

Ph.D. Entrance Examination

November - 2022

Part - C

(Pharmacy)

Time : 50 Minutes

Maximum Marks : 50

Note :

- (i) This question booklet comprises of 50 questions.
 - (ii) All questions are compulsory.
 - (iii) The question booklet along with answer sheet is to be handed over by the candidate to the Invigilator at the end of the examination.
 - (iv) There is no negative marking.
 - (v) Each question carries one mark.
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Multiple Choice Questions -

- 1. How much quantity (in grams) of sodium chloride is needed to make 30 ml of a 2% isotonic drug (sodium chloride equivalent 0.20) solution?
(a) 0.6 (b) 0.15 (c) 0.27 (d) 0.12
- 2. Find the process by which the conversion of sulfasalazine to sulfapyridine and 5-amino salicylic acid takes place in the colon?
(a) Hydrolysis (b) Deamination (c) Acetylation (d) Azoreduction
- 3. The integrity of seals in the case of vials and bottles is determined by some tests. Some of them are given below:[P]: Leaker's test[Q]: Water hammer test[R]: Spark tester probe
Choose the correct answer.
(a) P & Q (b) Q&R (c) P&R (d) P, Q & R all
- 4. Starch-iodide paste/paper is used as an external indicator in one of the following titrations. Identify that.
(a) Iodometric titration of copper sulfate using sodium thiosulphate as titrant
(b) Iodimetric titration of ascorbic acid using iodine solution as titrant
(c) Diazotization titration of sulphadiazine using sodium nitrite as titrant
(d) Potassium dichromate titration using sodium thiosulphate as titrant
- 5. In polarography, when the limiting current is achieved, one of the following processes takes place. Choose that.
(a) The rate of electron transfer just matches the rate of mass transfer.
(b) The rate of electron transfer is slower than the rate of mass transfer.
(c) The rate of electron transfer becomes independent of the rate of mass transfer.
(d) The rate of electron transfer far exceeds the rate of mass transfer.

6. Rast's camphor method is used for the determination of the molecular weight of solutes that are soluble in molten camphor. The basic principle of the method is dependent on one of the following properties. Identify that.
 - (a) Elevation of the freezing point of camphor by the solute
 - (b) Lowering of the vapor pressure of camphor by the solute
 - (c) Lowering of the freezing point of camphor by the solute
 - (d) Elevation of the boiling point of camphor by the solute
7. Which of the following respective Phase-I and Phase-II reactions are the most common drug biotransformation reactions?
 - (a) Oxidation and Glucuronidation
 - (b) Reduction and Acetylation
 - (c) Hydrolysis and Glucuronidation
 - (d) Oxidation and Glutathion conjugation
8. Which one of the following drugs has positive inotropic and negative chronotropic action?
 - (a) Dopamine
 - (b) Epinephrine
 - (c) Digoxin
 - (d) Isoprenaline
9. Which one of the following therapeutic classes has been proven clinically as first-line therapy for heart failure and has shown decreased hospitalization, improved symptoms, and delayed disease progression?
 - (a) Cardiac glycosides
 - (b) ACE Inhibitors
 - (c) Renin Antagonists
 - (d) Nitrites
10. Which one of the following glucose transporters is the new drug target for the management of Type-2 diabetes mellitus?
 - (a) Sodium-glucose linked transporter-2 (SGLT2)
 - (b) Glucose transporter-1 (GLUT1)
 - (c) Sodium-glucose linked transporter-1 (SGLT1)
 - (d) Glucose transporter-2 (GLUT2)
11. Which one of the following modes of HIV transmission carries highest relative risk of infection with a single exposure?
 - (a) Transfusion of blood and blood products
 - (b) Perinatal - from mother to child
 - (c) Sexual contacts with infected partners
 - (d) Syringe sharing with drug addicts
12. Which of the following are the critical neurotransmitters playing major role in depression?
 - (a) Acetylcholine, Norepinephrine and Dopamine
 - (b) Dopamine, Norepinephrine and Serotonin
 - (c) Serotonin, Dopamine and γ -Amino butyric acid
 - (d) Acetylcholine, Serotonin and γ -Amino butyric acid

13. A 55 years old man is under DOTS treatment for pulmonary tuberculosis for the last four months. Now, he has developed symptoms of peripheral neuritis. Which one of the followings is the right addition to his therapy to manage peripheral neuritis?
- (a) Cyanocobalamin (b) α -Lipoic acid
(c) Pyridoxine (d) Prednisolone
14. What is the primary mechanism of action of local anesthetics?
- (a) Activation of ligand-gated potassium channels
(b) Blockade of voltage-gated sodium channels
(c) Stimulation of voltage-gated N-type calcium channels
(d) Blockade of GABA-gated chloride channels
15. Which one of the following anti-asthmatic drugs can cause convulsions and arrhythmia?
- (a) Prednisolone (b) Salmeterol (c) Zafirlukast (d) Theophylline
16. Which one of the following anti-arrhythmic drugs acts by inhibiting potassium, sodium, and calcium channels?
- (a) Quinidine (b) Lignocaine (c) Amiodarone (d) Flecainide
17. A 48 years old woman is having the symptoms of weight gain, cold intolerance, constipation, bradycardia, puffy face, lethargy and dry skin. These symptoms are suggestive of which of the followings?
- (a) Overuse of corticosteroid (b) Hypothyroidism
(c) Estrogen deficiency (d) Overuse of thyroxin sodium
18. Increased risk of hypoglycemia and weight gain is the common side effect of drugs used in the management of Type-2 diabetes mellitus. Followings are some commonly used drugs, alone or in combination, for the management of Type-2 diabetes mellitus: [P] : Metformin [Q]: Pioglitazone [R]: Glipizide [S]: Sitagliptin Choose the correct combination which is weight neutral and without risk of hypoglycemia.
- (a) P and Q (b) Q and R (c) R and S (d) P and S
19. Which one of the following receptors is NOT a ligand-gated ion channel receptor?
- (a) Nicotinic Receptor (b) 5HT₃- Receptor
(c) GABA_A- Receptor (d) H₂- Receptor
20. Which one of the following classes of drugs causes side effects like dryness of mouth, tachycardia, urinary retention, constipation, blurring of vision, precipitation of glaucoma, drowsiness, and impairment of cognition?
- (a) Anti-adrenergic (b) Anti-cholinergic
(c) Anti-serotonergic (d) Anti-dopaminergic

21. Which of the following cytokines are the most important regulators in inflammation and are the targets for anti-inflammatory agents used in rheumatoid arthritis?
- (a) Tumor necrosis factor- α and Interleukin-1
 - (b) Acetylcholine esterase and Eicosanoids
 - (c) Leukotrienes and Isoprostanes
 - (d) Adhesion factor and Monoamine oxidase A
22. Which one of the followings is a FALSE statement for competitive antagonists?
- (a) They have an affinity for the agonist binding site on receptor
 - (b) They have no intrinsic activity
 - (c) They cause parallel rightward shift of the control dose response curve
 - (d) Maximum response of the agonist cannot be achieved in their presence by increasing the concentration of the agonist.
23. Typical antipsychotics differ from atypical antipsychotics in various ways that define them as atypical. Which one of the followings 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 side effects (EPSs)
 - (d) Greater serotonin receptor blockade than dopamine blockade
24. Which one of the following drugs produces significant relaxation of both venules and arterioles?
- (a) Hydralazine
 - (b) Minoxidil
 - (c) Diazoxide
 - (d) Sodium nitroprusside
25. Antiviral action of purine analogs is primarily related to the followings:
- [P]: Inhibition of RNA synthesis.
 - [Q]: Inhibition of DNA polymerase.
 - [R]: Immunomodulation.
 - [S]: Inhibition of viral penetration.
- Choose the correct option:
- (a) R is correct and Q is incorrect
 - (b) Q is correct and S is incorrect
 - (c) P is correct and R is incorrect
 - (d) S is correct and P is incorrect
26. Which one of the followings is a tyrosine kinase inhibitor indicated for a variety of malignancies?
- (a) Imatinib
 - (b) Paclitaxel
 - (c) Ezetimibe
 - (d) Mitomycin

27. Which one of the followings is the most likely positive sign of pregnancy, when detected in urine?
- (a) Estrogens (b) Progesterone
(c) Human Chorionic Gonadotropin (HCG) (d) Corticotropic Hormone
28. Followings are some opioid analgesics:[P]: Morphine [Q]: Pethidine[R]: Pentazocine [S]: Fentanyl Choose the correct order of respiratory depressant propensity of these agents.
- (a) P>Q>R>S (b) Q>P>R>S (c) R>P>Q>S (d) S>P>Q>R
29. Which one of the following statements is FALSE for fluoroquinolones?
- (a) These are highly effective by oral and parenteral routes
(b) These are relatively more susceptible to the development of resistance
(c) These are effective against those bacteria that are resistant to p-lactam and aminoglycoside antibiotics
(d) These are bactericidal with a broad spectrum of activity
30. Increased serum levels of which one of the followings may be associated with decreased risk of atherosclerosis?
- (a) VLDL (b) LDL (c) HDL (d) Total Cholesterol
31. Metformin causes the following actions EXCEPT for the one. Identify that.
- (a) Reduces hepatic gluconeogenesis
(b) Increases glucose uptake in skeletal muscles
(c) Enhances sensitivity to insulin
(d) Increases HbA1c by 1% to 2%
32. Misoprostol has a cytoprotective action on gastrointestinal mucosa because of one of the following actions. Identify that.
- (a) It enhances the secretion of mucus and bicarbonate ion
(b) It neutralizes hydrochloric acid in stomach
(c) It antagonizes nonsteroidal anti-inflammatory drugs
(d) It is bactericidal to H. pylori
33. Which of the following drugs can precipitate bronchial asthma?
- [P]: Indomethacin [Q]: Codeine phosphate[R]: Rabeprazole [S]: Theophylline
- Choose the correct option.
- (a) P and R can do that (b) P and Q can do that
(c) R and S can do that (d) S and Q can do that

34. Which one of the following alkaloids is derived from Lysine?
 (a) Emetine (b) Chelidonine (c) Lobeline (d) Stachydrine
35. Histologically the barks of *Cinnamomum cassia* and *Cinnamomum zeylanicum* differ in one of the following features. Identify that.
 (a) Sclerieds (b) Phloem Fibers (c) Pericyclic Fibres (d) Cortex
36. Which one of the following constituents is reported to have anti-hepatotoxic activity?
 (a) Podophyllotoxin (b) Linalool (c) Andrographoloid (d) Safranal
37. Identify the metabolite of prontosil responsible for its antibacterial activity.
 (a) Sulphacetamide (b) Sulphanilamide
 (c) p-Amino benzoic acid (d) Probenecid
38. Glucose is the only source of energy for one of the followings. Identify that.
 (a) Cardiac cells (b) Nephrons (c) RBCs (d) Thrombocytes
39. Among the followings which one is not only a non-reducing sugar but also does not exhibit mutarotation?
 (a) Glucose (b) Maltose (c) Lactose (d) Sucrose
40. Study the following statements on prevention of crystalluria. By the given approaches crystalluria can be prevented
 [P]: By co-administration of sulfadiazine, sulfamerazine and sulfamethazine
 [Q]: By increasing the pH of urine.
 [R]: By co-administration of sulphanilamide, sulphamethoxazole, and folic acid
 [S]: By administration of co-trimoxazole.
 Choose the correct combination of statements.
 (a) P and Q are correct (b) R and S are correct
 (c) P and R are correct (d) Q is correct
41. For the management of which disease, the given drug tacrine is used? Identify.
 (a) Glaucoma (b) Antidote for anti-cholinesterase poisoning
 (c) As an insecticide (d) Alzheimer's disease
42. Low-dose of aspirin acts as an anti-platelet aggregating agent by which one of the following mechanisms? Find the correct answer.
 (a) It acts as a suicide substrate for COX-1 enzyme present in platelets
 (b) It acts as a transition state analog for COX-2 enzyme present in the platelets
 (c) It acts as a reversible inhibitor of lipoyxygenase present in the platelets
 (d) It acts as an affinity label of oxidoreductases present in the platelets

43. Which detector is used in gas chromatography for halogen containing compounds specifically?
- (a) Katharometer (b) Electron capture detector
(c) Flame ionization detector (d) Thermal conductivity detector
44. Which one of the following amino acids is the most effective contributor of protein buffer?
- (a) Alanine (b) Glycine (c) Histidine (d) Arginine
45. Phenols are more acidic than alcohols. This is due to one the following reasons. Identify that.
- (a) Alkoxide ions are better stabilized by the electron releasing alkyl groups
(b) Resonance stabilizes both phenols and phenoxide ions to the same extent
(c) Phenols are better stabilized than the phenoxide ions while reverse is true for alcohols and alkoxides
(d) Phenoxide ions are much better stabilized than the alkoxide ions
46. Cetirizine as an antihistaminic agent has a low sedative potential due to one of the following reasons. Identify that.
- (a) It has a chiral center (b) It has high log P value
(c) It has high polarity (d) It has low molecular weight
47. There are some criteria which an ideal antacid should fulfill. Some of the criteria are given below:
- [P] : The antacid should be absorbable orally and should buffer in the pH range of 4 - 6
[Q] : The antacid should exert its effect rapidly and should not cause a large evolution of gas
[R] : The antacid should not be a laxative or should not cause constipation
[S] : The antacid should react with the gastric acid and should inhibit pepsin
- Choose the correct combination of criteria for an ideal antacid.
- (a) P, Q&R (b) Q, R&S (c) Q&R (d) R & S
48. Titanium dioxide is used in sun screen products as a topical protective. The topical protective effect of titanium dioxide is arising due to one of the following properties. Identify that.
- (a) It has a high bulk density (b) It has a high LTV absorptivity
(c) It has a low water solubility (d) It has a high refractive index
49. Deferoxamine is used for the treatment of toxicity caused by one of the following ions. Identify that.
- (a) Arsenic (b) Cyanide (c) Iron (d) Lead
50. Parachor and Molar refraction can be categorized under one of the following properties. Identify that.
- (a) Additive properties (b) Constitutive properties
(c) Colligative properties (d) Additive and constitutive property
