



East Point Campus, Jnana Prabha, Virgo Nagar Post,
Bengaluru – 560049, Karnataka

QUESTION BANK

B Pharmacy

Semester-VI



East Point Campus, Jnana Prabha, Virgo Nagar Post,
Bengaluru – 560049, Karnataka

Medicinal Chemistry- III

LONG ESSAYS 10 MARKS

1. Define antibiotics? Classify them with examples. Write a note on beta lactamase inhibitors.
2. Define antimalarial agents and classify them with examples. Give the mechanism of action and outline the synthesis of chloroquine.
3. Define and classify Sulphonamides with examples. Write the SAR and chemistry of sulpha drugs. Write the synthesis of Trimethoprim.
4. What are beta lactum antibiotics? Classify then with structural examples. Write a note on chemistry and degradation of beta lactum antibiotics.
5. Define anthelmintics? Classify them with structural examples. Give the synthesis of diethyl carbamazine citrate and mebendazole.(2+4+4)
6. Define and classify antimalarial agents with examples. Write the mechanism and synthesis of chloroquine.
7. What are beta lactum antibiotics? Give the degradation products of penicillins. Write a note on beta lactamase inhibitors.
8. What are antimalarial drugs? Explain the life cycle of malaria. Write the SAR of, (i). 9-amino quinolines (ii). 7-chloro 4-amino quinolines.
9. Define and classify sulphonamides. Give the SAR and chemistry of sulphonamides. Write the synthesis of sulphamethoxazole.
10. Write the structure and uses of three drugs each from cephalosporins and tetracyclins. Discuss in detail SAR of tetracyclines.
11. What are antimalarial agents? Classify them with examples. Give the mechanism of action of quinolines and outline the synthesis of Pamaquine.
12. What are therapeutic agents? Classify sulphonamides with examples. Outline the synthesis of Trimethoprim and Sulphamethoxazole.
13. Define antimalarials? Give the mechanism of action and SAR of quinolines and its analogues. Give the synthesis of Chloroquine.
14. What are anthelmintics? Classify with suitable examples. Outline the synthesis and mechanism of action of Mebendazole.

15. What are beta lactamase antibiotics? Give the two degradation products of penicillins and cephalosporins. Write a note on beta lactamase inhibitors.
16. Write four structures of cephalosporin class antibiotics. Write a note on beta lactamase inhibitors and SAR of tetracyclines.
17. What are antimalarial drugs? Write the malarial life cycle and different drugs acting on the different stages. Write the SAR of quinolines.
18. Classify sulphonamides with suitable examples. Explain the SAR among antibacterial sulphonamides. Give the synthesis of Sulphacetamide and Sulfamethoxazole.
19. What are antifungal agents? Describe in detail about polyene antifungal agents.
20. Classify antimalarial agents. Describe the life cycle of malaria.
21. What are antibiotics? Classify with examples. Discuss the SAR & MOA of tetracyclines.
22. Classify antimalarial agents with suitable examples. Outline the synthesis of chloroquine.
23. Discuss in detail about polyene antibiotic antifungal agents. Write the synthesis of sulfamethoxazole.
24. Define antibiotics? Classify them with examples? Discuss the chemistry and mechanism of action of amino glycoside antibiotics.
25. What are antibiotics? Classify them with examples. Write a note on lactamase inhibitors.
26. What are antimalarial agents? Classify them with examples. Give the mechanism of action and outline the synthesis of Pamaquine.
27. Define and classify Sulphonamides with examples. Write the SAR and chemistry of sulpha drugs.
28. What are beta lactamase antibiotics? Give the degradation products of penicillins. Outline the chemistry and synthesis of Chloramphenicol.
29. A) What are antimalarial drugs? explain the life cycle of malaria.
B) Outline the synthesis of Pamaquine and Chloroquine.
30. What are sulphonamides? Classify them with and comment on combination therapy of Trimethoprim and Sulphamethoxazole.

SHORT ESSAYS 05 MARKS

1. Write the SAR of tetracyclines.
2. What are aminoglycosides? Write the mechanism and chemistry of aminoglycoside antibiotics.
3. Discuss chemistry of macrolide antibiotics. Give their uses and side effects.
4. Write a note on urinary tract anti-infective agents.
5. What are first line anti-tubercular drugs? Write the structure of any two anti-tubercular drugs. Give the synthesis of para-amino salicylic acid.
6. What are anti-viral drugs? Classify them with suitable examples.
7. Add a note on synthetic anti-fungal agents. Give the synthesis of Tolnaftate.
8. Define and classify anthelmintics. Write the synthesis of Diethyl carbamazine citrate.
9. Write a note on combinatorial chemistry and its applications.
10. Write the SAR of aminoglycoside antibiotics.
11. What are tetracyclines? Write the mechanism of action and chemistry of tetracyclines.
12. Discuss the chemistry and mechanism of action of macrolide antibiotics.
13. Write the chemistry and synthesis of Chloramphenicol.
14. Define and classify anti-tubercular agents with examples. Give the synthesis of isoniazid.
15. What are anti-viral drugs, classify them with suitable examples.
16. Add a note on synthetic antifungal agents. Give the synthesis of Tolnaftate.
17. Define and classify protozoal agents with structural examples. Write the mechanism and synthesis of Metronidazole.
18. Write a note on QSAR and its significance.
19. Discuss the chemistry and mechanism of action of aminoglycoside antibiotics.
20. Discuss the stability and SAR of tetracyclines.
21. Describe the chemistry and synthesis of Chloramphenicol.
22. Write a note on macrolide antibiotics.
23. Enlist various antitubercular drugs. Write the synthesis of INH.
24. Give the synthesis, mechanism of action and uses of Nitrofurantoin.
25. Name any four antiamoebic drugs. Give the synthesis of Metronidazole.

26. What are anti-fungal antibiotics? Explain their mechanism of action.
27. Write a note on combinational chemistry and its applications.
28. Write a note on beta lactamase inhibitors.
29. What are aminoglycosides? Write the mechanism of action and chemistry of aminoglycosides antibiotics.
30. Write the SAR of 7-chloro 4-amino quinolines.
31. Write the chemistry and mechanism of action of Erythromycin.
32. What are first line anti-tubercular drugs? Write the structure of any two anti-tubercular drugs. Give the synthesis of para amino salicylic acid.
33. What are anti-viral agents? Classify them with suitable examples.
34. Add a note on synthetic anti-fungal agents. Give the synthesis of Tolnaftate.
35. Define and classify anthelmintics. Write the synthesis of Diethyl carbamazine citrate.
36. Explain the modern concept of rational drug design.
37. Write the SAR and MOA of tetracyclines.
38. Explain with examples quinolones as urinary tract anti-infective agents.
39. Write a note on anti-fungal antibiotics.
40. Classify anti-viral agents. Give the synthesis of Acyclovir.
41. Write a note on prodrug concept and combinational chemistry in drug discovery.
42. What are Sulphonamides? Explain their SAR.
43. Discuss the stability of tetracyclines.
44. Write the synthesis and MOA of Chloramphenicol.
45. Write a note on macrolide antibiotics.
46. Write the synthesis of Chloroquine and Pamaquine.
47. What are aminoglycosides? Write the MOA and chemistry of aminoglycoside antibiotics.
48. Write a note on anti-tubercular antibiotics.
49. Write a note on prodrug designing.
50. Classify anti-fungal agents. Give the MOA and synthesis of Tolnaftate.
51. Classify penicillins with examples. Give their mechanism of action.
52. Write the chemistry and MOA of Erythromycin.
53. Classify anthelmintics. Write the synthesis of Diethyl carbamazine and Mebendazole.

54. Define and classify urinary tract anti-infectives and give the synthesis of Ciprofloxacin.
55. Discuss about beta lactamase inhibitors.
56. Give the examples of substituted imidazole's as antifungal agents. Give the synthesis of Miconazole.
57. Write the methods and applications of combinational chemistry.
58. Outline the synthesis of chloroquine. Discuss about SAR of quinolines.
59. Discuss about miscellaneous anti-malarial agents.
60. Write a note on urinary tract anti-infectives. Outline the synthesis of Ciprofloxacin.
61. Add a note on folate reductase inhibitors. Explain the synergetic action of Sulphamethoxazole and Trimethoprim.
62. What are anti TB drugs? Enlist the problems associated with the treatment. Give the structure of para amino salicylic acid and INH.
63. Write the degradation of penicillin.
64. Comment on combination therapy of trimethoprim and sulphamethoxazole.
65. Discuss the chemistry of quinolines. Write the synthesis of nitrofurantoin.
66. Explain the different parameters used in QSAR study.
67. Write the degradation products of penicillin.
68. Explain the life cycle of malaria. Write the different drugs acting on various stages.
69. Write the synthesis of pamaquine and chloramphenicol.
70. Write the structure and uses of the following: A) Rifampicin B) Sparfloxacin C) Getifloxacin D) Gancyclovir.
71. Classify the cephalosporins based on generation.
72. Write the degradation products of penicillins.
73. Write the SAR of tetracyclines.
74. What are aminoglycosides antibiotics? Write the MOA and chemistry of aminoglycoside antibiotics.
75. Discuss chemistry of macrolide antibiotics. Give their uses and side effects.
76. Define and classify urinary tract anti-infective agents with structural examples.
77. What are first line anti-tubercular drugs? Write the structure of any two anti-tubercular drugs. Give the synthesis of para amino salicylic acid.
78. Add a note on synthetic antifungal agents. Give the synthesis of Tolnaftate.

79. Define and classify anthelmintics. Write the synthesis of Mebendazole.
80. Write a note on combinational chemistry and its applications.
81. Write a short note on aminoglycoside antibiotics.
82. Add a note on beta lactamase inhibitors.
83. Write the SAR of 4-amino quinolines as anti-malarials.
84. Give the chemistry and mechanism of macrolide antibiotics.
85. Write the synthesis of ant two anti-tubercular drugs.
86. Write a note on urinary tract anti-infectives. Outline the synthesis of Ciprofloxacin.
87. Name any four antiamoebic drugs. Give the synthesis of Metronidazole.
88. Define and classify anti-fungal agents with structural examples.
89. Explain modern concept of rational drug design.

SHORT ANSWERS 02 MARKS

1. Write the structure and uses of Cephalexin.
2. Write the structure and uses of Chloramphenicol.
3. Give the synthesis of Isoniazid.
4. Give the structure and uses of Ciprofloxacin and Nitrofurantoin.
5. List out important anti-viral agents. Give the structure and uses of any one anti-viral drugs.
6. Write the structure of any two anti-tubercular antibiotics.
7. Write the structure and uses of Miconazole.
8. What are antiprotozoal agents? Give the structure and uses of Iodoquinol.
9. Give the synthesis of Dapsone.
10. What is lead molecule? How are they useful in drug discovery?
11. Write the structure and uses of Cephaloridine.
12. Write the structure and uses of Cindamycin.
13. Give the synthesis of Pamoquine.
14. Give the structure and uses of Ciprofloxacin and Nitrofurantoin.
15. List out important antifungal antibiotics. Give the structure and uses of any one anti-fungal antibiotic drug.

16. Write the synthesis of para amino salicylic acid.
17. Write the structure and uses of Miconazole.
18. What are antiprotozoal agents? Give the structure and uses of Iodoquinol.
19. Give the structure and uses of folate reductase inhibitors.
20. What is Hammett's electronic parameter? How is it useful in drug discovery?
21. Write the structure and uses of Cephalexin.
22. Write the structure and uses of Proguanil.
23. Write the structure and uses of furazolidone.
24. List out important anti-viral agents. Give the structure and uses of any one anti-viral drug.
25. Write the synthesis of PAS.
26. Enlist the problems associated with the treatment of TB.
27. Write briefly on anti-fungal imidazoles.
28. Write the structure and uses of Mebendazole.
29. Explain the synergistic action of Sulphamethoxazole and Trimethoprim.
30. Enlist the parameters of QSAR.
31. Write the structure and uses of Ampicillin.
32. Write the structure and uses of Chloramphenicol.
33. Give the synthesis of Isoniazid.
34. Outline the synthesis of Nitrofurantoin.
35. Give the structure and uses of any one anti-viral drug.
36. Define anti-tubercular agents? Name the causative organism for tuberculosis.
37. List out antifungal agents having imidazole nucleus.
38. What are anti-protozoal agents? Give the structure and uses of Ornidazole.
39. Give the synthesis of Mebendazole.
40. Mention the electronic parameters used in QSAR.
41. What are monolactam antibiotics and give examples.
42. Write the structure and uses of Ethambutol and Pyrazinamide.
43. Write the structure and uses of Zidovudine.
44. Write the structure and uses of Clindamycin.

45. List out important anti-fungal agents. Give the structure and uses of any one antifungal drug.
46. Give the synthesis of Dapsone.
47. What are anti-protozoal agents? Give the structure of Iodoquinol.
48. What are urinary tract anti-infective agents? Write the structure and uses of Sparfloxacin.
49. Write the synthesis of Isoniazid.
50. Define and classify prodrugs.
51. Write the structure and uses of Oxytetracycline and Doxycycline.
52. Write the structure and uses of Clindamycin and Proguanil.
53. Give the synthesis of Trimethoprim.
54. Give the structure and uses of Amantadine and Zidovudine.
55. What are antiamebic agents? Write the structure and uses of Tinidazole.
56. Give the synthesis of Nitrofurantoin.
57. Write the structure and uses of Sulfaisoxazole and Mefenide acetate.
58. Write the structure and uses of Diloxanide furoate and Iodoquinol.
59. What are causative organisms for TB.
60. Write the synthesis of para amino salicylic acid.
61. Write the structure and uses of Sparfloxacin.
62. What are anthelmintics? Give examples.
63. Name any two antibiotics used as anti-tubercular drugs.
64. Give the synthesis of Sulphamethoxazole.
65. Write the structure and uses of Carbasone.
66. Mention the steric parameters used in QSAR.
67. Write the structure and uses of Streptomycin.
68. Write the structure and uses of Clindamycin.
69. Write the synthesis of Metronidazole.
70. Write the synthesis of Nitrofurantoin.
71. Write the structure and uses of Nalidixic acid.
72. Outline the synthesis of Dapsone.
73. Synthesis and uses of Thiabendazole.

74. Name any two sulfonamides used in treatment of Burn therapy.
75. What are structure and uses of chlorguanide.
76. Write the structure and uses of any two 8-amino quinolines.
77. Structure and uses of Nystatin.
78. Applications of drug design.
79. Write the structure and uses of Diethyl carbamazine.
80. Write the chemical structure and uses of macrolide antibiotic.
81. Write the structure and uses of Cephalexin.
82. Write the structure and uses of Chloramphenicol.
83. Give the synthesis of Isoniazid.
84. Give the structure and uses of Ciprofloxacin and Nitrofurantoin.
85. List out important antiviral agents. Give the structure and uses of any one antiviral drug.
86. Write the structure of ant two anti-tubercular antibiotics.
87. Write the structure and uses of Miconazole.
88. What are anti-protozoal agents? Give the structure and uses of Iodoquinol.
89. Give the synthesis of Diethyl carbamazine citrate.
90. What is lead molecule? How are they useful in drug discovery?
91. Give the MOA of Tetracyclines.
92. Give the structure and uses of Clindamycin.
93. Give the synthesis of Acyclovir.
94. Outline the synthesis of Nitrofurantoin.
95. Write the structure and uses of Nalidixic acid.
96. Write the structure and uses of Zidovudine.
97. Give the synthesis of Diethyl carbamazine citrate.
98. Define prodrug. Give examples
99. Write a note on crystalluria.
100. Outline the synthesis of Dapsone.



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Pharmacology-2

UNIT-1

DRUG ACTING ON RESPIRATORY SYSTEM

LONG ESSAY 10 MARKS

1. What is bronchial asthma? Classify drug used in its treatment.
2. Mention xanthine derivatives and write their mechanism of antiasthmatic action?
3. Explain mechanism of action, adverse effect and therapeutic uses of selective Beta 2 agonist (salbutamol).
4. Classify antitussive with example. Write their general mode of action and uses.
5. What are mucolytics ? Give example. Write mechanism of action of bromohexine.
6. What are respiratory stimulants? Explain pharmacology of any one.
7. Define respiratory stimulant with examples. Write their mechanism of action and therapeutic uses.

SHORT ANSWER 02 MARKS

8. Differentiate between bronchial asthma and COPD.
9. What are the causes of COPD.
10. Name the drug used in COPD.
11. Enlist bronchodilators
12. What are leukotriene antagonist? Give example.
13. Mention mast cell stabilizer.
14. Define expectorant with example.
15. Write uses of expectorant and antitussive?
16. What are difference between expectorant and antitussive?
17. Mention four antitussive agents?
18. What are mucolytics? Give example.
19. What are the adverse effect and uses of bromhexine
20. What are nasal decongestants? Give example.
21. List respiratory stimulants.

DRUGS ACTING ON GASTROINTESTINAL TRACT

LONG ESSAYS 10 MARKS

22. Classify anti-ulcer agents with example. Write mechanism of action and therapeutics uses of PPIs.
23. Classify antiemetic with example. Explain mechanism of action and uses of domperidone.
24. Define antiemetics and classify them with examples. Write the mechanism of action, adverse effects and therapeutic effect of ondansetron?
25. What are prokinetic drugs? Give example. Write the MOA, adverse effect and uses of metoclopramide.
26. Classify laxatives and purgative with example. Write MOA and uses of irritant purgative?
27. What are laxative and purgative? Classify them with example. Write the mechanism of action and uses of saline cathartics.

SHORT ANSWER 02 MARKS

1. What are the antacid? Give example.
2. Enlist non systemic antacids
3. What are antacids ? write their uses.
4. Mention four antidiarrheals.
5. What are appetizers? Give example
6. Define carminative with examples
7. What are appetizers? Give example.
8. What are antidiarrhoeal? Give example.
9. What are osmotic purgative? Give two examples.

UNIT-2 GENERAL PRINCIPLE OF CHEMOTHERAPY

SHORT ESSAYS 05 MARKS

1. Define chemotherapy. Write classification of antibacterial agents.
2. Classify antibiotics on the basis of mechanism of action along with examples.
3. Write chemical classification of antimicrobial agents with example.
4. Define chemoprophylaxis. Write briefly on types of chemoprophylaxis along with example.
5. Example rational behind combined therapy of antimicrobial agents with examples.
6. Write a note on causes and prevention of antimicrobial resistance.
7. Explain mechanism of antimicrobial resistance.

SHORT ANSWER 02 MARKS

1. Four classes of antibiotics acting by inhibiting cell wall synthesis.
2. Mention four class of antibiotics acting by inhibiting protein synthesis.
3. Define bacteriostatic and bactericidal agents with example.
4. Mention mechanism of development of anti microbial resistance.
5. What are probiotics? Give example.
6. What are preprobiotics? Give example.
7. Give four reason for combined uses of antibiotics.
8. What are superinfection? Give example.

UNIT-3 ANTIBIOTICS AND ANTIMICROBIAL AGENTS

LONG ESSAYS 10 MARKS

1. Classify sulphonamides with example. Describe their mechanism of action and uses.
2. What are sulphonamides? Classify them with examples. Write the mechanism of action and uses of co-trimoxazole.
3. Classify penicillins. Write mechanism of action, adverse effects and uses of penicillin-G.
4. Classify semi synthetic penicillin with example? Discuss antimicrobial spectrum, mechanism of action and uses of ampicillin.
5. What are cephalosporins? Classify them with examples. Write their mechanism of action, adverse reactions and therapeutic uses.
6. Write sources. MOA, adverse effect and therapeutic uses of tetracyclines.
7. What are aminoglycoside antibiotics? Write the antimicrobial spectrum, MOA, adverse action and therapeutics uses of streptomycin.
8. What are macrolides? Give examples. Discuss their antimicrobial spectrum, MOA, and therapeutic uses.

SHORT ESSAYS 05 MARKS

1. What are sulphonamides? Classify them with example.
2. Write MOA and merits of colrimoxazole.
3. What are MOA and uses of penicillins.
4. Write MOA and uses of streptomycin.
5. What are broad spectral antibiotics? Give example. Write MOA of chloramphenicol.
6. Classify tetracyclines with example. Example why tetracycline causes discoloration of teeth.
7. What are polyene antibiotics? Give examples. Enlist their therapeutic uses.
8. Classify fluoroquinolones with example and write their MOA ofloxacin.
9. Write the mode of action and therapeutic uses of fluoroquinolones.
10. Write briefly pharmacology of dapsone and clofazimine.

CHEMOTHERAPY OF DISEASES

LONG ESSAY 10 MARKS

1. Classify antifungal agents with example. Write MOA, adverse effect and uses of amphotericin-B.
2. Classify antifungal agents with example. Write MOA, adverse effect and uses of triazoles.
3. Classify antifungal agents with example. Discuss anti-fungal spectrum, MOA, and uses of systemic triazoles.
4. Classify antitubercular agents. Explain MOA of INH and Rifampicin.
5. What is DOTS? Classify anti TB drugs with examples. Write the MOA, adverse effect and uses of INH.
6. Classify antiamoebic agents with examples. Write MOA, adverse effect and uses of metronidazole.
7. Name the causative organism of malaria. Classify antimalerials with example.
8. Classify antimalarial agents with example. Discuss pharmacology of chloroquine.

SHORT ESSAYS 05 MARKS

1. Classify antiviral and antiretroviral agents with example.
2. Classify antiviral agents with example. Write the adverse effects and uses of acyclovir.
3. Write MOA, adverse effect and uses of zidovudine.
4. Classify anti viral agents with examples. Write effect and therapeutic uses of zidovudine.
5. Write MOA, adverse effect and uses of acyclovir.
6. Write MOA, adverse effect and uses of amphotericin-B.
7. Classify antiamoebic agents with example. Write the uses of tinidazole.
8. Write a flow chart showing life cycle of plasmodium species.
9. Write MOA, adverse effect and uses of chloroquine.
10. Write MOA and uses of chloroquine.

11. Classify anti-tubercular drugs with example and write the mechanism of action of INH.
12. Classify antileprotic drugs with example. Write the mechanism of action of dapsone.
13. Classify type of leprosy and antileprotic agents with examples.
14. Classify anthelmintics with examples. Write the pharmacology of albendazole.
15. Classify anthelmintic agents with examples. Write mechanism of action of Benzimidazoles.

SHORT ANSWERS 02 MARKS

1. What is DOTS therapy?
2. Write adverse effect of rifampicin.
3. Write the adverse effect of streptomycin.
4. Mention types of leprosy.
5. What are blood schizonticides. Give one example.
6. Mention four malarial parasites.
7. Outline mechanism of action of metronidazole.
8. Mention the drugs used for treatment of filariasis.

UNIT-4 CHEMOTHERAPHY OF UTI, STD AND CANCER

SHORT ESSAYS 05 MARKS

1. Classify anticancer agents with examples.
2. Describe the mechanism of action and therapeutic uses of alkylating agents.
3. Write the mechanism of action and adverse effect of methotrexate.
4. Write the mechanism of action and adverse effect of 5-fluorouracil.
5. Classify types of anti-metabolites with examples.

SHORT ANSWERS 02 MARKS

1. Mention common causative organisms for UTI.
2. Mention four urinary antiseptics.
3. Mention four hormonal anticancer agents.
4. What are major adverse effect cytotoxic agents.
5. Mention common causative organism of sexually transmitted diseases.
6. Write causative organism and drug of choice for syphilis and gonorrhoea.
7. Mention one sexual transmitted diseases and treatments.
8. Mention the first line of drug therapy for syphilis.

IMMUNOPHARMACOLOGY

SHORT ESSAYS 10 MARKS

1. What are immunosuppressants and immunostimulants? Give examples. Write their application.
2. Classify immunosuppressants with example and mention their uses.
3. Classify immunosuppressants with example, write the mechanism of action of tacrolimus.
4. Explain mechanism of action and uses of cyclosporins.
5. Write MOA, adverse effect and uses of corticosteroids.
6. Write a note on monoclonal antibody as immunosuppressants.
7. Write briefly on monoclonal antibodies with example.
8. Classify immunostimulants with examples. Write note on types and uses of interferons.

SHORT ANSWER 02 MARKS

1. What are immunosuppressant? Give examples.
2. Enlist four immunostimulant.
3. Enlist T-cell inhibitors.
4. Explain mechanism of action and uses of cyclosporine.
5. Write adverse effects of cyclosporine
6. Write the adverse reaction of tacrolimus
7. Write the uses of corticosteroids
8. What are adverse effects of corticosteroids?
9. What are monoclonal antibodies used for immunosuppression

Unit 5: PRINCIPLE OF TOXICOLOGY

SHORT ESSAYS 10 MARKS

1. Explain the acute, subacute and chronic toxicity studies along with their purpose
2. Highlight on ABCD regimen of acute poisoning management.
3. Outline the steps involved in the management of acute poisonings.
4. Outline steps involve in the elimination of orally ingested poisons.
5. Outline general principle of treatment of acute poisoning.
6. Write a note on re-correction of vital functions during acute poisoning
7. Write briefly on special toxicity tests.
8. Explain genotoxicity and teratogenicity with suitable examples.
9. Explain mutagenicity and chronic toxicity with suitable examples.
10. Explain the terms carcinogenicity and mutagenicity with examples.
11. Write clinical symptoms and outline steps involved in the treatment of barbiturates poisoning.
12. Write the signs, symptoms and treatment of morphine poisonings.
13. Write clinical symptoms of heavy metals poisonings. Add a note on their antidotes.
14. Write the signs, symptoms and treatment of arsenic poisonings.
15. Write clinical symptoms and outline steps involved in the treatment of lead poisonings.

SHORT ANSWERS 02 MARKS

1. Define acute toxicity.
2. What is teratogenicity ? Give an examples
3. Explain genotoxicity
4. Mention antidotes for morphine and organophorous poisonings.
5. Write signs and symptoms of organphosphorous poisonings.
6. Mention four heavy metals and their antidotes.
7. Write antidotes for morphine and lead poisoning.
8. Mention antidotes for arsenic and lead.
9. What are the antidotes for lead and mercury?

CHRONOPHARMACOLOGY

SHORT ANSWERS 02 MARKS

1. Explain the term chronopharmacology.
2. Write significance of chronopharmacology
3. Write the significance of chronopharmacology.
4. Define biological rhythms.
5. Mention four biological rhythms.
6. What are infradian rhythms? Give an example.
7. What is circadian rhythms? Give an example of drugs affected by it.
8. Mention drugs affected by circadian rhythm.
9. What is biological clocks?
10. Mention important classes of drugs affected by biological cycles.



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Pharmaceutical Bio-Technology

LONG ESSAYS 10 MARKS

1. Discuss in detailed the various skin care formulations with their importance.
2. Mention various Ayurvedic formulations and elaborate the formulation of Asava and its alcoholic content determination.
3. Explain the WHO and ICH guidelines for assessment of herbal drug.
4. Explain in detail the concept of Ayurvedic system of Medicine
5. Discuss quality control assessment of Herbal Cosmetics.
6. Give a detailed account on the regulations of manufacture of ASU drugs as per schedule z
7. Explain the selection, identification and authentication of herbal materials.
8. Write the sources and description of raw materials of herbal origin used as skin care products.
9. Describe the WHO guidelines for the assessment of herbal drugs.
10. Describe the WHO guidelines for the assessment of herbal drugs.
11. Explain Good agricultural practices in cultivation of medicinal plants including
12. organic farming.
13. Write the sources and description of raw materials of herbal origin used as hair care
14. products.
15. Describe the herbs used in skin care in detail with examples.
16. Explain in detail stability testing of herbal drug formulations.
17. Explain the Good agricultural practices in the cultivation of medicinal plants.
18. Explain the importance of garbling, drying and preservation in the processing of
19. herbal raw materials.
20. Describe the herbs used in hair care in detail with examples.
21. Write a detailed note on patenting of traditional knowledge and natural products with
22. examples.
23. Explain the principle, diagnosis and methods of treatment in Ayurveda and
24. Homeopathy system of medicine.
25. Define and classify herbal excipients with examples. Describe the role of herbal
26. excipients in cosmetics.
27. Explain the need for quality control of raw materials and extracts. Describe WHO

28. guidelines for quality control of Herbal drugs
29. Explain different pest management methods used in cultivation of medicinal plants.
30. Define herbal excipients with examples and write their role in skin and hair
31. cosmetics.
32. Write a detailed note on patenting of traditional knowledge and natural products with
33. examples.
34. Describe in detail the morphological and microscopical methods of identification and
35. authentication of herbal materials
36. Write different herbal liquid formulations. Give a detailed account on preparation,
37. standardization and preservation of herbal syrups.
38. Write a detailed note on patenting of traditional knowledge and natural products with
39. examples
40. Describe the WHO guidelines for the assessment of herbal drugs.
41. Explain Good agricultural practices in cultivation of medicinal plants including
42. organic farming.
43. Write a note on herbal excipients and their significance as Colorants, Sweeteners &
44. Binders.

SHORT ESSAY 05 MARKS

1. Discuss in brief on “Sodhana” process.
2. What are Nutraceuticals? Discuss on the present market scenario and scope of nutraceuticals.
3. Add a brief note on storage areas under GMP in herbal drug industry.
4. What is Biopiracy? Explain patent case study of Curcuma.
5. Give the ideal characteristics of Leha and churna
6. Write the possible side effects of Kava-Kava, Garlic and pepper
7. Enlist the various Bioinsecticides and explain any two in detail
8. Give the general herbal ingredients of herbal shampoo
9. Discuss on present scope of Herbal Drug Industries
10. Discuss in brief “Marana” process.
11. Discuss the morphological authentication of Herbal materials.
12. Write the possible side effects of Ginseng and Ephedra.

13. Add a detailed account on Garlic as a nutraceutical.
14. Briefly explain the patenting aspects of traditional knowledge and natural products.
15. Give a note on infrastructural requirements under GMP for herbal industry.
16. Add a note on Organic farming
17. Give a note on herbal skin care cosmetics
18. Enlist the various herbs used as health food. Discuss any two of them
19. Define Herb. Explain the methods for Processing of Herbal raw materials.
20. Write about the side effects and interactions of Kava-kava.
21. Give the benefits and role of nutraceuticals in Diabetes.
22. Give the sources and description of any two fixed oils and waxes used in herbal cosmetics.
23. Write a short note on colorants and sweeteners as herbal excipients and their significance.
24. Explain Schedule Z of Drugs & Cosmetics act for ASU drugs.
25. Write in detail the patent case study of Curcuma.
26. Give the general ingredients of herbal shampoos.
27. Enumerate different pest control methods and explain biological control method.
28. Write a short note on biopesticides.
29. Write a note on general aspects, market growth of nutraceuticals.
30. Write the scope and future prospects of herbal drug industry.
31. Give the health benefits and role of nutraceuticals in CVS diseases.
32. Give side effects and interactions of Ginkobiloba.
33. Give the source, chemical constituents and uses of any two natural gums.
34. Write a short note on binders and diluents used as herbal excipients.
35. Write a note on stability testing of herbal drugs.
36. Write a note on major institutions involved in medicinal plant research.
37. Define and classify nutraceuticals with examples.
38. Explain the health benefits and role of nutraceuticals in CVS diseases.
39. Explain the method of preparation of Aristas.
40. Describe the possible side effects and interactions of hypericum and kava-kava. .
41. Write a note on natural sweeteners and flavoring agents used in pharmaceutical formulations with examples.
42. Explain the regulation of manufacture of ASU drugs in India.

43. Write a note on WHO guidelines for the assessment of herbal drugs.
44. Discuss the natural disintegrants used in pharmaceutical formulations with examples.
45. Explain the present scope and future prospects of herbal drug industry.
46. Explain any two methods for the determination of alcohol content in asavas.
47. Explain the health benefits and role of nutraceuticals in diabetes.
48. Explain the health benefits and role of ashwagandha and ginseng as nutraceuticals.
49. Describe the possible side effects and interactions of garlic and ephedra.
50. Explain the diluents and viscosity builders from natural source with examples. .
51. Write a note on fixed oils and waxes used herbal cosmetics with examples.
52. Write the significance of quality control of raw materials and extracts, explain.
53. Explain the basic principles of Siddha and Unani.
54. Give a brief account on plant-based industries and institutions in India.
55. Write different methods for processing of herbal raw materials and explain storage of herbal drugs with examples.
56. Define and classify Nutraceuticals with examples. Give the source and uses of Spirulina.
57. Write a note on herbal-drug and herb-food interactions with examples.
58. Explain the role of nutraceuticals in the treatment of irritable bowel syndrome..
59. Name the herbs used in skin care preparations. Give the source, uses and significance of Aloe vera and Neem in skin care preparations.
60. Give the source of Saffron, hibiscus and Bringaraj. Explain their role in cosmetics.
61. What are the advantages of patenting natural products? Explain with examples.
62. Discuss the case study of Neem and Curcuma in patenting.
63. Discuss the machinery and equipments required for herbal drug industry as per GMP.
64. Name the various dosage forms of Ayurveda and explain the preparation of Taila
65. Describe the role of honey as health food.
66. Describe the possible side effects and interactions of hypericum and kava-kava.
67. What are polyherbal tablets? Discuss their evaluation parameters.
68. Describe the role of herbs in dental care.
69. Explain about infrastructural requirements of herbal drug industry as per Schedule T.
70. Elaborate the ICH guidelines for assessment of herbal drugs.

71. Write a note on regulation of manufacture of ASU drugs.
72. Explain the principles of Ayurveda, Siddha and Unani systems of medicine
73. Discuss the objectives and components of GMP.
74. Classify biopesticides with examples. What are the advantages of biopesticides.
75. Define and classify nutraceuticals with examples.
76. Explain the health benefits and role of nutraceuticals in irritable bowel syndrome and gastric diseases.
77. Describe the possible side effects and interactions of ginkobiloba and ginseng.
78. What is the role of bleaching agents and protective agents from herbs in the preparation of cosmetics? Explain with examples.
79. Write a note on phytosomes.
80. Explain the WHO guidelines for the assessment of herbal drugs.
81. Explain about documentation and record maintenance as per Schedule Z
82. Give the preparation and standardization of Asavas involved in Ayurvedic formulations.
83. Give the side effects and interactions of Pepper and Ephedra.
84. Write a note on stability testing of herbal drugs.
85. Discuss the components of GMP (Schedule T) for ASU drugs.
86. Give the sources and description of bleaching agents and anti-oxidants used in herbal cosmetics.
87. Write a short note on flavoring agents and perfumes as herbal excipients and their significance.
88. Define Patent. Explain the Patent Case Study of Curcuma and Neem.
89. Explain Garlic and honey as Health food.
90. Write a short note on Herb-Drug interactions.

SHORT ANSWERS 02 Marks

1. Define Herb and Herbal medicines.
2. Health benefits of Ginger and Chicory
3. What are phytosomes ?
4. Significance of preparation of herbarium
5. Write the characteristics of Hair dyes
6. Give the source and active principles of a natural diluent
7. What are the objectives of GMP?
8. What is meant by farmers right?
9. Role of honey as health food
10. Name any two natural bleaching agents with biological source.
11. What is meant by SOP?
12. Give the source and active constituents of a natural binder
13. Enlist four dietary supplements under nutraceuticals
14. What is meant by farmers right ?
15. Mention the health benefits of Spirulina
16. Name any two oral hygienic herbal formulations available in market
17. Name the components of GMP
18. Write the Characteristics of Hair dyes
19. Write the advantages of Bioinsecticides
20. Define patent
21. What are Asava and Arista?
22. Give the source and chemical constituents of any one herb used as perfume.
23. Mention the uses of Alfalfa as a Nutraceutical.
24. Define bioprospecting.
25. Name any two natural gums and their biological source.
26. List out two herbal excipients used as sweeteners with their biological source.
27. Enlist two nutraceuticals used in gastrointestinal diseases with their active constituents.
28. What are hair tonics?
29. Define IPR.

30. Write any two biopesticides with biological source.
31. What are Asava and Lehya?
32. Define Herbal medicinal product.
33. What are probiotics? Give examples.
34. What is the basic principle involved in homeopathy?
35. Mention two examples of nutraceuticals used in the treatment of cancer.
36. Give two examples of waxes used in herbal cosmetics.
37. What are the ideal requirements of bhasma?
38. List any four plant-based industries in India.
39. Mention the constituents and uses of Spirulina.
40. Name two herbs used in dental care with their biological source.
41. Give the source, chemistry and uses of Aloe vera in herbal cosmetics.
42. What are the objectives of GMP with respect to herbal drugs?
43. What are bhasma and lehya?
44. Define ghutika and churna?
45. Name any two herbal antioxidants and give their biological source.
46. Mention two natural viscosity builders and give their biological source.
47. Name any two bioinsecticides with their biological source.
48. Give the source, chemistry and uses of Henna in herbal cosmetics.
49. What do you mean by patent and biopiracy?
50. Write the side effects and interactions of pepper as health food?
51. Write any two plant-based bioinsecticides and their biological source.
52. What are traditional medicines? Name any two ayurvedic formulations.
53. What are the source, active constituents and uses of honey?
54. What are the source, active constituents and uses of ginkobiloba?
55. Name any two natural sweeteners and give their biological source.
56. Mention any two natural flavoring agents and give their biological source.
57. Give two evaluation parameters for herbal skin care products.
58. What is bioprospecting and biopiracy?
59. Define breeder's right?
60. What is schedule T?
61. Define herbal medicine with examples.

62. Define biofertilizers with examples.
63. Write the source of Hypericum and Amla.
64. Define perfume. Give two examples for perfumes of natural origin.
65. Define phytosomes.
66. Define flavors. Mention two examples for flavors of natural origin.
67. Define Marker compound? Give one example.
68. What is Schedule Z?
69. What is gutika? Give examples.
70. Mention the chemical constituents of Ephedra and Ashwagandha.
71. Define herbal drug preparation with examples.
72. Define organic farming.
73. What is nutraceutical? Write one example.
74. Mention the source of Garlic and Pepper.
75. Name any two natural sweeteners with biological source.
76. Mention the evaluation parameters for herbal syrups.
77. Name two natural perfumes with their biological source.
78. What is chromatographic fingerprinting?
79. Give the significance of estimation of microbial content in herbal drugs.
80. What is master formula record?
81. Define herbal medicinal product and herbal drug preparation.
82. What are traditional medicines? Name any two ayurvedic formulations.
83. What are the source, active constituents and uses of alfalfa?
84. Mention the source, active constituents and uses of amla.
85. Give the source, chemistry and uses of Soapnut in herbal cosmetics.
86. Name two herbs used for dental care and give their biological source.
87. Give the characteristics of herbal hair dyes.
88. What do you mean by farmer's right and breeder's right?
89. What is bioprospecting and biopiracy?
90. Name any two plant-based industries and research institutions in India.
91. What are ghutika and churna?
92. List any two plant-based industries in India.
93. Define Biopesticides with examples.

94. Mention the source and chemical constituents of ginger.
95. Mention the significance of Phytosomes.
96. Give examples for antioxidant herbs.
97. Give the chemical constituents and uses of Amla.
98. Define Nutraceuticals.
99. Give examples of herbal excipients used as binders.
100. Define Bioprospecting.



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Biopharmaceutics and Pharmacokinetics

LONG ESSAYS- 10MARKS

1. What are the assumptions made in developing pH partition hypothesis? What are the limitations of pH partition hypothesis?
2. Explain different pharmacokinetic models. What are the important points to be considered in developing equation for a two compartment model?
3. Explain different methods to enhance the dissolution of poorly soluble drugs.
4. Describe the various physiological barriers affecting distribution of drug.
5. Describe the various methods of assessment of bioavailability.
6. Discuss the one compartment open model for IV bolus administration.
7. Write a note on absorption and various mechanisms of drug absorption.
8. Define bioavailability, classify bioavailability, and write about bioequivalence study protocol.
9. Write about physicochemical and pharmaceutical factors effecting drug absorption.
10. Discuss biological and physicochemical factors influencing drug absorption.
11. Define bioavailability. Explain any two methods for measurement of bioavailability.
12. Define compartment. Discuss method of residuals/feathering method for deriving pharmacokinetic parameters following one compartment model.
13. Define Biopharmaceutics. Discuss in detail kinetics of protein binding.
14. Discuss in detail drug metabolism and metabolic pathways of renal excretion.
15. Define pharmacokinetics. Derive pharmacokinetic parameters of drug administered by intravenous injection (bolus).
16. Classify factors influencing absorption drugs. Explain physicochemical factors in detail.
17. Define bioavailability. Write its objectives. Explain different methods for measurement of bioavailability.
18. Derive various pharmacokinetic parameters for intravenous infusion by two compartment model.
19. Define drug absorption. Explain various mechanisms of drug absorption through GIT.
20. Define bioavailability. Discuss the different methods for measurement of bioavailability.
21. Explain determination of pharmacokinetic parameters from plasma concentration data after administration of drug by I.V. infusion.
22. List the various processes through which drugs can cross the biological membrane. Describe absorption of drugs from non per oral extra-vascular routes.



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23. Explain various methods to enhance the dissolution rate of poorly soluble drugs.
24. Explain determination of pharmacokinetic parameters from plasma concentration data after administration of drug I.V bolus.
25. Discuss in detail the various physiological factors affecting drug absorption.
26. Define metabolism. Explain Phase I reactions.
27. Discuss in detail one-compartment open model for a drug administered as I.V. Bolus. Give the schematic representation, graphs and equations for the same.
28. Define drug distribution. Describe the various factors affecting drug distribution.
29. Define bioavailability. Explain pharmacokinetic methods for assessment of bioavailability.
30. Discuss in detail one-compartment open model for a drug administered as I.V. infusion. Give the schematic representation, graphs and equations for the same.

SHORT ESSAYS-5MARKS

1. What do you mean by the term clearance and how will you determine renal clearance.
2. Write the advantages and limitation of multiple dose study
3. Explain various methods to determine Michaelis-Menten rate constant.
4. Discuss about criteria for obtaining a valid urine excretion data.
5. Derive an equation to determine concentration of drug given by i.v bolus route following 1 CBM kinetic.
6. Explain the role of plasma proteins in drug distribution
7. What is a compartment model? Discuss the various types of compartment models.
8. Explain apparent volume of distribution and distribution co-efficient.
9. Explain the factors affecting drug distribution.
10. Write about pH partition theory and its limitation.
11. Explain Wagner –Nelson method along with its advantages and limitations.
12. Briefly explain about mechanism of renal clearance.
13. Brief note on dosage regimen adjustment in patient with renal failure.
14. Describe briefly on absolute and relative bioavailability.
15. Enumerate different methods for enhancement of dissolution of poorly soluble drugs.
16. Discuss about different pharmacokinetic parameters.
17. Enumerate various factors affecting protein binding and explain protein related factors.



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18. Explain sigma-minus method.
19. Write in detail about physiological factors effecting drug absorption.
20. Write a note on application of pharmacokinetic models.
21. Write any two methods to determine bioavailability.
22. Write a note on metabolic pathway of renal excretion of drug.
23. Explain term *in-vitro in-vivo* correlation.
24. Enumerate the kinetic of protein –drug binding and represent different plots.
25. Explain about pseudo polymorphism and biopharmaceutical classification system.
26. Determination of absorption coefficient by back residual method.
27. Write a note on mamillary and caternary model.
28. Enumerate factors affecting protein drug binding. Explain any two factors.
29. Compare and contrast active and passive diffusion of drug absorption.
30. Define clearance. Write a note on renal clearance
31. Define dissolution. Explain various methods to enhance the dissolution of poorly soluble drugs.
32. Write a note on applications of pharmacokinetics in pharmacy.
33. Describe non-compartment models.
34. Explain drug accumulation during multiple dosing.
35. Write a note on Michaelis-Menten equation.
36. Estimate K_m and V_{max} .
37. Write a note on non per oral extra vascular routes for drug absorption.
38. Explain clinical significance of protein binding.
39. Enlist in vitro dissolution models. Explain USP type I apparatus.
40. Write a note on IVIVC correlations.
41. Write a note on physiological models.
42. Significance of compartment modeling.
43. Explain two compartment open model.
44. Explain factors causing non-linearity.
45. Write the objectives and significance of non linear pharmacokinetics.
46. Enlist various mechanism of drug absorption. Explain active and passive diffusion.



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47. Write a note on tissue permeability of drugs.
48. Write a note on pathways of renal excretion of drugs.
49. Explain bioequivalence studies in brief.
50. Define compartment. Write its applications in pharmacokinetic analysis.
51. Applications and significance of pharmacokinetics.
52. Explain two compartment open model.
53. Write a note on factors causing nonlinearity.
54. Explain the method to determine nonlinearity.
55. Explain the factors affecting protein binding of drugs.
56. Write a note on tissue permeability of drugs.
57. Define metabolism. Write a note on glucuronidation.
58. Write a note on non renal excretion of drugs.
59. What are pharmacokinetic models? What is the importance and utility of such models?
60. Discuss about the blood level curves of a drug administered by I.V. bolus and oral routes.
61. Explain in brief what is multi compartment model?
62. Explain about Michaelis - Menten's equation?
63. How do you estimate K_m and V_{max} after i.v. bolus administration of drug following non-linear kinetics?
64. Define biopharmaceutics and discuss its role in formulation development.
65. Write in detail about protein binding and its significance.
66. Write a note on renal excretion of drugs.
67. Explain bioequivalence studies.
68. Discuss about the blood level curves of a drug administered by I.V. infusion and oral routes.
69. What are pharmacokinetic models? Explain various types with their significance.
- 70.** Estimate one compartment model parameters by using the method of residuals.
71. Explain about Michaelis - Menten's equation?
72. Write a note on determination of K_m and V_{max} at steady state concentration.
73. Discuss the differences between passive diffusion and active transport of drugs.
74. Define volume of administration and give its significance.
75. Explain the factors affecting renal excretion of drugs.



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76. Define bioavailability. Mention the objectives of bioavailability studies.
77. Write the importance of Compartment modeling in pharmacokinetic study.
78. How do you determine KE using rate of excretion method from urine data.
79. Define loading and maintenance dose. Give the formula for the same.
80. Explain Michaelis –Menten equation in determining non-linearity.
81. Explain the various factors leading to non-linearity.
82. Explain in vitro and in vivo methods for determining absorption of drugs.
83. Explain kinetics of drug protein binding.
84. Discuss the various study designs for performing bioequivalence studies.
85. Explain various factors affecting biotransformation of drugs.
86. Write the applications of pharmacokinetic models.
87. Explain the assumptions of one-compartment open model.
88. Give schematic representation of two and three compartment models with brief explanation.
89. How do you estimate K_m and V_{max} .
90. Explain the causes of nonlinearity.



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SHORT ANSWERS-2MARKS

1. Drug dissolution rate and bioavailability
2. Define Solid dispersion.
3. Maximum Safe concentration, Minimum effective concentration.
4. Loading dose and maintenance dose.
5. Difference between biopharmaceutics and pharmacokinetics.
6. Why non linear kinetics are called dose dependent kinetics.
7. Pharmaceutical equivalence and therapeutic equivalence.
8. Flip-flop phenomena and lag time.
9. Define T_{max} , C_{max} .
10. Pharmacodynamic drug interaction.
11. USP type-II dissolution testing apparatus.
12. Biological half life of a drug.
13. What is meant by compartment models.
14. Define Extraction ratio.
15. Mean residence time.
16. Michaelis-Menten equation.
17. Bioavailability and Bioequivalence.
18. Endocytosis.
19. Inclusion complex.
20. Curve fitting method.
21. Proteins responsible for protein binding.
22. Limitation of urine data for calculation of pharmacokinetics.
23. Clinical pharmacokinetics and its significance.
24. Apparent volume of distribution and its significance.
25. Facilitated diffusion.
26. Non-linear kinetic.
27. Gastric emptying time.



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28. Tissue permeability of drug.
29. ABC transporter.
30. Plateau principle.
31. Define apparent volume of distribution.
32. Write any two clinical significance of protein binding.
33. Define bioequivalence and therapeutic equivalence.
34. List out non renal routes of drug excretion.
35. Define catenary model and write its one application.
36. Define Biological half-life.
37. Define dosage regimen.
38. Enlist factors causing non-linearity.
39. Define loading and maintenance dosing.
40. Define mixed order kinetics.
41. Define absorption and distribution of drugs.
42. Enlist physicochemical factors affecting drug absorption.
43. Enumerate different methods to enhance dissolution of poorly soluble drugs.
44. Objectives of bioavailability.
45. Define intravenous infusion.
46. Plot plasma concentration vs time profile.
47. Define intravenous bolus injection.
48. Plot multiple dosage regimens.
49. State Michaelis-menten equation.
50. Enlist the drugs follows non-linear pharmacokinetics.
51. Pore transport in absorption.
52. Enlist factors affecting protein binding.
53. Enumerate various dissolution models.
54. Enlist methods to enhance the dissolution rate of poorly soluble drugs.
55. Define physiological model and write its one application.
56. Define Biological half-life.

57. Significance of loading dose in clinical setting.
58. Define steady state in drug level study.
59. Define nonlinear-pharmacokinetics.
60. Define mixed order kinetics.
61. Define biopharmaceutics and drug protein binding.
62. How components of gastrointestinal fluid affect absorption of drugs.
63. Define absolute and relative bioavailability.
64. Enlist non renal routes of drug excretion.
65. What factors affect half life of the drugs?
66. Define volume of distribution, Write its importance.
67. Define loading dose and maintenance dose.
68. What is the significance of K_m and V_{max} ?
69. Compare the concept of linear and non linear pharmacokinetics.
70. Why is it important to monitor drug levels carefully for dose dependency?
71. What is hepatic first pass effect?
72. What is the influence of GI pH on drug absorption?
73. Enlist objectives of bioavailability studies.
74. Define clearance. What is its unit?
75. Define C_{max} and AUC.
76. Define apparent volume of distribution and give the mathematical equation to calculate it.
77. Define loading dose and maintenance dose.
78. What do you mean by central and peripheral compartment in two compartment model?
79. Define dose dependent kinetics.
80. Compare the concept of linear and non linear pharmacokinetics.
81. What is polymorphism?
82. Define protein binding.
83. What is clearance? Give the formula for same.
84. Give the significance of bio-equivalence.
85. What are the limitations of one compartment model?



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86. Write equation for zero order half life and first order half life.
87. Give the schematic representation of two compartment open model-IV bolus.
88. Define Biological half-life.
89. What is multi compartment model?
90. What is K_m and V_{max} ?
91. What is Pinocytosis and phagocytosis.
92. What is the effect of food on absorption of drugs?
93. Define biotransformation.
94. Write the formula to calculate hepatic extraction ratio.
95. What is zero order reaction?
96. Draw the blood level profiles for oral administration.
97. Define dosing frequency.
98. Enlist different pharmacokinetic parameters.
99. Name two parameters used in adjusting dosage regimen.
100. Give Michaelis-Menton equation. Explain the terms.



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Pharmaceutical Biotechnology

LONG ESSAY 10 MARKS

1. Explain the different methods of immobilization of enzyme. And give its applications
2. Describe the production of hepatitis B vaccine.
3. Explain the production of Griseofulvin and Penicillin by fermentation technology with a neat labelled flow chart.
4. What are biosensors? Explain the types with pharmaceutical applications.
5. Write a detailed note on cloning vectors.
6. Describe the production of citric acid by fermentation technology with a neat labelled flow chart.
7. Explain different methods of enzyme immobilisation with their advantages and disadvantages.
8. Describe the production of Hepatitis B vaccine. Write a note on plasmid vectors.
9. Describe the production of Penicillin by fermentation technology with a neat labelled flow chart.
10. What are biosensors? Write its principle and its functions.
11. Write in detail the production of Insulin by genetic engineering method.
12. Write in detail the different types of fermenters and its applications.
13. Write in detail the different methods of enzyme immobilization. Write its applications.
14. Write in detail three different vectors used in genetic engineering.
15. Write the design of an industrial fermenter with a neat labelled diagram.
16. What is enzyme immobilization? Explain covalent bonding and gel entrapment methods with advantages and disadvantages.
17. Describe the general method of recombinant DNA technology.
18. Describe the construction and working of a fermenter with a neat labelled diagram.
19. Describe any three methods of enzyme immobilization. Illustrate the applications of immobilised enzymes in medicine and production of pharmaceuticals.
20. Describe the production of insulin by recombinant DNA technology.
21. Describe the different methods of fermentation. Explain the production of griseofulvin by fermentation technology with a neat labelled flow chart.
22. What are biosensors? Explain the types with pharmaceutical applications.

23. Write a detailed note on cloning vectors.
24. Describe the production of citric acid by fermentation technology with a neat labelled flow chart.
25. Explain different methods of enzyme immobilisation with their advantages and disadvantages.
26. Describe the production of Hepatitis B vaccine. Write a note on plasmid vectors.
27. Describe the production of Penicillin by fermentation technology with a neat labelled flow chart.
28. Explain different types of biosensors and their applications in pharmacy and medicine.
29. Describe the production of insulin by r DNA technology.
30. Describe the production of Penicillin by fermentation technology with a neat labelled flow chart.

SHORTS ESSAY 05 MARKS

1. Describe the production and uses of Penicillinase.
2. Explain the production of interferons by rDNA technology.
3. Describe the production of hormone insulin.
4. Describe the structure and functions of MHC.
5. Describe the production of monoclonal antibodies by hybridoma technology.
6. Explain the general method of the preparation of viral vaccine.
7. Write a note on serum –immune blood derivatives.
8. Describe ELISA test with its applications.
9. What is Mutation and explain the different types of mutation.
10. Describe the production and uses of amylase.
11. Explain the production of interferons by rDNA technology.
12. List out the applications of genetic engineering in medicine.
13. Write a note on microbial biotransformation in production of steroidal medicinal agents.
14. List out different blood products and their applications.
15. Outline the general method for the production of live viral vaccines.
16. Write the role of lymphocytes in immunity.
17. Describe the Southern blot test. How does it differ from Western blot test?
18. Explain conjugation. Write its significance.

19. Describe the production and uses of lipase.
20. Explain polymerase chain reaction with applications.
21. Outline the production of interferons by rDNA technology
22. What is biotransformation? List out the applications of microbial biotransformation.
23. Describe the applications and method for production of monoclonal antibodies.
24. Outline the general method for the preparation of live attenuated bacterial vaccines.
25. What are vaccines? Classify the types with examples.
26. Describe the Southern blot test with its applications.
27. Explain transduction and conjugation.
28. How to make sodium alginate beads in calcium chloride solution?
29. What is PCR? Write the working principle of PCR.
30. Explain the structure of immunoglobulins.
31. Write the production of killed bacterial vaccines.
32. Write the production of monoclonal antibodies.
33. Write in brief the western blotting technique and mention its application.
34. Write in brief about transformation with suitable examples.
35. Write briefly about different types of mutation and give its significance.
36. Write in brief the Collection, Processing and Storage of whole human blood.
37. Explain the method for determination of immobilized amylase activity.
38. Write a note on applications of genetic engineering in medicine production.
39. Write a note on Immune stimulation and Immune suppression.
40. Write in brief structure and function of MHC.
41. Write a note on storage and stability of vaccines.
42. Write in brief the southern blot technique and mention its applications.
43. Write in brief about transduction. Explain the types.
44. Describe ELISA with its applications.
45. Define fermentation and write the production of Vitamin B12.
46. Describe the production and uses of amylase.
47. Explain the production of insulin by rDNA technology.
48. Describe the technique of polymerase chain reaction (PCR).
49. Explain the production of penicillin G by fermentation technology.
50. Classify immunity. Write the difference between active and passive immunity

51. Outline the general method for the preparation of live attenuated bacterial vaccines.
52. Describe the structure of an immunoglobulin with a neat labelled diagram.
53. Describe ELISA with its applications.
54. Explain microbial biotransformation with examples.
55. Describe the production and uses of penicillinase. List out advantages of 56. production of enzymes from microbial sources.
57. Explain the production of hepatitis B vaccine by rDNA technology.
58. What are restriction enzymes? Explain the types and their role in genetic engineering.
59. Explain different types of mutations.
60. Describe the production of monoclonal antibodies by hybridoma technology.
61. Outline the general method for the preparation of bacterial toxoids.
62. What are vaccines? Classify the types with examples.
63. Describe the Southern blot test with its applications.
64. What is transduction. Explain the methods.
65. Describe the production and uses of amylase.
66. Explain the production of interferons by rDNA technology.
67. List out the applications of genetic engineering in medicine.
68. Write a note on microbial biotransformation in production of steroidal medicinal agents.
69. List out different blood products and their applications.
70. Outline the general method for the production of live viral vaccines.
71. Write the role of lymphocytes in immunity.
72. Describe the Southern blot test. How does it differ from Western blot test?
73. Explain conjugation. Write its significance.
74. Describe the production and uses of lipase.
75. Explain Polymerase chain reaction with applications.
76. Outline the production of interferons by rDNA technology.
77. What is biotransformation? List out the applications of microbial biotransformation.
78. Describe the applications and method for production of monoclonal antibodies.
79. Outline the general method for the preparation of antitoxin.
80. Describe the structure of Immunoglobulin.
81. Describe ELISA with its applications.
82. Explain different types of mutations.

83. Describe the production and uses of catalase.
84. What are cloning vectors? Explain the features of pBR322.
85. What are molecular scissors. Explain their role in recombinant DNA technology.
86. Explain the production of antibodies from B lymphocytes.
87. Classify vaccines giving examples. Write the difference between toxins and toxoids.
88. What are monoclonal antibodies? Describe different methods of purification of MAb.
89. Describe ELISA with its applications.
90. Explain briefly, transformation, transduction and conjugation.
91. Explain different types of mutagenic agents.

SHORT ANSWERS 02 MARKS

1. How is fermentation equipments sterilized.
2. Write any two application of Microbial Biotransformation.
3. Define conjugation.
4. Define plasmids with examples.
5. Define immunoglobulins.
6. Write the storage conditions of vaccines.
7. Difference between vaccine and serum.
8. What is PCR. Give two applications.
9. Write any four applications of Amylase.
10. List out any four advantages of Enzyme Immobilization.
11. List out any two applications of enzymes in medicine.
12. Write any four methods of immobilisation techniques.
13. Define immunity. List the types of immunity.
14. What are different types of aerators.
15. List out different types of hypersensitivity reactions.
16. Write any four properties of Immunoglobulin M.
17. Write the difference between vaccines and sera
18. What are cosmid vectors?
19. Write any four applications of PCR.
20. Write any four differences between prokaryotic and eukaryotic DNA.
21. List out any four applications of enzymes in medicine.

22. Write any four applications of immobilised enzymes.
23. What is cellular immunity?
24. What is protected fermentation?
25. What is immune suppression? Give two example for immunosuppressive agent.
26. Write any four properties of Immunoglobulin G.
27. What are the conditions for storage of official vaccines?
28. What are transposons?
29. Write any two applications of ELISA.
30. What do you mean by plasmid.
31. Name any four natural polymers used for immobilization.
32. Name any four disadvantages of immobilization.
33. Write any four applications of interferons.
34. Define toxoids. Give two examples.
35. Name any two blood products with applications.
36. What is hypersensitivity? Write the types.
37. What is microbial biotransformation? Give two examples.
38. What is downstream processing? Give two examples.
39. Expand ELISA and write two applications.
40. Applications of plasma substitutes.
41. Name any four advantages of enzyme immobilization.
42. Name any four chemical polymers used for immobilization.
43. What are restriction endonuclease enzymes? Give two examples.
44. Name two methods of preparation of viral vaccine.
45. Define hybridoma technology. Write two applications.
46. Write the therapeutic uses of plasma substitutes.
47. Name four mutagenic agent.
48. What is upstream processing? Give two examples.
49. What are transposons and episomes?
50. Write any four pharmaceutical applications of biosensors.
51. Write any four pharmaceutical applications of biotechnology.
52. Enlist the different types of vectors used in genetic engineering.
53. Write the source organism and uses of griseofulvin.

54. What are anti-toxins? Give an example.
55. Write any two functions of MHC.
56. What are plasma substitutes?
57. Write any four applications of western blotting?
58. What are point mutation?
59. List out any four applications of enzymes in medicine.
60. Write any four advantages of immobilised enzymes.
61. What is cellular immunity?
62. What is protected fermentation?
63. What is immune suppression? Give two examples for immunosuppressive agent.
64. Write any four properties of Immunoglobulin G.
65. What are the conditions for storage of official vaccines?
66. What are transposons?
67. Write any two applications of ELISA.
68. List out any two applications of enzymes in medicine.
69. Mention any two methods of immobilisation techniques.
70. Define immunity. List the types of immunity
71. What are different types of aerators.
72. List out different types of hypersensitivity reactions.
73. Write any four properties of Immunoglobulin M.
74. What is HAT medium. Write its role in selection of hybridoma cells.
75. What are cosmid vectors?
76. Write any two applications of PCR.
77. List out any four applications of biotechnology in medicine.
78. Write any four synthetic polymers used for immobilisation of enzymes
79. What is humoral immunity?
80. List any four factors that affect fermentation process.
81. Write the functions of MHC.
82. Write any four properties of Immunoglobulin A.
83. Write the difference between vaccines and sera.
84. Write the difference between transposons and episomes.
85. Write any four applications of Southern blot test.

86. What is protein engineering?
87. Write any four applications of proteases
88. What is chimeric DNA?
89. What are batch culture and continuous cultures?
90. Write any four uses of blood products.
91. Write the role of CD4 cell in immune reaction.
92. Write the different types of heavy chains and light chains in immunoglobulin molecules
93. Write the importance of transposons.
94. Write any two enzymes and their substrates employed in ELISA.
95. What are plasmids. Give one example.



Vision and Mission of the Institution

Vision

The East Point College of Pharmacy aspires to be a globally acclaimed institution, **recognized for excellence in** pharmaceutical education, research and nurturing students for **holistic development**.

Mission

- M1** Create pharmacy graduates through **quality education**
- M2** Promote innovation, **creativity**, and excellence **in teaching**, learning, and **research**
- M3** **Inspire** integrity, teamwork, critical thinking, **personal** development, and ethics in **students** and lay **the** foundation for lifelong learning
- M4** **Serve** the **healthcare, technological, scientific**, and **economic** needs of then **society**.