

**QUESTION BANK OF
MEDICINAL CHEMISTRY 3RD YEAR PHARM D-2016**

Long Essays (10 Marks)

1. Define and classify antibiotics. Explain SAR and Mechanism of action of Beta lactum antibiotics
2. Describe the degradation of pencillins. Explain about development of acid resistant penicillins
3. What are antibiotics? Discuss the SAR & MOA of tetracyclines
4. What are beta lactum antibiotics? Give the degradation products of pencillins. Write a note on beta lactamase inhibitors.
5. What are Beta lactum antibiotics? Give the degradation products of penicillins. Outline the synthesis of chloramphenicol.
6. Define antibiotics? Classify them with examples. Discuss the chemistry and mechanism of action of aminoglycoside antibiotics
7. Define antibiotics? Classify them with examples. Write the chemistry & MOA of aminoglycoside antibiotics.
8. Define antibiotics? Classify cephalosporins with examples. Write the structure and uses any two cephalosporins. Discuss the MOA and therapeutic uses of Macrolide antibiotics.
9. Define antibiotics? Write a note on Beta lactamase inhibitors. Explain the SAR & MOA of tetracyclines.
10. A) Define and classify antibiotics.
B) Discuss bacterial resistance? Write a note on beta lactamase inhibitors?
11. a) What are antibiotics? Classify them with examples and discuss the MOA and therapeutic uses of penicillin's.
b) Discuss the chemistry of streptomycin
12. a) Describe how molecular modification of penicillin molecule leads to the development of orally effective penicillins. Give the structures of any three such drugs.
b) Discuss the SAR of tetracyclines.
13. a) Write short notes on penicillinase resistant oral penicillins.
b) Give an account of chemistry and stability of penicillin molecule

14. Write the structure and uses of any three drugs from each class of cephalosporins and tetracyclines. Discuss in detail SAR of tetracyclines
15. What are antibiotics? Classify them with examples, explain the chemical degradation. Write the structure and specific uses of chlorphenicol.
16. Classify antihypertensive agents? Explain the MOA of ACE inhibitors. Write the synthesis and uses of warfarin
17. What are antiarrhythmic drugs? Classify them with examples. Write structure and uses of verapamil, phenytoin and propranolol.
18. Classify antihypertensive agents? Discuss the MOA of calcium channels blockers & beta blockers with examples. Write the synthesis of propranolol.
19. Classify anti-arrhythmic and antihypertensive agents? Explain the MOA of angiotensin receptor blockers. Write the structure and uses of Losartan
20. What are calcium channel blockers? Describe their effect on cardiovascular system. Write the synthesis of Warfarin
21. Classify antihypertensive agents? Write a note on antianginal agents? Give the structure and uses of any two nitro vasodilators
22. Classify antiarrhythmic agents? Explain the MOA of antihyperlipidemic agents? Write the structure and uses of atorvastatin and lovastatin
23. What are cardiovascular drugs? Classify them with examples. Give the synthesis of Warfarin
24. Write any two structure and uses of the following
 - i) Calcium channel blocker ii) ACE Inhibitor iii) Beta blocker
 - IV) Antianginal agents v) Antihyperlipidemic agents
25. Write the structure and specific uses of
 - i) Isosorbide dinitrate ii) Verapamil iii) Propranolol iv) Captopril
 - V) Clofibrate
26. What is primary hypertension? Describe the role of renin-angiotensin system in the pathogenesis of essential hypertension. What are the important recently used antihypertensive agents?
27. What is essential hypertension? Classify antihypertensive drugs with examples. Outline the synthesis of 1) Propranolol 2) Nifedepine
28. What are antiarrhythmic drugs? Write the classification by giving at least one structure for each class of antiarrhythmic drugs. Give the synthesis of Procainamide.
29. Classify antihypertensive agents. Explain the following with suitable examples
 - a) Calcium Channels and their blockers. (b) Beta blockers.
30. Classify cardiovascular agents with examples. Write an account on calcium channel blockers. Give the synthesis of Diltiazem

31. Outline the synthesis of any one beta-blocker. Write the structure and uses for the followings:

a) Reserpine b) Nifedipine c) Clofibrate d) Isosorbide dinitrate

Cardiovascular

1. What are CVS drugs? Mention different types with suitable examples.
2. Define and classify lipid lowering agents. Explain the MOA of HMG coA reductase inhibitors.
3. Define and classify anti arrhythmic agents with examples.
4. Discuss briefly about antianginal agents.
5. What are anti arrhythmic agents? Outline the synthesis of Procainamide.
6. Give the Chemical name, structure and specific uses of Isosorbide dinitrate, Captopril
7. Classify antiarrhythmic agents with examples
8. What are antianginal drugs? Give examples.
9. Give three chemical structures and uses of drugs belonging to Antihyperlipidemic agents
10. Classify antiarrhythmic agents with examples. Write the MOA and therapeutic uses of Verapamil
11. Classify antihypertensive agents with examples. Write the synthesis of Diltiazem
12. Give the structure and uses of the following a) Captopril b) Methyldopa c) Phenytoin
13. What are antiarrhythmic agents. Outline the synthesis of Procainamide
14. Write the briefly about the chemistry and MOA of anticoagulants
15. Outline the synthesis and mode of action of any one beta blocker
16. Discuss mode of action of Antihyperlipidemic agents with examples
17. What are antihypertensive agents. Classify them with examples
18. Give an account of antihyperlipidemic agents including their structure and their specific uses
19. Give the synthesis and uses of Warfarin and Propranolol.
20. Write a note on antihyperlipidemic agents.
21. Give an account on membrane depressant drugs as antiarrhythmic agents
22. Write a note on antianginal agents.

23. Explain the MOA of ACE inhibitors. Write the structure and uses of Captopril and Enalapril
 24. Give the synthesis and uses of a) Propranolol b) Warfarin
 25. Give the synthesis and uses of a) Nifedipine b) Warfarin
 26. Give the synthesis and uses of a) Nifedipine b) Propranolol
 27. Give the synthesis and uses of a) Procainamide b) Warfarin
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SHORT ESSAY 5 marks

28. Write a note on urinary tract anti-infectives. Outline the synthesis of ciprofloxacin.
29. Add a note on synthetic antifungal agents. Give the synthesis of tolnaftate.
30. Name any four antiamoebic drugs. Give the synthesis of metronidazole.
31. What are anthelmintics? Write the synthesis of thiabendazole and albendazole
32. What are antifungal antibiotics? Explain their mechanism of action.
33. What are antitubercular agents? Write short notes on combination therapy for tuberculosis
34. Classify viral diseases and enumerate the drugs used in the therapy. Explain their mode of action. Give the structural and medicinal uses of zidovudine.
35. Classify antiviral agents? Give the structure and uses of Amantadine, Acyclovir
36. Give examples of drugs that act as DNA polymerase inhibitors. Describe their chemistry and therapeutic uses.
37. Give examples, MOA and clinical uses of Reverse transcriptase inhibitors.
38. Enumerate various classes of antiviral chemotherapeutic agents. Explain the MOA Idoxuridine
39. What are anti TB drugs ? Enlist the problems associated with the treatment. Give the structure of Para amino salicylic acid and INH
40. What are antiviral drugs? Classify them with suitable examples.
41. Write concept of multi drug therapy for mycobacterial infections.
42. What is multi drug resistant TB? How it is treated
43. Classify anti- TB agents? Write the structure of any two antitubercular drugs.
44. Write the structure and uses of *p*-amino salicylic acid, Isoniazid , Ethambutol and Pyrazinamide
45. Discuss the chemistry of Quinolones? Write the synthesis of Nitrofurantoin.
46. Give the examples of substituted Imidazoles as antifungal agents? Give the synthesis of Miconazole
47. Name any four antiamoebic agents? Give the synthesis of Metronidazole
48. Write a note on Polyene antibiotics as antifungal agents
49. Name any four synthetic antifungal agents. Outline the synthesis of Miconazole
50. Classify antifungal agents with examples? Write the synthesis of Tolnaftate
51. Classify Antiamoebic agents with examples. Give the synthesis of Metronidazole
52. Classify anthelmintics with examples. Give the synthesis of Albendazole
53. Classify antitubercular agents with examples. Write the management of tuberculosis
54. Write the structure and therapeutic uses of any four antiviral agents
55. Classify Antiprotozoal agents giving one example with structure under each class.

Sulfonamides

56. Discuss the SAR of sulfonamides
57. Comment on combination therapy of trimethoprim and sulphamethoxazole.
58. Give the mechanism of action of sulphonamides. Write the structure and uses of phthalyl sulphathiazole and sulphadiazine.
59. Add a note on folate reductase inhibitors. Explain the synergistic action of sulphamethoxazole and trimethoprim.
60. Write the synthesis of sulfoxazole and trimethoprim.
61. What is crystalluria? How it could be prevented.
62. Discuss the current status of sulfa drugs in the chemotherapy of bacterial infections.
63. Discuss the role of pKa in the designing of newer sulfonamides with examples.
64. Explain the MOA of sulfonamides? Write the structure and uses of sulfapyradine and sulfacetamide
65. Classify sulfonamides based on the duration of action? Give the synthesis of Dapsone
66. Classify sulfonamides based on site of action? Give the synthesis of Trimethoprim
67. Explain the SAR of sulfonamides? Give the synthesis of Dapsone

Antimalarials

68. Write the SAR of quinoline analogues of antimalarials.
69. Classify antimalarial agents with suitable examples. Outline the synthesis of Chloroquine
70. What are antimalarial drugs? Explain the life cycle of malaria.
71. Write the SAR of i) 8-amino quinolines ii) 4-amino quinolones.
72. Give the MOA and synthesis of chloroquine phosphate
73. How malaria is caused? Classify antimalarial agents?
74. Write a note on the use of artemisinin and its derivatives as antimalarial drugs.
75. Give an account of antimalarial drugs covering the life history and clinical symptoms of parasite.
76. Describe in detail the status of natural products useful in the treatment of human malarial infections.
77. Outline the synthesis of Chloroquine and Pyrimethamine
78. Outline the synthesis of Trimethoprim and pyrimethamine

Antineoplastic agents

79. What are antineoplastic agents? Discuss the mechanism of action of alkylating agents
80. Classify Alkylating agents with examples. Outline the synthesis of chlorambucil.
81. Discuss the MOA, structure and uses of mercapto purine and busulfan.
82. Give the structure, MOA and therapeutic uses of chlorambucil
83. What are anticancer drugs? Give the mechanism of action of antimetabolites
84. Write a note on plant products and hormones used as anticancer agents
85. Write the synthesis of chlorambucil and methotrexate
86. Outline the synthesis, MOA and uses of 1) Methotrexate 2) 5-Fluorouracil.
87. What are antineoplastic agents? Classify them with examples.
88. Discuss the MOA of alkylating agents. Write the synthesis of Cyclophosphamide.
89. Write a note on Antimetabolites used in the treatment of cancer
90. Classify Alkylating agents with structural examples. Outline the synthesis of chlorambucil

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SHORT ANSWERES 2 marks

91. Give the structures of two carrier linked prodrugs.
92. What is prodrug? Give examples.
93. Define prodrug with one example.
94. Write the structure of one prodrug and its active metabolites.
95. Mention the electronic parameters used in QSAR studies
96. Mention the steric parameters used in QSAR
97. What are lead molecules? How are they useful in drug discovery
98. Enumerate the applications of QSAR
99. What is CADD? Enlist the applications
100. Define combinatorial chemistry. Enlist its applications

ANTI HYPERTENSIVE AGENTS

101. Write the structure uses of propranolol
102. Write the structure and uses of amiodarone and diltiazem.
103. What are ACE inhibitors? Give two examples.
104. Name any two calcium channel blockers with their uses.
105. Write the structure and uses of minoxidil
106. Write the structure and uses of felodipine
107. Write the structure and uses of Nifedipine
108. Give the structure and uses of Isosorbide dinitrate.
109. What are vasodilators, give examples.
110. Write the structure and uses of captopril
111. Give the structure and uses of Propranolol and phenytoin.
112. Chemical structure and specific uses of Amyl nitrate.
113. Write the synthesis of Warfarin.
114. Name any two anticoagulants with their mechanism of action.
115. Write the structure and specific uses of quinidine
116. Write the structure and uses of alpha1 antagonist
117. Write the structure and uses of alpha2 agonist.
118. Write the structure and uses of any two beta blockers
119. What is the use of Angiotensin receptor blockers, Give one structure and use
120. Write the MOA of antianginal agents
121. Write the structure of any two anti hyperlipidemic agents.
122. What are antihyperlipidemic agents? Write the structure of Atorvastatin
123. What are antihyperlipidemic agents? Write the structure of Lovastatin.
124. Write the structure and uses of Phenindione
125. Write the structure and uses of dicoumorol
126. What are antianginal agents give examples

Hypoglycemic agents

127. Give the synthesis of chlorpropamide
128. Give the structure and uses of Meglitinide
129. Write the structure and uses of Pioglitazone

130. Write the structure and uses of Rosiglitazone
131. Define diabetes? Name any two drugs used in the treatment of diabetes
132. Define Hyperglycemia? Name any two biguanides used in the treatment of diabetes
133. Define hypoglycemia? Name any two sulfonyl urea derivatives
134. Mention the uses of Insulin and its derivatives
135. Give the MOA of Biguanides
136. Give the MOA of sulphonylureas
137. Give the MOA of Meglitinide
138. Write the structure and uses of Glibenclamide
139. Write the structure and uses of Metformin
140. Write the structure and uses of Phenformin
141. Write the symptoms of diabetes mellitus
142. Name any four drugs used in the treatment of type-2 diabetes
143. Give the MOA of Rosiglitazone
144. Give the MOA of Anagliptin
145. Write the structure and uses of glipizide
146. Give two drug names of thiazolidinediones used as hypoglycemic agents

DIURETICS

147. Write the structure and uses of Amiloride.
148. Structure and uses of triamptere
149. What are high ceiling diuretics? Give examples
150. Synthesis of furosemide
151. Structure and uses of furosemide
152. Synthesis of ethacrynic acid
153. Structure and uses of ethacrynic acid
154. Mechanism of acetazolamide
155. Structure and uses of acetazolamide
156. What are carbonic anhydrase inhibitors give examples
157. Write the structure and uses of spironolactone
158. Write the structure and uses of hydrochlorothiazide
159. Write the structure and uses of Benzthiazide
160. What are potassium sparing diuretics give examples
161. Give the structure and use of any one aldosterone antagonists
162. MOA of thiazide diuretics
163. How does carbonic anhydrase inhibitors acts as diuretics? Give examples
164. What are carbonic anhydrase inhibitors give examples
165. What are loop diuretics? Give examples
166. Give the MOA of mercurials
167. Give the MOA of carbonic anhydrase inhibitors

THYROID AND ANTI THYROID

- 168. What are hormones? How are they classified chemically? Name any two hormones secreted by thyroid gland.
- 169. Define hormones. Why they are transported through blood in combination with certain fractions of protein.
- 170. Define hormones and classify them on the basis of source
- 171. What are antithyroid drugs? Why are they called goitrogens?
- 172. Classify antithyroid drugs with examples
- 173. Write the structure of any two antithyroid drugs
- 174. Write the structure and uses of thyroid hormones.
- 175. Write any two structures of imidazole derivatives used as antithyroids.
- 176. Write any two structures of thiouracil derivatives used as antithyroids.
- 177. What are ionic inhibitors? Give examples.

DIAGNOSTIC AGENTS

- 178. What are diagnostic agents? Classify them with examples.
- 179. What are diagnostic agents? Give a brief account of radio opaques
- 180. Give the structure and uses of 1) Propyl iodine 2) Indigotin disulfonate 3) Evans blue.
- 181. Name any two drugs used for examination of Gall bladder.
- 182. Name any two drugs used for examination of Gastric function.
- 183. Name any two drugs used for examination of Liver function.
- 184. Name any two drugs used for examination of ophthalmic diagnostic aid.
- 185. Name any two drugs used for examination of pancreatic function.
- 186. Name any two drugs used for examination of Kidney function.
- 187. Name any two drugs used for examination of Lymphatic system.
- 188. Name any two dyes used as diagnostic agents.
- 189. Name the drug used for examination of Drug-hyper sensitivity.
- 190. Name any two drugs used in X-ray contrast media.
- 191. Name any two drugs used for examination of Angiography and Urography
- 192. Name any two drugs used for examination of Cholecystography.
- 193. Name any two drugs used for examination of Myelography.
- 194. Name any two drugs used for examination of Kidney function.

STEROIDS

- 195. What are steroids? Name any one drug containing Estrane nuclei
- 196. What are adrenocorticoids? Give example.
- 197. What are sex hormones? Give example
- 198. What are steroidal drugs? Name any two steroidal drugs with their uses
- 199. Classify steroidal drugs with examples
- 200. Write any steroidal drugs and their uses
- 201. Write the structure and uses of estrogen and Progesterone
- 202. What are steroids? Name any one drug containing androstane nuclei
- 203. What are steroids? Name any one drug containing Pregnane nuclei