to E:**

- |                   |            |
|-------------------|------------|
| (1) Astemizole    | (a) 500 mg |
| (2) Captopril     | (b) 200 mg |
| (3) Ascorbic acid | (c) 2 g    |
| (4) Cephalothin   | (d) 10 mg  |
|                   | (e) 100 mg |

**35. Match the following psychoactive drugs with their respective categories A to E:**

- |                 |                       |
|-----------------|-----------------------|
| (1) Haloperidol | (a) Leukotriene       |
| (2) Meprobamate | (b) Antipsychotic     |
| (3) Imipramine  | (c) Anti - anxiety    |
| (4) LSD         | (d) Anti - depressant |
|                 | (e) Psychotogenic     |

**36. Match the following sympathomimetic drugs with their respective categories A to E:**

- |                   |                       |
|-------------------|-----------------------|
| (1) Amphetamine   | (a) Dopamine          |
| (2) Phenylephrine | (b) Indirect releaser |
| (3) Dobutamine    | (c) Alpha-1 selective |
| (4) Albuterol     | (d) Beta-1 selective  |
|                   | (e) Beta-2 selective  |

**37. Given below are the ailments and the drugs used. Match them correctly.**

- |                         |                   |
|-------------------------|-------------------|
| (1) Parkinson's disease | (a) Probenecid    |
| (2) Glaucoma            | (b) Ampicillin    |
| (3) Gout                | (c) Nitroglycerin |
| (4) Angina              | (d) Pilocarpine   |
|                         | (e) Levo dopa     |

**38. Given below are the drugs and their antagonists. Match them correctly.**

- |                    |                    |
|--------------------|--------------------|
| (1) 5-HT           | (a) Bemegrade      |
| (2) Codeine        | (b) Atropine       |
| (3) Phenobarbitone | (c) Cyproheptadine |
| (4) Muscarine      | (d) Naloxone       |
|                    | (e) Pyridoxine     |

**39. Choose the most appropriate from the group below to match drugs:**

- |                   |                                      |
|-------------------|--------------------------------------|
| (1) Cocaine       | (a) Central stimulant                |
| (2) Codeine       | (b) Acetylcholine esterase inhibitor |
| (3) Physostigmine | (c) Cardiotoxic                      |
| (4) Atropine      | (d) Relief of mild pain              |
|                   | (e) Mydriatic                        |

**40. Given below are some of the drugs and their mode of action in A to E. Match them correctly.**



- (1) Hydralazine (a) Vasodilator by direct action  
 (2) Phenothiazine (b) Inhibits the vasoconstrictor and pressor effects of 5-HT  
 (3) Methysergide (c) Antagonist to HT receptor of Histamine  
 (4) Tolazamide (d) Stimulate the islet tissue to secrete insulin  
 (e) Inhibiting the enzyme carbonic anhydrase

**41. Given below are the hypotensive agents. Match their modes of action:**

- (1) Minoxidil (a) Alpha adreno receptor antagonist  
 (2) Parazosin (b) Beta adreno receptor antagonist  
 (3) Alpha – methyl dopa (c) From alpha methyl norepinephrine  
 (4) Clonidine (d) Direct action on blood vessel  
 (e) Decreases sympathetic activity through brain

**42. Given below are the drugs and their enzymes inhibited by them. Match them correctly.**

- (1) Physostigmine (a) COMT  
 (2) Imipramine (b) Acetaldehyde dehydrogenase  
 (3) Pyrogallol (c) Carbonic anhydrase  
 (4) Disulfiram (d) Cholinesterase  
 (e) MAO

**43. Choose the most appropriate drug for the following:**

- (1) Potassium sparing diuretic (a) Spironolactone  
 (2) Loop diuretic (b) Mannitol  
 (3) Osmotic diuretic (c) Furosemide  
 (4) Carbonic anhydrase inhibitor (d) Acetazolamide  
 (e) Aldosterone

**44. Match the following regions in GIT with the pH levels indicated from A to E:**

- (1) Mouth (a) = 5.0–6.0  
 (2) Stomach (b) = 6.8–7.5  
 (3) Deodenum (c) = 6.8–7.0  
 (4) Large intestine (d) = 3.0–5.0  
 (e) = 1.5–3.0

**45. For the drugs listed 1 to 4, mechanism of action is indicated from A to E. Match them:**

- (1) Vincristine (a) Macrolide antibiotic which inhibits DNA dependent RNA polymerase

- (2) Streptomycin (b) An antibiotic containing nitro group which binds to 50 S ribosomal subunit  
 (3) Chloramphenicol (c) A dimeric indole alkaloid which binds avidly to tubulin, a class of protein that forms the mitotic spindle  
 (4) Rifampicin (d) A quinoline alkalid which inhibits the growth of Plasmodium vivax  
 (e) A naphthalene antibiotic which inhibits cell wall synthesis

**46. For the following drugs, specific mechanism of action is given in A to D. Match them:**

- (1) Spironolactone (a) Non-competitively inhibit the enzyme carbonic anhydrase  
 (2) Acetazolamide (b) Inhibit the cotransport of Na<sup>+</sup> and Cl<sup>-</sup> in loop of Henle  
 (c) Competitive inhibitor of aldosterone at the receptors in the distal tubule  
 (d) Direct inhibition of Na<sup>+</sup> and Cl<sup>-</sup> reabsorption

**47. Match the following terms with their respective definitions A to E:**

- (1) Drug allergy (a) Excessive pharmacological action of the drug due to overdosage or prolonged use  
 (2) Toxic effect (b) Characteristic toxic effects of a drug in an individual at therapeutic doses  
 (3) Idiosyncrasy (c) An immunologically mediated reaction producing sterotype symptoms  
 (4) Intolerance (d) Abnormal reactivity to a chemical  
 (e) Alteration of mood and feelings

**48. Match the following terms with their respective meanings A to E:**

- (1) Carcinogenicity (a) Drugs causing genetic defects  
 (2) Mutagenicity (b) Drugs causing foetal abnormalities  
 (3) Teratogenicity (c) Drugs capable of altering mood and feelings  
 (4) Drug dependence (d) Drugs causing functional disturbances which persist, even after the offending drug  
 (e) Drug causing cancer

**49. Match the following teratogenic drugs and their respective produced abnormalities A to D:**

- |                        |   |
|------------------------|---|
| (1) Aspirin            | (a) Nose, eye and hand defects, growth retardation  |
| (2) Anti-thyroid drugs | (b) Hypoplastic phalanges, cleft lip, micro-cephaly |
| (3) Phenytoin          | (c) Premature closure of ductus arteriosus          |
| (4) Warfarin           | (d) Foetal goiter and hypothyroidism                |

**50. Match the following drugs and their respective resulted diseases A to E:**

- |                    |  |
|--------------------|--|
| (1) Isoniazid      | (a) Peptic ulcers  |
| (2) Phenothiazines | (b) Hepatitis  |
| (3) Salicylates    | (c) Parkinsonism   |
| (4) Tetracyclines  | (d) Phocomelia, multiple defects                         |
|                    | (e) Discoloured and deformed teeth, retarded bone growth |

**51. Match the following oral hypoglycaemic drugs with their respective features A to E**

- |                  |                             |
|------------------|-----------------------------|
| (1) Tolbutamide  | (a) Potent                  |
| (2) Penicillin V | (b) Penicillinase resistant |
| (3) Methicillin  | (c) Natural                 |
| (4) Ampicillin   | (d) Semi-synthetic          |
|                  | (e) Anti-pseudomonas        |

**52. Match the following sulfonamides with their duration of actions from A to E**

- |                            |                         |
|----------------------------|-------------------------|
| (1) Sulphadiazine          | (a) Long acting         |
| (2) Sulfadimethoxine       | (b) Toxic               |
| (3) Sulfaphenazole         | (c) Short acting        |
| (4) Succinyl sulfathiazole | (d) Intermediate acting |
|                            | (e) Poorly absorbed     |

**53. Match the following modes of action with their respective antimicrobial drugs A to E**

- |  |  |
|--|--|
| (1) Interfere with intermediary metabolism | (a) Rifampicin, Norfloxacin, Metronidazole             |
| (2) Interfere with DNA synthesis           | (b) Penicillins, Cephalosporins, Vancomycin Bacitracin |
| (3) Intefere with DNA                      | (c) Idoxuridine, Acyclovir, Zidovudin                  |
| (4) Inhibit cell wall synthesis            | (d) Sulfonamides, PAS, Ethambutol                      |
|  | (e) Polymyxins, Colistins, Bacitracin                  |

**54. Match the following categories with their respective antimicrobial drugs A to E:**

- |                                |   |
|--------------------------------|---|
| (1) Aminoglycosides            | (a) Polymyxin-B Colistin, Bacitracin          |
| (2) Macrolide antibiotics      | (b) Streptomycin, Gentamycin, Neomycin        |
| (3) Polypeptide antibiotics    | (c) Erythromycin, Oleandomycin, Roxithromycin |
| (4) Nitrofurantoin derivatives | (d) Vancomycin, Lincomycin, Viomycin          |
|                                | (e) Nitrofurantoin, Furazolidone              |

**55. Match the following categories of antimicrobial agents with their respective examples A to E:**

- |                   |   |
|-------------------|---|
| (1) Antibacterial | (a) Chloroquine, Metronidazole, Diloxanide          |
| (2) Antifungal    | (b) Sodium fusidate, Thiacetazone                   |
| (3) Antiviral     | (c) (Acyclovir), Amantadine, Idoxuridine, Zidovudin |
| (4) Antiprotozoal | (d) Amphotericin B, Griseofulvin, Ketoconazole      |
|                   | (e) Aminoglycosides, Erythromycin, Penicillins      |

**56. Match the following categories of laxatives/purgatives with their respective examples A to E:**

- |                    |   |
|--------------------|---|
| (1) Bulk forming   | (a) Docusates                               |
| (2) Stimulant      | (b) Magnesium and sodium salts              |
| (3) Osmotic        | (c) Bisacodyl, Senna, Castor Oil            |
| (4) Stool softener | (d) Dietary fibre, Psyllium Methylcellulose |
|                    | (e) Liquid paraffin                         |

**57. Match the following categories of antiulcer drugs with their respective examples A to E:**

- |                                   |  |
|-----------------------------------|--|
| (1) Ulcer healing drugs           | (a) Sodium bicarbonate, sodium citrate                 |
| (2) Ulcer protective              | (b) Carbenoxolone sodium, Deglycyrrhizinated liquorice |
| (3) H <sub>2</sub> antihistamines | (c) Sucralfate, colloidal bismuth subcitrate           |
| (4) Anticholinergics              | (d) Atropine Pirenzepine Trimipramine                  |
|                                   | (e) Cimetidine, Ranitidine, Roxatidine                 |

**58. Match the following fat-soluble vitamins with their respective chemical constituents A to E:**

- |               |                                  |
|---------------|----------------------------------|
| (1) Vitamin A | (a) Pyridoxine                   |
| (2) Vitamin D | (b) Methyl Phytyl naphthaquinone |
| (3) Vitamin E | (c) Alpha tocopherol             |
| (4) Vitamin K | (d) Calciferol                   |
|               | (e) Retinol                      |

**ANSWERS**

1. 1-d, 2-e, 3-b, 4-c
2. 1-d, 2-c, 3-b, 4-e
3. 1-c, 2-d, 3-a, 4-c
4. 1-b, 2-d, 3-a, 4-c
5. 1-b, 2-a, 3-b, 4-c
6. 1-d, 2-a, 3-b, 4-c
7. 1-e, 2-c, 3-a, 4-b
8. 1-b, 2-e, 3-a, 4-c
9. 1-b, 2-a, 3-d, 4-c
10. 1-d, 2-a, 3-e, 4-b
11. 1-c, 2-e, 3-d, 4-b
12. 1-b, 2-c, 3-d, 4-e
13. 1-d, 2-c, 3-e, 4-a
14. 1-d, 2-a, 3-b, 4-c
15. 1-c, 2-d, 3-b, 4-a
16. 1-c, 2-d, 3-e, 4-b
17. 1-b, 2-c, 3-d, 4-a
18. 1-d, 2-e, 3-c, 4-a
19. 1-d, 2-e, 3-a, 4-b
20. 1-b, 2-a, 3-e, 4-c
21. 1-e, 2-d, 3-b, 4-c
22. 1-c, 2-d, 3-e, 4-a
23. 1-d, 2-e, 3-a, 4-b
24. 1-b, 2-a, 3-d, 4-e
25. 1-d, 2-c, 3-b, 4-a
26. 1-b, 2-c, 3-a, 4-e
27. 1-c, 2-d, 3-e, 4-b
28. 1-b, 2-c, 3-d, 4-e
29. 1-c, 2-d, 3-e, 4-b
30. 1-c, 2-a, 3-b, 4-e
31. 1-d, 2-a, 3-b, 4-c
32. 1-e, 2-d, 3-b, 4-c
33. 1-d, 2-a, 3-b, 4-c
34. 1-d, 2-e, 3-a, 4-c
35. 1-b, 2-c, 3-d, 4-e
36. 1-b, 2-c, 3-d, 4-e
37. 1-e, 2-d, 3-a, 4-c
38. 1-c, 2-d, 3-a, 4-b
39. 1-a, 2-d, 3-b, 4-e
40. 1-a, 2-a, 3-a, 4-a
41. 1-b, 2-a, 3-a, 4-e
42. 1-e, 2-d, 3-b, 4-c
43. 1-a, 2-c, 3-b, 4-d
44. 1-b, 2-e, 3-d, 4-c
45. 1-c, 2-d, 3-b, 4-a
46. 1-X, 2-X, 3-X, 4-X
47. 1-c, 2-a, 3-d, 4-b
48. 1-e, 2-a, 3-b, 4-c
49. 1-c, 2-a, 3-b, 4-a
50. 1-b, 2-c, 3-a, 4-e
51. 1-e, 2-c, 3-b, 4-a
52. 1-c, 2-a, 3-d, 4-e
53. 1-d, 2-c, 3-a, 4-b
54. 1-b, 2-c, 3-a, 4-e
55. 1-e, 2-d, 3-c, 4-a
56. 1-d, 2-a, 3-b, 4-a
57. 1-b, 2-c, 3-e, 4-d
58. 1-e, 2-d, 3-c, 4-b