EAST POINT COLLEGE OF PHARMACY
East Point Campus, Jnana Prabha, Virgo Nagar Post,
Bengaluru – 560049, Karnataka

QUESTION BANK

Pharm D

3rd Year

EAST POINT COLLEGE OF PHARMACY
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Pharmacology – II

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Chapter 01: Pharmacology of Drugs acting on Blood and blood forming agents

1. Classify anticoagulants with examples. Mention in-vitro anticoagulants.
2. Compare the pharmacology of heparin and warfarin.
3. What is heparin? Write its mechanism of action and therapeutic uses.
4. Write mechanism of action, adverse effects and therapeutic uses of warfarin.
5. Write mechanism of action, advantages and uses of Low Molecular Weight Heparins.
6. What are thrombolytics? Give examples. Write their mechanism of action and therapeutic uses.
7. Classify antiplatelet agents on the basis of mechanism of action with examples.
8. What are GP IIb/IIIa antagonists? Give examples. Write their mechanism of action and uses.
9. Write mechanism of action and uses of aspirin and clopidogrel combination.
10. Write mechanism of action and uses of aspirin and dipyridamole combination.
11. Write sources, mechanism of action and therapeutic uses streptokinase and urokinase.
12. How do you treat iron deficiency anaemia? Explain with examples.
13. What are recombinant tissue plasminogen activators? Write their mechanism of action and uses.
14. Write briefly on different classes of agents used for the treatment of anaemia.
15. Mention any four low molecular weight heparins.
16. Mention antagonists for heparin and warfarin along with their uses.
17. Write four therapeutic uses of anticoagulants.
18. Mention two common adverse effects and two contraindications of anticoagulants
19. Mention four oral anticoagulants.
20. What are Low Molecular Weight Heparins? Give two examples.
21. Write significance of GP IIb/IIIa antagonists and give two examples.
22. Write mechanism of antiplatelet action of aspirin.
23. Write any four prophylactic uses of clopidogrel.
24. Write mechanism of action of thrombolytic agents.
25. Name four fibrinolytic agents.
26. What are plasma expanders? Give two examples.
27. Name two plasma expanders. Mention their uses.

28. What is megaloblastic anaemia? Mention two drugs used in its treatment.
29. What is microcytic hypochromic anaemia? Mention two drugs used in its treatment.
30. What are haematopoietic growth factors? Give two examples.
31. Mention four parenteral iron preparations.
32. Write indications for parenteral iron preparations

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Chapter 02: Pharmacology of drugs acting on Renal System

1. What are diuretics? Classify them with examples.
2. Write mechanism of action, adverse effects and uses of loop diuretics.
3. Define diuretic? Write the clinical application of diuretics with emphasis on edema.
4. Write mechanism of action, adverse effects and uses of thiazide diuretics.
5. Enlist potassium sparing diuretics. Write their mechanism of action and uses.
6. Classify weak diuretics. Add a note on mechanism of action and uses of CAI.
7. Enlist diuretics acting on ascending and descending loop of Henle. Write their adverse effects and therapeutic uses.
8. What are anti-diuretics? Give examples. Add a note on mechanism of action and uses of ADH.
9. Write the mechanism action, adverse effect of uses of frusemide.
10. Write the pharmacology action of spironolactone.
11. Name four vasopressin analogues?
12. Name any two ADH and its two uses.
13. Define carbonic anhydrase inhibitors? Give two examples
14. What are osmotic diuretics? Write their uses.
15. Classify diuretics showing their site of action in nephron.
16. Write four uses of potassium sparing diuretics.
17. Enlist potassium sparing diuretics.
18. Mention four uses of thiazide diuretics.
19. Give four indications for loop diuretics.
20. Mention four adverse effects of diuretics.

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Chapter 03: Chemotherapy

01. Classify sulphonamides with examples. Write the mechanism of action, merits and uses of co-trimoxazole.
02. Classify penicillins with examples. Write the mechanism of action and therapeutic uses of amoxicillin.
03. What are penicillins? Write antimicrobial spectrum, adverse effects, preparations and uses of natural penicillins.
04. Classify cephalosporin with examples. Highlight on changes in antimicrobial spectrum, adverse reactions and therapeutic uses of each generation of cephalosporins.
05. Compare and contrast different generations of tetracyclines with example. Discuss about their mechanism of action and antimicrobial spectrum.
06. Explain mechanism of action of antimicrobial agents acting by inhibiting protein synthesis.
07. Write in detail about classification of anti-bacterial agents depending on mechanism of action with examples.
08. What are macrolide antibiotics? Give examples.
09. Write the antimicrobial spectrum, mechanism of action and therapeutic uses of erythromycin/azithromycin/clarithomycin.
10. What are aminoglycoside antibiotics? Write the mechanism of action, adverse reactions and therapeutic uses of streptomycin/amikacin.
11. Write the antifungal spectrum, mechanism of action, adverse reactions and therapeutic uses of amphotericin B.
12. Classify antifungal agents with examples. Write mechanism of action, adverse reactions and therapeutic uses of fluconazole and itraconazole.
13. Classify antiviral agents with examples. Write the mechanism of action, adverse reactions and therapeutic uses of acyclovir.
14. What is DOTS? Classify anti TB drugs with examples. Write the mechanism of action, adverse effects of INH.
15. Write the mechanism of action, adverse effects and therapeutic effects of rifampicin, pyrazinamide, Ethambutol.
16. Classify anti-leprotic drugs with examples. Write the mechanism of action, adverse effects and therapeutic uses of dapsone. Add note on different forms of leprosy.

17. Classify antimalarials with examples. Write the mechanism of action, adverse effects and therapeutic uses of chloroquine.
18. Name the causative organisms of malaria. Classify antimalarials on the basis of stage of action.
19. Write the mechanism of action, adverse effects and therapeutic effects of artemisinin
20. Write life cycle of amoebic parasite. Write the mechanism of action, adverse effects, and therapeutic uses of tinidazole.
21. Classify antineoplastic agents with examples. Write the mechanism of action and adverse effects of alkylating agents.
22. What is cancer? Explain the basic principle involved in the treatment of cancer. Write the mechanism of action therapeutic uses of an antimetabolite.
23. Write about mode of antimicrobial resistance in microbes.
24. Suggest measures to prevent superinfection and microbial resistance.
25. Write the antimicrobial spectrum and mechanism of action of a true broad-spectrum antibiotic.
26. Write the mechanism of action and uses of ampicillin.
27. Explain rationale behind co-trimaxazole combination. Write its advantages and uses.
28. Classify cephalosporins with examples and mention the therapeutic uses.
29. Write antimicrobial spectrum, mechanism of action and adverse effects of fluoroquinolines.
30. Name four triazole anti-fungal agents? Write their merits and mechanism of action.
31. Write the pharmacology of drugs used in the treatment of giardiasis.
32. Classify helminthes and anthelmintics with examples.
33. Write the mechanism of action, adverse effects and uses of albendazole.
34. Differentiate between paucibacillary and multibacillary leprosy. Add a note on their treatment.
35. Classify the anticancer agents with examples.
36. Give cell cycle-based classification of anticancer drugs.
37. Write the pharmacology of taxols.
38. Write the mechanism of action, adverse effects and uses of vincristine.
39. Write the mechanism of action, adverse effects and uses of methotrexate.
40. Write the mechanism of action, adverse effects and uses of 5-fluorourocil.
41. Write the mechanism of action, adverse effects and uses of mercaptopurine
42. Outline life cycle of plasmodium three species.
43. Write briefly on therapeutic classification of antimalarial agents.

44. Classify anti-retroviral agents with examples? Mention their important adverse effects.
45. Enlist aminoglycoside antibiotics and write their adverse effects.
46. Write about common features of aminoglycosides and write therapeutic uses of gentamicin.
47. Classify fluoroquinolones with examples and write their therapeutic uses.
48. Describe the adverse effects of anti-neoplastic agents.
49. What is superinfection?
50. What is multidrug therapy? Give example.
51. What is grey baby syndrome?
52. Enlist the drugs causing ototoxicity?
53. Enlist the drugs causing nephrotoxicity?
54. What is anaphylaxis?
55. What are the drugs used in treatment of tapeworm infection?
56. What are the drugs used in treatment of round worm infection?
57. What are the drugs used in filariasis?
58. Which are the causative organisms of filariasis?
59. What is amoebiasis? Name two drugs used in the treatment of amebiasis?
60. Enlist the four uses of tetracyclines/doxycycline/oxytetracycline
61. Enlist the four toxic effects of chloramphenicol.
62. Name the causative organisms of malaria.
63. Name the opportunistic infections in HIV.
64. What is multidrug regimen for the treatment of TB and name the drugs.
65. What is DOTS therapy?
66. Mention β-lactamase inhibitors. Mention their use.
67. Mention any four blood schizonticides.
68. What is chemoprophylaxis? Give examples.
69. Write uses of griseofulvin.
70. Mention DHFR inhibitors. Write their uses.
71. What are probiotics? Give examples.
72. What is crystalluria? How can it be prevented?
73. Mention four adverse effects of anti-cancer drugs.

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Chapter 04: Immunopharmacology

1. Enlist four immunostimulants.
2. Write uses of immunostimulants.
3. What are Colony-Stimulating Factors? Write their specific use.
4. What are Interferons? Give examples.
5. Write indications for recombinant interferons.
6. What is Levamisole? Write its uses.
7. Outline mechanism of action of Cyclosporin.
8. Mention calcineurin inhibitors. Write their uses.
9. What are cytotoxic agents? Write their significance in immunology.
10. Write briefly on immunosuppressant actions of Glucocorticoids.
11. Write uses of Glucocorticoids as immunosuppressants.
12. Write uses of Tacrolimus.
13. Mention immunosuppressant monoclonal antibodies.
14. Enlist cytokine inhibitors.
15. How does cyclophosphamide produce immunosuppression?
16. Define immunostimulant and immunosuppressant with two examples.
17. What is Thymosin? Mention its therapeutic uses.
18. What are mTOR inhibitors? Give examples.
19. What are TNF – α inhibitors? Give examples.
20. What are Interleukins? Mention their inhibitors.

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Chapter 05: Principles of Animal toxicology

1. Define toxicology.
2. What is OECD 420 guidelines? Write its significance in toxicity studies.
3. Explain the term acute toxicity.
4. Explain the term subacute toxicity.
5. Explain the term chronic toxicity.
6. What are the four objectives of special toxicity?
7. Define therapeutic index.
8. What is difference between acute and chronic toxicity studies with examples.
9. Mention OECD guidelines used for determination LD50.
10. Write about duration of study period for acute, subacute and chronic toxicity studies.

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Chapter 06: The dynamic cell: The structures and functions of the components of the cell

1. Write cellular classification along with brief description.
2. Write significance of different macromolecular assemblies of cell.
3. What is chromosome? Explain the structural aspects of the chromosome in eukaryotes.
4. Draw cell cycle and give brief note on events of each phase.
5. Explain the process of cell cycle regulation.
6. Describe the term Genome complexity.
7. Explain the stages of interphase.
8. Describe the signal transduction pathway of MAPK kinases.
9. Describe the signal transduction pathway of p38 kinases pathway.
10. Describe the signal transduction pathway of P13 kinases pathway.
11. Describe the signal transduction pathway JNK kinases pathway.
12. Explain salient features of B-form of DNA with a neat labelled diagram.
13. Distinguish between the processes of DNA replication in prokaryotes and eukaryotes.
14. Write a note on steps involved in eukaryotic DNA replication.
15. Write a note on steps involved in prokaryotic DNA replication.
16. When does the tumour suppressive factor activated? How does it act?
17. What are biosensors? Write their general mode of action and uses
18. Write a note on modes of cell communication.
19. Discuss about the results of cell communication.
20. Write briefly on cell signal transduction mechanisms.
21. Mention the cell signal transduction pathways.
22. Name the methods of communication between the cells.
23. Name the subcellular organelles.
24. What are cytokines?
25. What is prometaphase?
26. Enlist the cell cycle checkpoints.
27. What is anaphase?

28. What is zygotene?
29. What is telophase?
30. What is diplotene?
31. What is diakinesis?
32. Differentiate between Eukaryotic and Prokaryotic chromosome.
33. Name cell cycle regulators and modifiers.
34. What are Biosensors?
35. Outline the principle of biosensors.
36. Write qualities of an ideal biosensor.
37. Differentiate between DNA and RNA.
38. Define genome.
39. Draw a diagram of cell cycle.
40. Write the chromatin structure.
41. Write four applications of biosensors.
42. Mention the contributions of P38 in cellular processes.
43. Give reasons for activation of P53 factor.
44. Mention stages of mitosis.
45. What is karyokinesis and cytokinesis?

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Chapter 07: The dynamic cell, The gene

1. Describe the steps involved in recombinant DNA technology.
2. Explain the stages of transcription in prokaryotes and add a note on factors regulating the transcription.
3. Outline the steps involved in the process of gene expression in prokaryotes.
4. Describe the steps involved in transcription and translation processes of eukaryotes.
5. Differentiate between gene sequencing and mapping. Describe any two methods of gene sequencing.
6. Explain the processes and applications of gene transfer technology.
7. What is gene expression? Write in detail about regulation of transcription and translation in eukaryotes.
8. Explain the basic principles and procedures of gene therapy.
9. Discuss about the strategies, limitations and applications of gene therapy.
10. Describe the process of protein synthesis in eukaryotes.
11. Describe structure of gene with a labelled diagram.
12. Explain the steps involved in transcription process of prokaryotes.
13. What is gene therapy? Write applications of gene therapy.
14. Explain the steps involved in translation process of prokaryotes.
15. Explain any two methods of gene sequencing.
16. Write about limitations and applications of gene therapy
17. Describe viral and non-viral approaches of gene therapy.
18. Describe the structure of mRNA with schematic diagram.
19. Describe the structure of tRNA with schematic diagram.
20. Explain any four strategies for correcting defective gene.
21. Differentiate between prokaryotic and eukaryotic genes.
22. Write a note on regulation of gene expression in eukaryotes.
23. Explain the process of positive and negative regulation of Lac Operon.
24. Write briefly about enzymes used in recombinant DNA technology.
25. How do you obtain desired gene in recombinant DNA technology?
26. Mention techniques used for identification of recombinant cells. Explain anyone.

27. Write a flow chart showing the steps involved in recombinant DNA technology.
28. What is RNA processing? Write the importance of rRNA, tRNA and mRNA?
29. What is mutation? Add a note on types of mutations.
30. Outline the process of transcription in eukaryotes.
31. Name the components of gene.
32. Write difference between gene mapping and sequencing.
33. Mention any four methods of DNA sequencing.
34. What are OKAZAKI fragments?
35. What are leading and lagging strands.
36. Name the components of promoter sequence.
37. Write the significance of sense and nonsense strands in DNA.
38. What is Chargorff ‘s rule?
39. What are oncogenes? Give examples.
40. Write the significance of repetitive and non-repetitive sequences in a gene.
41. What is gene mapping?
42. What is mutation?
43. What is meant by Genome and Genomics?
44. Name the Termination codons and Initiation codons.
45. What are the applications of human genome sequencing?
46. Name the types of gene therapies?
47. Types of Mutations with examples?
48. What is amplification?
49. What is LOH?
50. Explain the functioning of tumour suppressor genes?
51. Name four diseases caused due to mutations?
52. Name post-translation events in protein synthesis?
53. What is tRNA? Write its role.
54. Write four applications of recombinant-DNA technology?
55. Name the events in eukaryotic protein synthesis?

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Pharmaceutical Analysis

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Chapter 1– Quality assurance

SHORT ESSAYS 05 MARKS

1. Define Validation? Classify and explain each type in briefs
2. Define & Explain (1) Accuracy (2) Precision (3) Significant figure
3. Describe different steps involved in validation master plan
4. Explain the procedure to calibrate wavelength of UV Instrument
5. Write a note on ICH Guidelines
6. Describe the pharmaceutical water system Validation.
7. Define Validation? Explain types of "process Validation"?

SHORT ANSWERS 02 MARKS

1. Define & Explain "Quality Assurance".?
2. Define & Explain (1) Accuracy (2) Precision (3) Significant figure
3. Describe different steps involved in validation master plan
4. Explain the procedure to calibrate wavelength of UV Instrument

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Chapter 2- Chromatography

SHORT ESSAYS 10 MARKS

1. Discuss the principle & development techniques used in column chromatography Adda note on the adsorbents mobile phase & detection systems in column chromatography.
2. Write a note on development techniques in column chromatography.
3. Describe the preparation, activation of plates &adsorbents used in the TLC & write its application.
4. Define paper chromatography? What are the modes of development of paper chromatography & Enumerate the application of paper chromatography
5. Give a detailed account of principle, classification of Ion-Exchange process in pharmaceutical analysis
6. What are the Ion-Exchange resins? Explain Mechanism of Ion-Exchange process and application of Ion-Exchange chromatography
7. Explain with a neat diagram any three detectors used in Gas Chromatography
8. Describe the construction and working of a Gas Chromatography? Emphasize on the ideal characteristics of stationary phases and mobile phases used in Gas Liquid Chromatography.
9. Describe instrumentation and application of HPLC
10. Describe the principles and application of Electrophoresis
11. Explain various methods of preparing TLC plates and its application.
12. How development is carried out in column chromatography,TLC & Paper chromatography

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SHORT ANSWERS 05 MARKS

1. Explain the term a) HETP b) Retention time c) Theoretical plate d) Retention volume
2. Define HPLC & write a note on detectors present in HPLC
3. Write a note on Guard Column and its significance
4. What are the techniques of separation in HPLC based on a) Principle of separation b) Elution Techniques c) Types of analysis d) Scale of operation
5. What is the principle in a) Normal-Phase Chromatography b) Reverse -Phase Chromatography c) Ion- Exchange Chromatography d) Ion-pair Chromatography.
6. Define chromatography? What are the principles of separations in chromatography
7. Explain the different packing techniques in column chromatography which packing techniques is best and why?
8. Classify adsorbents used in column chromatography with example.
9. Define partition chromatography and write a note on factors affecting column efficiency
10. Write a note on Development Techniques in column chromatography
11. Define Partition chromatography & write a note on Bonded Phase Chromatography
12. Write a note on Frontal Analysis & Bonded Phase Chromatography
13. Describe the preparation activation of plates & adsorbents used in TLC
14. Define paper chromatography? What are the modes of development in paper chromatography
15. Explain two dimensional & Reverse-phase Chromatography
16. Explain various development techniques used in paper chromatography
17. Enumerate the application of paper chromatography
    a)alkaloid b) Cardiac glycoside c) Aldehydes or ketones d) proteins.
18. How will you perform quantitative analysis in paper chromatography
19. Compare the principle techniques limitations and application of paper chromatography with electrophoresis.

20. How does the following factors affect separation efficiency a) cross-linking of Resin b) Ion-Exchange Capacity
21. Write a note on factors affecting the separation efficiency of Ion exchange resin
22. What is regeneration of a resin? How will you regenerate cation and anion exchange resin
23. Explain with a neat diagram any two detectors used in G.C.
24. Explain the concept of pre-dervitization & post dervitization techniques in Gas – Chromatography with relevant examples
25. write a note on paper electrophoresis
26. What is electrophoresis? Mention their types
27. Describe the principles and application of electrophoresis
28. Write a note on HPTLC.
29. Write a note on instrumentation and application of HPTLC

SHORT ANSWERS 02 MARKS

1. What are the general requirements for doing a separation by column chromatography
2. Enumerate various types of chromatography
3. What is migration parameters
4. What is TLC & Write the principles of separation in TLC
5. What are the general requirements in TLC techniques
6. Define TLC & name the stationary phases used in TLC
7. What is the difference between silica gel H,G,GF ?
8. Define Chromatography & Rf values
9. Name the different grades of alumina
10. Describe the preparation of plates & adsorbents used in TLC
11. For silica gel G, in what ratio it is mixed with water for making slurry for use in TLC
12. What is the thickness of adsorbents layer in a) analytical TLC b) preparative TLC
13. How is activation of TLC plates done?

14. Why activation of TLC plates necessary. How TLC plates stored
15. What is edge effect in TLC ? To avoid edge effect what must be done in TLC
16. Enumerate four adsorbents and four mobile phases used inTLC
17. Give a specific spray reagent to detect the following compounds by TLC a) sulphanilamide b) amino acids c) alkaloid d) phenols
18. Define paper chromatography ? which type of paper is normally used ; Hydrophilic/hydrophobic
19. Enumerate the application of paper chromatography
20. Explain Radial Chromatography
21. What is an ion-exchange resin? Give an example of natural resin a) Cation b) Anion
22. Which portion of resin contains exchangeable sites
23. Which function group can be present in a) weak Cationic exchange resin b) Strong Cationic exchange resin c) weak and strong anionic exchange resins
24. What is cross linking, rigidity & swelling of ion exchange resin?
25. How is the efficiency of an ion-exchange resin measured?
26. What are the requirements for a compound to be analysed by Gas- Liquid Chromatography
27. Give example of carrier gas used in G.L.C.
28. nder what conditions Gas-Solid Chromatography is preferred over Gas- Liquid Chromatography.
29. Write a note on Guard Column & its Significance.
30. What is C_{18} or ODS? What is its use in Chromatography
31. How will you check the presence of impurities in HPLC & What is internal standard

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Chapter 3- Electrometric methods

LONG ESSAYS 10 MARKS

1. Describe the principle of a Potentiometric titrations? Write the construction and working of a calomel electrode & glass electrode?
2. Give an account of the construction and working of glass electrode? Write the application of potentiometric titrations
3. Describe the construction and working, advantages, disadvantages & application of a Standard Hydrogen Electrode.
4. Explain the theory & the types of Conductometric Titrations.
5. Write the basic principle of a potentiometry .Describe in detail Dead Stop End point techniques.

SHORT ESSAYS 05 MARKS

1. What is the principle in potentiometric titration and How is the end point determinedin Potentiometric titrations
2. Enumerate the different reference electrodes & Indicators electrodes in potentiometric titrations
3. Explain the principle underlying “Dead- Stop end point technique” and Null point potentiometry.
4. Explain with graphs the methods of potentiometric end point determination
5. With titration curves, describe the principles of Conductometric titrations?
6. Explain with graph, the conductometric titration of a mixture of weak & strong acids with alkali
7. Explain the conductometric titration curve for strong acids against weak base?
8. What is quenching? Explain various types of quenching with suitable examples?
9. What is the number of Fundamental Vibration modes for linear and non-linear molecules containing ‘n’ atoms? Explain how these numbers are obtained.

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SHORT ANSWERS 02 MARKS

1. What is potentiometry ? How is potential (emf) is measured
2. What is Indicator electrode & reference electrode give examples
3. What is the relationship between emf & pH.
4. What are the advantages of glass electrode & saturated Calomel electrode
5. Name the factors which affect potential of a solution.
6. What are auto titrimeters? What is the principle of operation?
7. What is dead stop end point techniques? How this techniques is applied in the determination of water
8. What is null point potentiometry
9. Explain the significance of dead-stop end point potentiometry.
10. What is Coductometry, Resistance,
11. What is relationship between resistance & conductivity
12. What is relationship between conductivity & Specific conductivity
13. Define Specific Conductance & Equivalent conductance
14. What is the principle in Amperometric Titrations
15. How is the potential selected in Amperometric titrations
16. What are the advantages of Amperometric titrations over potentiometry/ conductometry?
17. What is the principle in polorographic analysis ?
18. What is $E^{1/2}$ (Half Wave potential)
19. What is diffusion current, residual current, migration current ,polarographic maxima.
20. Why is DME used? What are the advantages ?

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Chapter 4- Spectroscopy

LONG ESSAYS 10 MARKS

1. Describe the construction and working of a Double- Beam Recording Dispersive IR Spectrophotometer with its advantages and disadvantages.
2. Outline the working of a double beam recording of UV/Visible spectrophotometer .Name each part of the system & its functioning.
3. Describe the construction and working of Double-Beam UV/Visible spectrophotometer. Mention the advantages of double beam over single beam spectrophotometer
4. a) Derive Beer's & Lamberts Law .b) what are the applications advantages and limitations of Beer's law?
5. Describe the principle and Application of IR Spectroscopy for the following A) Detection of functional group(two example) B) Study of Hydrogen Bonding.
6. Explain the principal instrumentation and factors affecting fluorescence intensity.
7. Describe the Instrumentation and application of HPLC.
8. Explain with the help of a neat diagram, the construction and working of UV/Visible spectrophotometer with special emphasis on the monochromators and detectors present in them.
9. Describe the instrumentation of I.R. Spectrometry
10. How are different samples handled (solid,liquid,and gaseous) in I.R. Spectroscopy
11. List out the sources of UV,Visible spectrophotometers and I.R.Spectrometers
12. What are pharmaceutical application of fluorimetry? How is fluorimetry more sensitive and specific than spectrophotometry.
13. Discuss the phenomenon of fluorescence. Explain the working of fluorimeter with suitable diagram?

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SHORT ESSAYS 05 MARKS

1. What is quenching? Explain various types of quenching with suitable examples?
2. What is the number of Fundamental Vibration modes for linear and non-linear molecules containing 'n' atoms? Explain how these numbers are obtained.
3. What is nebulization? Write a note on types of Burner's used in Atomic emission spectrometer
4. Depict the different modes of fundamental vibrations in a tri-atomic group (stretching & deformation) by means of a neat sketch for each mode
5. Explain what is meant by allowed transition and forbidden transition of valence electron in absorption spectroscopy
6. Describe the terms fluorescence & phosphorescence Depict both the phenomena by energy diagram
7. What is flame emission & atomic Absorption spectrometry? How do you estimate the amount of sodium by the above techniques
8. Explain the different modes of fundamental vibrations occurring in IR Spectroscopy
9. What are the factors affecting the fluorescence
10. Write a note on spectrophotometric titration
11. Explain deformation vibrations in IR Spectroscopy
12. What are the effect of solvent & conjugation in UV Spectroscopy
13. Write the structure and chemical name of BMR Reagent. Write the principle involved in the reaction of BMR.with Sulphanilamide along with chemical reactions.
14. State & explain the mathematical expression for Beer's & Lamberts Law
15. Explain the term- Red Shift, Blue Shift, hypochromic shift, hyperchromic shift giving suitable examples for each along with λmax and $\sum$ values.
16. What is chromophore & auxochrome? Give two examples of each term
17. What is the effect of polar& Non-polar solvent on π-π^* transition of alkenes ? Give one example of each case with λmax and $\sum$ values..
18. Depict their energy diagram with respect to sigma bond , π-bond & non-bonding electrons on absorption of UV energy.

19. What are K bands, R-bands,B-bands & E-bands. Give their significance individually
20. Explain why UV/Visible Spectroscopy is widely applicable in pharmacy
21. Give any four Important application of UV & Visible absorption spectroscopy
22. How do you determine the amount of paracetamol in a given tablet according to IP by means of UV using 1cm cell (a=0.715 at 257nm)
23. Write a short note on ORD & give its applications.
24. Describe why UV/Visible spectrometry is widely used for assay of a drug sample than other methods.
25. What is the minimum requirements for a molecules to show I.R bands.State selection rule for exhibiting IR Vibrations
26. What are the different sampling techniques for mounting a sample in the form of a solid, thin film, liquid or gas in the beam of IR spectrometer.Type equation here.
27. Why carbon-di-oxide shows some IR bands though the molecule as a whole does not possess any dipole moment?
28. Give approximate stretching wave number values for the following groups C=O, C=N, C=C, C ≡N.
29. What is the basic requirement for a nucleus to exhibit NMR phenomenon?
30. What are the main advantages of mass spectrometry.
31. Calculate (a) frequency (b) wave number) for the radiation of wavelength 530nm.($c=38x10^{8}$ m/s)
32. Calculate the wavelength corresponding to a radiation in which the energy of photon $5x10^{-22}$ J
33. Calculate the frequency of a radiation of wavelength 700nm
34. Give reason why you will get absorption curve rather than peak in Ultraviolet regionfl
35. What are the factors affecting.fluorescence and phosphorescence?
36. What is Quenching? Explain various types of quenching with suitable examples?
37. What are self quenching and true quenching
38. Show the relationship between fluorescence intensity and concentration. Describe any four factors that influence fluorescence intensity?

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SHORT ANSWERS 02 MARKS

1. What changes in the molecules occur when the following is passed a) UV/Visible radiation b) I.R radiation
2. Principle involved in a grating & prism monochromators
3. How are the primary & secondary filters selected in fluorimetry assay?
4. How do you detect the aromaticity of an unknown sample by means of its UV absorption spectrum.
5. Explain why the intensity of π-π * transition is more than that of n- π * transitions.
6. Define transmittance & absorbance in spectrometry
7. Reasons for Deviation of Beer's law
8. Principle involved in Grating & Prism monochromators
9. Write various ranges of electromagnetic spectrum.
10. Define Red & Blue Shift with example
11. What are stepwise & Gradient elutions?
12. Importance of Finger prints region in IR Spectroscopy
13. Define filters and monochromators
14. What is natural frequency of vibration & mention different types of vibrations
15. What is the effect of conjugation & cross conjugation on λ max
16. What is Stoke's & Anti-stoke's fluorescence
17. A solution of P-nitro phenol in water is yellowish but its solution in dilute NaoH
18. Is intense yellow. Explain why the colors deepens in the latter case.
19. What is the source for UV & Visible radiations ? How is monochromaticity obtained in both case
20. Which is the common detectors in UV absorption spectrometry & outline its functioning
21. What are the three types of fundamental motions of a molecules?
22. What are the methods of solvent degassing

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Pharmacotherapeutics II

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LONG ESSAYS 10 MARKS

1. Explain the Pathophysiology, diagnosis and management of Tuberculosis
2. Explain the Pathophysiology of Tuberculosis. Give the management of multi-drug resistance tuberculosis
3. Explain the pathophysiology of tuberculosis. Add a note on DOTS therapy.
4. Explain the pathophysiology and management of HIV
5. Discuss the general principles of management of AIDS. Add a note on the dosing regimen for the drugs used in management of AIDS.
6. Explain the pathogenesis of HIV Infection and list out of the different classes of antiviral agents
7. Define tumor. Classify tumors with their diagnostic features. Describe the general principles of cancer chemotherapy
8. Discuss the etiology, detection, diagnosis and chemotherapy of cancer.
9. Explain various considerations in design of a chemotherapeutic regimen in management of cancer
10. Explain the risk factors and classification of breast cancer. Write a note on chemotherapeutic regimens used in the treatment of breast cancer.
11. Describe the risk factors and diagnosis of breast cancer. Write a note on the management of breast cancer.
12. Define Leukemia. Explain the types of leukemia. Add a note on management of Acute Lymphocytic Leukemia.
13. Define Leukemia. Explain the classification and diagnosis of Leukemia. Add a note on management of Chronic Lymphocytic leukemia
14. Mention the clinical manifestations of acute and chronic leukaemias? Describe the treatment protocol for acute myeloblastic leukemia.
15. Give the clinical manifestations, classification and management of chronic leukemias.
16. Classify chemotherapy induced nausea and vomiting. Explain its management.

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SHORT ESSAYS 05 MARKS

1. Explain the general guidelines for the rational use of antibiotics
2. Explain surgical prophylaxis, and add a note on selection of antibiotics for surgical prophylaxis
3. Write a note on choice of antimicrobials for surgical prophylaxis
4. Explain DOTS therapy
5. Explain Management of pulmonary tuberculosis
6. Write a note on the diagnosis, classification and primary prevention of tuberculosis
7. Write a note on the management of extra-pulmonary tuberculosis
8. Explain management of multi-drug resistant tuberculosis.
9. Explain management of tuberculosis in children and pregnancy
10. Explain management of meningitis.
11. Write a note on the selection of antimicrobial regimens for treatment of acute bacterial meningitis in different age groups.
12. Explain management of pneumonia
13. Explain management of bronchitis
14. Define, classify and explain management of otitis media
15. Explain management of Sinusitis and Pharyngitis
16. Explain the clinical manifestation and management of bronchiolitis
17. Write a note on general management of gastroenteritis
18. What is enteric fever? Explain management of enteric fever.
19. Name the causative organism and explain the management of cholera
20. Explain management of infective endocarditis
21. Explain modified duke criteria for the diagnosis of endocarditis
22. What are the clinical manifestations of Endocarditis?

23. Explain the complications of endocarditis.
24. Explain the management of septicemia
25. Enlist clinical manifestation and acute management of septicemia
26. Give the classification and management of urinary tract infections.
27. Give the clinical presentation and management of urinary tract infections.
28. Write a note on prevention and prophylaxis for UTI
29. Give the management of malaria
30. Give the clinical presentation and management of Amoebiasis
31. Explain HAART therapy for HIV
32. What is an opportunistic Infection? Explain measures to prevent opportunistic infections.
33. Explain reasons for non-adherence to HAART Therapy, and discuss methods to overcome non-adherence.
34. Explain the management of any two fungal infections
35. Explain the classification and management of candidiasis
36. Enumerate the predisposing factors and clinical manifestations of systemic fungal infections.
37. Write a note on herpes zoster infection
38. Write a note on Influenza infections
39. Write the symptoms, management and complications of Dengue
40. Enlist the causative organism of Polio. Add a note on the complications of polio
41. Give the symptoms, diagnosis and management of Gonorrhea
42. Give the management of Syphilis
43. Classify Syphilis. Write a note on the complications of Syphilis
44. Explain the clinical manifestation and management of Rheumatoid arthritis?

45. Explain the algorithm for management of Rheumatoid Arthritis.
46. Enumerate differences between Osteoarthritis and Rheumatoid arthritis
47. Explain the pathogenesis and management of Rheumatoid arthritis.
48. Explain the clinical manifestation and management of osteoarthritis?
49. Explain the management of acute and chronic gout?
50. Write the risk factors of Gout. Add a note on management of gout.
51. Types and management of ankylosing spondylitis?
52. Explain the clinical manifestation and management of SLE?
53. Discuss various methods used in the management of acute renal failure.
54. Describe the pharmacotherapy of acute renal failure.
55. Describe the etiology, and pathogenesis of acute renal failure.
56. Discuss various methods used in the management of acute renal failure.
57. Describe the pharmacotherapy of chronic renal failure.
58. Describe the etiology, and pathogenesis of chronic renal failure.
59. Write a note on renal osteodystrophy.
60. Write a note on renal dialysis.
61. Write a note on drug induced renal failure.
62. Write a note on Acute Tubular Necrosis
63. Explain the diagnosis and staging of Cancer.
64. Discuss the role of oncogenes and tumor suppressor genes in etiopathogenesis of cancer
65. Explain the significance of screening in prevention and early detection of cancer.
66. Explain the various side effects of chemotherapeutic agents and its prophylactic measures.
67. Discuss toxicities of chemo-therapeutic agents

68. Explain the etiology and management of breast cancer
69. Describe chemotherapy of breast cancer.
70. Explain the treatment for metastatic breast cancer
71. Describe the chemotherapy of acute myelogenous leukemia
72. Describe the clinical manifestations and management of acute lymphocytic leukemia
73. Discuss the role of hematopoietic stem cell transplantation in management of leukemias
74. Discuss common therapeutic problems in management of leukemias
75. Describe the effective management of nausea and vomiting in cancer patient.
76. Write the complications and management of chemotherapy induced nausea and vomiting.
77. Write a short note on chemotherapy induced emesis

SHORT ANSWERS 02 MARKS

1. Discuss role of Prophylaxis in surgery
2. Classify surgical wounds
3. Write any four criteria for selection of antimicrobials.
4. What is Mantoux test?
5. Classify Tuberculosis?
6. Define Tuberculosis
7. What is TB Skin Test?
8. List the diagnostic methods for tuberculosis
9. Discuss Category-1 DOTS regimen for pulmonary tuberculosis.
10. List the clinical features of pulmonary tuberculosis
11. List out goals of therapy for Tuberculosis
12. Enlist the risk groups for TB

13. What is disseminated TB?
14. List the ADRs of any two anti-TB drugs
15. List the reserve drugs in TB
16. Give the counselling points for TB
17. What is Heaf Test?
18. What is nuchal rigidity?
19. List out clinical features of meningitis
20. Classify meningitis
21. Enlist the predisposing factors for meningitis
22. Role of mannitol in meningitis
23. Enlist drugs used in tubercular meningitis
24. Give the diagnosis of meningitis
25. Enumerate the abnormal findings of CSF in meningitis.
26. What is SARS?
27. List the clinical manifestations of pneumonia
28. Discuss management of pharyngitis
29. Discuss management of sinusitis
30. Discuss management of otitis media
31. Define bronchiolitis
32. Define chronic bronchitis
33. Classify Otitis Media
34. Classify Respiratory Tract infections
35. Note on role of macrolides in LRTI

36. What is community acquired pneumonia?
37. What is hospital acquired pneumonia?
38. Write a note on oral rehydration therapy.
39. Discuss management of enteric fever
40. List out different organisms that may cause gastroenteritis
41. Define Gastroenteritis
42. Write the clinical manifestations of endocarditis
43. Classify endocarditis on basis of clinical presentation
44. Define endocarditis
45. Enlist the predisposing factors for endocarditis.
46. Explain role of osmotic diuretics in septicemia
47. Explain the role of corticosteroids in septicemia
48. Enlist clinical manifestations of septicemia
49. What is the etiology of septicemia?
50. Give the management of uncomplicated to UTI
51. Discuss non-pharmacologic methods of managing UTI
52. Give the risk factors of UTI
53. Give the management of UTI in pregnancy.
54. Give the symptoms of UTI
55. Give the management of relapsed UTI
56. Enlist the causes of UTI Relapse.
57. Define complicated UTI
58. Give the management of Vivax malaria

59. Discuss about Artemisinin Combination therapy

60. Discuss preventive measures for malaria

61. Enlist the complications of Malaria

62. What is cerebral malaria?

63. What are the diagnostic tests for malaria?

64. Enlist risk groups for AIDS

65. Name markers used for prognosis of HIV

66. Enlist the symptoms of HIV infection

67. Enlist various opportunistic infections of HIV

68. Enlist the diagnostic test for HIV.

69. Discuss methods to prevent HIV infections

70. Classify candida infections

71. Discuss management of thrush

72. What is deep seated fungal infection?

73. 4. What are the advantages of liposomal Amphotericin-B formulation?

74. Discuss the symptoms of varicella zoster infection

75. What is measles?

76. What are the symptoms of Dengue hemorrhagic fever?

77. What is mumps?

78. What are the symptoms of polio infection?

79. What are the complications of Polio?

80. Enlist different forms of Polio vaccination.

81. Discuss VDRL Test

82. Give the symptoms of Syphilis
83. Give the symptoms of Gonorrhea
84. Classify Syphilis
85. Give the clinical manifestations of Syphilis
86. Give the diagnosis of Syphilis
87. List of DMARDs used in the treatment of rheumatoid arthritis?
88. What are the drugs safe in rheumatoid arthritis with pregnancy?
89. Enumerate etiological differences between osteoarthritis and rheumatoid arthritis
90. List the diagnostic methods for diagnosis of Rheumatoid arthritis
91. Enlist the extra-articular features of Rheumatoid arthritis
92. Discuss the role of cytokine inhibitors in management of Rheumatoid arthritis
93. Enlist the clinical manifestations of Rheumatoid Arthritis
94. Explain role of chondroprotective agents in Osteoarthritis
95. Risk factors for Osteoarthritis
96. Discuss the role of NSAIDs in Osteoarthritis
97. Enlist non-pharmacologic therapy for osteoarthritis
98. What are the Risk factors and counselling for gout?
99. What are the clinical manifestations of gout?
100. What is the role of colchicine in gout?
101. Role of uricosuric drugs in Gout
102. What are the risk factors and counselling for ankylosing spondylitis?
103. Enumerate the clinical signs and symptoms of ankylosing spondylitis
104. What are the drugs that induces SLE?

105. What are the signs and symptoms of SLE?
106. Enlist the dermatologic symptoms of SLE
107. Give the classification of Acute kidney injury
108. Discuss RIFLE criteria in ARF
109. Enlist causes for pre-renal failure
110. How to differentiate between pre-renal failure and acute kidney injury?
111. What is the significance of Fractional Excretion of Sodium (FENa)
112. List out monitoring parameters in Acute Kidney Disease
113. Discuss the significance of renal function test
114. Define renal reserve.
115. Define chronic glomerulonephritis
116. Enlist risk factors for acute renal failure
117. Explain the management of hyperkalemia in chronic renal failure.
118. Draw the algorithm for management of hypertension in CRF
119. List the types of renal dystrophy
120. What are the criteria to restrict volume overload in renal failure?
121. Give the management of hyperphosphatemia in Chronic Renal Failure
122. Discuss etiology of renal osteodystrophy
123. Enlist different types of bone diseases associated with chronic renal failure
124. Enlist any four examinations for diagnosing chronic renal failure
125. List out the complications of peritoneal dialysis.
126. What is Renal dialysis?Give its types.
127. Define Haemodialysis

128. Define Peritoneal Dialysis
129. Enlist the different form of renal replacement therapy
130. What are the complications of peritoneal dialysis?
131. Classify peritoneal dialysis
132. List out the drug induced renal disorders.
133. Name the drugs which affect the renal system
134. List out four drugs causing acute tubular necrosis.
135. Define palliative treatment with examples
136. What is cachexia?
137. What is TNM Staging?
138. What are the warning signs of Cancer?
139. List the major adverse effect of cancer chemotherapy
140. Importance of radiotherapy in cancer treatment
141. What is pulse therapy?
142. Enumerate the merits of surgery in breast cancer
143. Give the diagnosis of breast cancer
144. Enlist the risk factors for breast cancer
145. Enlist the stages of breast cancer.
146. Enlist the prognostic markers for breast cancer
147. Pharmacotherapy of acute promyelocytic leukemia
148. Enlist vaccinations recommended to lymphocytic leukemia patients
149. What is breakthrough vomiting?
150. What is anticipatory vomiting

151. Explain the role of methotrexate in the management of psoriasis
152. Name four drugs for the treatment of psoriasis
153. What is the first line treatment for psoriasis?
154. Write a note on non-pharmacologic therapy for psoriasis
155. What is the role of TNFI in psoriasis?
156. Topical therapy for psoriasis
157. Adverse effects of topical treatment in psoriasis
158. Adverse effects of topical corticosteroids in psoriasis
159. Role of keratolytics in psoriasis
160. What is balneotherapy?
161. Write briefly on the clinical types of eczema
162. Enumerate the clinical signs and symptoms of eczema
163. Topical therapy for eczema
164. Enlist allergens for eczema
165. Enlist Diagnostic methods for eczema
166. Name causes & triggers for eczema
167. Enumerate the clinical signs and symptoms of scabies
168. What is Scabies? Name its causative organism.
169. Drugs used for treatment of scabies
170. Treatment for impetigo
171. Signs and symptoms of impetigo
172. Topical therapy for impetigo
173. What is Impetigo?

174. Classify Impetigo

175. Mention the route of spread of Scabies

176. Diagnosis of scabies

177. Preventive measures for scabies

178. Symptoms of scabies

179. Role of benzyl benzoate in scabies

180. Role of ivermectin in scabies

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Pharmaceutical Jurisprudence

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Chapter 1– Pharmaceutical legislation

SHORT ESSAYS 05 MARKS

1. Give an account of pharmaceutical legislations in India.
2. Describe the recommendations made by Chopra committee
3. Write contributions of Joseph Bhore committee to pharmacy profession
4. Write final recommendations of Drug Enquiry Committee.
5. Discuss pre-independence pharmaceutical legislation of India

SHORT ANSWERS 02 MARKS

1. Give the recommendations of 'Hathi Committee'
2. Give future trends in pharmaceutical legislation
3. What is CDSCO
4. Give two recommendations made by Bhatia Committee
5. List four key functions of CDSCO
6. Give two recommendations made by Drug Enquiry Committee
7. Give significance of Drug Enquiry committee.
8. Justify repealing of the 'dangerous drugs act' into Narcotics and Psychotropic substances act'.
9. State importance of CDSCO.
10. State Indian drug Policy

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Chapter 2- Principle & significance of professional ethics

SHORT ESSAYS 05 MARKS

1. Discuss the code of ethics for pharmacists in relation to his trade.
2. Discuss the code of ethics for pharmacists in relation to his job.
3. Define Code of Ethics. Explain Receiving and Handling of prescription by pharmacist
4. Discuss the code of ethics for pharmacists in relation to his medical profession.
5. Briefly mention about the code of ethics for pharmacists framed by PCI.

SHORT ANSWERS 02 MARKS

1. What are the limitations of professional activity for a pharmacist as per code of Pharmaceutical ethics
2. State Clandestine Arrangement
3. Describe Professional vigilance as Code of Pharmaceutical Ethics
4. Enlist Code of Pharmaceutical Ethics in relation to his profession
5. Enlist Code of Pharmaceutical Ethics in relation to medical profession.
6. Justify pharmacist to be liaison with public as per code of pharmaceutical ethics.
7. How should be ‘conduct of pharmacy’ as per code of pharmaceutical ethics.
8. Brief about’ Professional Vigilance’ as stated under code of pharmaceutical ethics.
9. How a pharmacist should follow’ fair trade practice’ as per code of pharmaceutical ethics.

Brief ‘Apprentice Pharmacist’ as code of pharmaceutical ethics

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Chapter 3- Drugs & cosmetics Act & its rules

LONG ESSAYS 10 MARKS

1. What are the precedents and subsequent conditions for grant of license to manufacture of drugs specified in schedule C, C1 and X.
2. Write the qualifications, duties and responsibilities of drugs inspector. Explain the procedure for taking of samples by drugs inspector.
3. Describe the good manufacturing practices to be followed as per schedule M specified under Drugs and Cosmetics Act 1940.
4. Explain various provisions of Schedule Y as per Drugs and Cosmetics Act 1940.
5. What are the precedents and subsequent conditions for grant of license to manufacture of drugs specified in schedule C, C1 and X.

SHORT ESSAYS 05 MARKS

1. Give the labeling requirements and write the specimen label for ophthalmic preparation
2. Mention the classes of Drugs Prohibited to be imported into India
3. Give the qualification required for appointment of Government analyst. Add note on his duties.
4. Name different types of licenses for the retail and whole sale of drugs
5. Give the labeling requirements and write the specimen label for ophthalmic preparation.
6. Give licensing conditions for import of drugs other than CC1 and X.
7. Explain Central Drugs laboratory under D &C Act.
8. Duties and responsibilities of drug inspector.
9. Describe the procedure for import of drugs for examination, test, and analysis
10. Write the Qualification and Duties of Government Analyst.
11. Explain in detail about Schedule N as per the D&C Act.
12. What are the conditions for General and restricted license for sale of drugs?

13. Give labelling requirements and specimen label for schedule X drugs
14. Define misbranded and adulterated drugs?
15. What are loan license and repacking license as per D &C act.. Explain their licensing conditions.

SHORT ANSWERS 02 MARKS

1. Define Schedule J. Give two examples.
2. Define Loan licenses.
3. Define Schedule FF. Give two examples.
4. Give labeling requirements for schedule H drugs.
5. Define Schedule P. Give two examples.
6. Give labeling requirements for schedule G drugs.
7. Define Schedule X. Give two examples.
8. Define Repacking licenses.
9. Define Schedule J. Give two examples.
10. Define Loan licenses.
11. Define Schedule U& V.
12. Give labeling requirements for Schedule H drugs.
13. Define Schedule P& Jas per D &C act.
14. Give two examples of permitted colors as per D &C act.
15. Write specimen label of Schedule H drug for parenteral administration.
16. Define cosmetics under D&C Act
17. Define ‘patent and proprietary medicines’ as per D&C act.
18. Give the functions of Drug Consultative Committee.
19. Give labeling requirements of patent and proprietary medicines as per D&C Act.
20. Define Schedule Y as per D&C act.

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Chapter 4- Pharmacy Act

LONG ESSAYS 10 MARKS

1. Describe in detail the constitution of Pharmacy Council of India. Discuss in detail education regulation.
2. Write in detail about the constitution and functions of the state and joint state pharmacy council.
3. Describe the constitution and functions of Pharmacy council of India.
4. Describe the constitution of State pharmacy council. Explain preparation of 'first register and 'subsequent register'
5. Explain Registration of pharmacist detailing about first register, qualifications for entry into first register, subsequent register and removal of name from the register as per Pharmacy Act.

SHORT ESSAYS 05 MARKS

1. Define the terms first register and subsequent registers. How first register is prepared?
2. What are the education regulations and how they are implemented as per Pharmacy Act?
3. Write the constitution of Joint State Pharmacy Council. Enumerate its functions
4. Give constitution of Pharmacy Council of India as per Pharmacy Act.
5. Discuss approval and withdrawal of approval of institutions providing course of study and examination according to Pharmacy Act.

SHORT ANSWERS 02 MARKS

1. List out the Ex-Officio Members of PCI.
2. Define "Registered Pharmacist".
3. Give objectives of Pharmacy Act.
4. Mention the grounds on which names of registered pharmacist can be removed.
5. Mention the qualifications necessary for entering name into 'first register'.
6. Enumerate two functions of PCI Inspector
7. Explain approval of foreign qualification by PCI.
8. What Punishment is provided under pharmacy act for falsely claiming to be registered pharmacist?
9. How to Restore to the register as per Pharmacy act.

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Chapter 5- Medicinal & Toilet Preparation Act 1955

LONG ESSAYS 10 MARKS

1. Give the design of bonded laboratory. Discuss in detail manufacturing of alcoholic preparations in bonded laboratory.
2. What is meant by "Manufacture in Bond? Discuss the conditions to be followed before and after obtaining a license for manufacture in bond**.**
3. Discuss the procedure to be followed for manufacturing medicinal preparations without bond.
4. Define manufacturing in bond. Outline the procedure to be followed in obtaining a license for manufacture in bond including the conditions that are to be fulfilled.
5. Explain Warehousing of alcoholic preparation as per Medicinal and Toilet preparations act. How alcoholic goods are transported from one warehouse to another.

SHORT ESSAYS 05 MARKS

1. Give offenses and penalties for medicinal and toilet preparations act
2. What are the requirements of a bonded laboratory?
3. Discuss the procedure to be followed for manufacturing medicinal preparations without bond.
4. Explain Export of Alcoholic preparations under bond.
5. Explain warehousing of alcoholic preparations.

SHORT ANSWERS 02 MARKS

1. How do you procure rectified spirit as per provisions of Medicinal and Toilet Preparations Act?
2. How to dispose recovered alcohol as per provisions of Medicinal and Toilet Preparations Act.
3. Define 'restricted preparations' under Medicinal and Toilet Preparations Act
4. Define 'London proof spirit' under Medicinal and Toilet Preparations Act.
5. Define 'rectified spirit' under Medicinal and Toilet Preparations Act.

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Chapter 6- Narcotic Drugs & Psychotropic Substances Act

SHORT ESSAYS 05 MARKS

1. Define 'Manufactured Drugs' and 'Controlled Substances' as per NDPS Act.
2. Write the constitution and functions of Narcotic and Psychotropic consultative committee
3. Define the term 'Opium Derivatives' and 'Coca derivatives' under NDPS Act
4. Explain manufacture, Sale and export of Opium
5. Discuss cultivation and production of opium.

2-Marks questions

1. What is the punishment specified for illegal cultivation of coca plants?
2. Write the constitution and functions of Narcotic and Psychotropic consultative committee
3. Define 'Psychotropic substances' as per NDPS Act
4. What is the punishment specified for allowing the use of premises, vehicles etc. for commission of an offence under the NDPS act?
5. Give four examples for psychotropic substances.
6. What are objectives of NDPS act?
7. Define the term coca derivatives under NDPS Act. 8 Differentiate between Poppy straw and poppy concentrate 9 Define Narcotic Drug as per NDPS Act.
8. Define Manufactured Drug as per NDPS Act.
9. What is the punishment specified for allowing the use of premises, vehicles etc. for commission of an offence under NDPS act?
10. Define controlled substance
11. What is the punishment specified for illegal cultivation of coca plant?
12. Give four examples of Psychotropic Substances under NDPS act 15 Define illicit traffic as under NDPS Act.

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Chapter 7- Drug & Magic Remedies Act

SHORT ESSAYS 05 MARKS

1. Drugs and Magic Remedies Act.
2. Define magic remedy. Write the classes of advertisements prohibited under D&MR Act.
3. Define ‘advertisement’. Write the classes of advertisements exempted under D&MR Act.
4. Define ‘Drugs’, ‘Advertisements’, and ‘Magic Remedies’ as per Drugs and Magic Remedies Act.
5. What are objectives of Drugs and Magic Remedies Act. Give offences and penalties under the act.

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Chapter 8 & 9- Essential Commodities Act relevant to DPCO & National Drug Pol

SHORT ANSWERS 02 MARKS

1. Define 'ceiling price' as per DPCO.
2. Write objectives of National Drug Policy
3. How retail price of formulation is calculated as per DPCO
4. How MAPE is calculated as per DPCO
5. What is MAPE as described in DPCO
6. How do you calculate retail price for formulations as per DPCO?
7. What is ceiling price as per DPCO
8. Explain the term MAPE. How it is calculated.
9. Describe facilities to be maintained for experimentation animals under CPCSEA guidelines.
10. Name the Authorities under DPCO.
11. Write Objectives of DPCO

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Chapter 10- Prevention of cruelty to animals act

LONG ESSAYS 10 MARKS SHORT ESSAYS 05 MARKS SHORT ANSWERS 02 MARKS

1. Write objectives of 'Prevention of cruelty to animals act'. What are the parts of CPCSEA guidelines?
2. Define 'Cruelty to animals'. Explain provisions for breeding and stocking of animals as per this act.
3. Describe facilities to be maintained for experimentation animals under CPCSEA guidelines
4. Give constitution and function of Institute Animal Ethics(IAE) Committee
5. How are experimental animals to be handled during and after experiments as per CPSCEA guidelines?

SHORT ANSWERS 02 MARKS

1. Under what conditions an animal for experiment is sacrificed as per CPCSEA guidelines?
2. Write the objectives of Prevention of Cruelty to Animals Act.
3. Define CPCSEA.
4. Give the constitution of Institutional Animal Ethics Committee
5. What are the functions of Institutional Animal Ethics Committee?

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Chapter 11- Patent & design Act

LONG ESSAYS 10 MARKS

1. Name the types of patents granted under patents act. Give the procedure for obtaining the patent.
2. Define Patent. List the inventions that are not patentable within the meaning of Patent Act**.** Give offence and penalties under this Act.
3. Explain procedure of application of patent including revocations of patents under Indian Patent Act.
4. What is Patent Coopertative Treaty. Explain Patent of addition and restoration of Lapsed patents under Patent Act.
5. What is Patent Coopertative Treaty. Explain Patent of addition and restoration of Lapsed patents under Patent Act.
6. Describe Publication and examination of application for patents. Give offences and penalties patents act.

SHORT ESSAYS 05 MARKS

1. Define the term Patent as per Patent act. Which inventions are not patentable under the Act.
2. What is the Patent of addition? What are the rights of patentees & co owners of patent.
3. Explain the procedure for revocation of patents.
4. Enumerate the types of patents. What are the criteria for inventions to be patentable?
5. Define Invention as per patent act. Enlist the steps for obtaining a patent

SHORT ANSWERS 02 MARKS

1. What are the rights of owner a patent under the Patent Act?
2. How restoration of lapsed patent can be done?
3. Define ‘exclusive license’ as per patent act.
4. What are the rights of patentee as per the Patent Act.
5. Define ‘priority date’ in filing patent.

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Chapter 12- Prescription & Non-prescription products

SHORT ANSWERS 02 MARKS

1. What are OTC products?
2. Give two examples of diagnostic aids.
3. Give two examples of surgical aids
4. What are prescription drugs. Give two examples 5. What are Non-prescription drugs. Give two examples.
6. What are diagnostic aids. Give one example.
7. Name any four surgical accessories
8. Distinguish between prescription and non-prescription products
9. What are OTC products? Give two examples.
10. Give the procedure for disposal of expiry drugs.

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Medicinal Chemistry

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Chapter 1 Rational Drug Design

LONG ESSAY 10 MARKS

1) Write a note on Rational drug design.
2) Write a note on combinational chemistry and its applications.
3) Write a note on the Quantitative Structural Activity Relationship (QSAR) and its significance.
4) Write a note on the prodrug concept and combinational chemistry in drug discovery.
5) Write a note on prodrug designing.
6) Write the methods and applications of combinational chemistry.
7) Explain the different parameters used in the QSAR study.

SHORT ANSWERS 02 MARKS

1) Applications of drug design
2) Define prodrug. Give examples
3) What are carrier-linked prodrugs? Give two examples.

2 Give. Enlist the parameters of QSAR.

4) What are Anti-sense molecules?
5) What is CADD? Give its application.
6) What is lead molecule? How are they useful in drug discovery?
7) Mention the electronic parameters used in QSAR.
8) What is Hammet's electronic parameter? How is it useful in drug discovery?

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Chapter 2- Anti-Infectives

LONG ESSAY 10 MARKS

1. Define anthelmintics? Classify them with structural examples. Give the synthesis of diethyl carbamazepine citrate and mebendazole
2. Discuss in detail about polyene antibiotic antifungal agents. Write the synthesis of sulfamethoxazole.

SHORT ESSAY 05 MARKS

1. Write a note on urinary tract anti-infective agents.
2. What are first-line anti-tubercular drugs? Write the structure of any two anti-tubercular drugs. Give the synthesis of para-aminosalicylic acid.
3. What are anti-viral drugs? Classify them with suitable examples.
4. Add a note on synthetic anti-fungal agents. Give the synthesis of Tolnaftate.
5. Define and classify anthelmintics. Write the synthesis of Diethylcarbamazine citrate.
6. Define and classify anti-tubercular agents with examples. Give the synthesis of isoniazid.
7. What are anti-viral drugs, classify them with suitable examples.
8. Add a note on synthetic antifungal agents. Give the synthesis of Tolnaftate.
9. Define and classify protozoal agents with structural examples. Write the mechanism and synthesis of Metronidazole.
10. Enlist various antitubercular drugs. Write the synthesis of Isoniazid.
11. Write a note on anti-tubercular antibiotics.
12. Classify anthelmintics. Write the synthesis of Diethyl carbamazine and Mebendazole.
13. Define and classify urinary tract anti-infectives and give the synthesis of Ciprofloxacin.
14. What are anti-TB drugs? Enlist the problems associated with the treatment. Give the structure of para aminosalicylic acid and INH.
15. Discuss the chemistry of quinolines. Write the synthesis of nitrofurantoin.

16. Write the structure and uses of the following: A) Rifampicin B) Sparfloxacin C) Gatifloxacin D) Gancyclovir.
17. Write the synthesis of ant two anti-tubercular drugs.
18. Write a note on urinary tract anti-infectives. Outline the synthesis of Ciprofloxacin.
19. Name any four antiamoebic drugs. Give the synthesis of Metronidazole.
20. Define and classify anti-fungal agents with structural examples.

SHORT ANSWERS 02 MARKS

1. Give the synthesis of Isoniazid.
2. Give the structure and uses of Ciprofloxacin and Nitrofurantoin.
3. List out important anti-viral agents. Give the structure and uses of any one anti-viral drugs.
4. Write the structure of any two anti-tubercular antibiotics.
5. Write the structure and uses of Miconazole.
6. What are antiprotozoal agents? Give the structure and uses of Iodoquinol.
7. Give the structure and uses of Ciprofloxacin and Nitrofurantoin.
8. List out important antifungal antibiotics. Give the structure and uses of any one anti-fungal antibiotic drug.
9. Write the synthesis of para-aminosalicylic acid (PAS).
10. Write the structure and uses of Miconazole.
11. What are antiprotozoal agents? Give the structure and uses of Iodoquinol.
12. Write the structure and uses of furazolidone.
13. List out important anti-viral agents. Give the structure and uses of any one anti-viral drug.
14. Enlist the problems associated with the treatment of TB.
15. Write briefly on anti-fungal imidazoles.
16. Write the structure and uses of Mebendazole.
17. Write the structure and uses of Ethambutol and Pyrazinamide.
18. Write the structure and uses of Zidovudine

19. List out important anti-fungal agents. Give the structure and uses of any one antifungal drug.
20. What are anti-protozoal agents? Give the structure of Iodoquinol.
21. What are urinary tract anti-infective agents? Write the structure and uses of Sparfloxacin.
22. What are antiamoebic agents? Write the structure and uses of Tinidazole
23. Give the synthesis of Nitrofurantoin.
24. Write the structure and uses of Diloxanide furoate and Iodoquinol.
25. Write the structure and uses of Carbasone.
26. Write the structure and uses of Nalidixic acid.
27. List out antifungal agents having imidazole nucleus
28. What are anti-protozoal agents? Give the structure and uses of Ornidazole.

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Chapter 3- Sulfonamides and sulfones

LONG ESSAY 10 MARKS

1. Define and classify Sulphonamides with examples. Write the SAR and chemistry of sulpha drugs. Write the synthesis of Trimethoprim.
2. Define and classify sulphonamides. Give the SAR and chemistry of sulphonamides. Write the synthesis of sulphamethoxazole.
3. What are therapeutic agents? Classify sulphonamides will examples. Outline the synthesis of Trimethoprim and Sulphamethoxazole.
4. Classify sulphonamides with suitable examples. Explain the SAR among antibacterial sulphonamides. Give the synthesis of Sulphacetamide and Sulfamethoxazole.
5. Define and classify Sulphonamides with examples. Write the SAR and chemistry of sulpha drugs.
6. What are sulphonamides? Classify them with and comment on combination therapy of Trimethoprim and Sulphamethoxazole.

SHORT ESSAY 05 MARKS

1. What are Sulphonamides? Explain their SAR.
2. Comment on combination therapy of trimethoprim and sulphamethoxazole.
3. Add a note on folate reductase inhibitors. Explain the synergetic action of Sulfamethoxazole and Trimethoprim.

SHORT ANSWERS 02 MARKS

1. Write the structure and uses of Sulfaisoxazole and Mefenide acetate.
2. Give the synthesis of Sulphamethoxazole.
3. Give the synthesis of Dapsone

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Chapter 4- Antimalarial agent

LONG ESSAY 10 MARKS

1. Define antimalarial agents and classify them with examples. Give the mechanism of action and outline the synthesis of chloroquine.
2. Define and classify Sulphonamides with examples. Write the SAR and chemistry of sulpha drugs. Write the synthesis of Trimethoprim.
3. Whar are antimalarial agents? Classify them with examples. Give the mechanism of action of quinolines and outline the synthesis of Pamaquine.
4. Define antimalarials? Give the mechanism of action and SAR of quinolines and its analogues. Give the synthesis of Chloroquine.
5. What are antimalarial drugs? Write the malarial life cycle and different drugs acting on the different stages. Write the SAR of quinolines.
6. Classify antimalarial agents. Describe the life cycle of malaria.
7. Classify antimalarial agents with suitable examples. Outline the synthesis of chloroquine
8. What are antimalarial agents? Classify them with examples. Give the mechanism of action and outline the synthesis of Pamaquine.
9. A) What are antimalarial drugs? Explain the life cycle of malaria.
   B) Outline the synthesis of Pamaquine and Chloroquine.

SHORT ESSAY 05 MARKS

1. Outline the synthesis of chloroquine. Discuss about SAR of quinolines.
2. Discuss about miscellaneous anti-malarial agents.
3. Explain the life cycle of malaria. Write the different drugs acting on various stages.
4. Write the SAR of 4-amino quinolines as antimalarials.

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SHORT ANSWERS 02 MARKS

1. Write the Structural Activity Relationship (SAR) of 4-amino quinolines.
2. Write the Structural Activity Relationship (SAR) of 4-amino quinolines.
3. Give the synthesis of Trimethoprim.

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Chapter 5- Antibiotics

LONG ESSAY 10 MARKS

1. Define antibiotics? Classify them with examples. Discuss the chemistry and mechanism of action of aminoglycoside antibiotics.
2. What are antibiotics? Classify them with examples. Write a note on lactamase inhibitors.
3. What are beta-lactamase antibiotics? Give the degradation products of penicillins. Outline the chemistry and synthesis of Chloramphenicol.
4. What are beta-lactamase antibiotics? Give the two degradation products of penicillins and cephalosporins. Write a note on beta-lactamase inhibitors.
5. What are antibiotics? Classify with examples. Discuss the SAR & MOA of tetracyclines

SHORT ESSAY 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. 4.What are tetracyclines? Write the mechanism of action and chemistry of tetracyclines
5. Discuss the chemistry and mechanism of action of macrolide antibiotics.
6. Discuss the chemistry and mechanism of action of aminoglycoside antibiotics.
7. Discuss the stability and SAR of tetracyclines.
8. Write a note on macrolide antibiotics.
9. What are aminoglycosides? Write the MOA and chemistry of aminoglycoside antibiotics.
10. Discuss about beta lactamase inhibitors.
11. Write the degradation products of penicillin.

12. Classify the cephalosporins based on generation.
13. Discuss chemistry of macrolide antibiotics. Give their uses and side effects.
14. Write a short note on aminoglycoside antibiotics.
15. Add a note on beta-lactamase inhibitors.
16. Give the chemistry and mechanism of macrolide antibiotics.

LONG ESSAY 10 MARKS SHORT ESSAY 05 MARKS SHORT ANSWERS 02 MARKS

1) Write the structure and uses of Cephalexin.
2) Write the structure and uses of Chloramphenicol
3) Write the structure and uses of Cephaloridine.
4) Write the structure and uses of Cindamycin
5) Write the structure and uses of Ampicillin.
6) Write the structure and uses of Oxytetracycline and Doxycycline.
7) Write the structure and uses of Clindamycin and Proguanil.
8) Give the Mechanism of Action (MOA) of Tetracyclines.

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Chapter 6- Antineoplastic agents

LONG ESSAY 10 MARKS

1. What are antineoplastic agents? Classify them with example? Discus the mechanism of action of alkylating agents. Outline the synthesis of Meclorethamine.
2. Classify Antineoplastic agents with example. Outline the synthesis of Mercaptopurine and Methotrexate.
3. Define and Classify antineoplastic agents with suitable examples. Explain the synthesis and uses of Methotrexate?

SHORT ESSAY 05 MARKS

1. Classify alkylating agents with examples and outline the synthesis of mechlorethamine.
2. Explain the role of alkylating agents as anti-cancer drugs.
3. Write a note on antimetabolites. Explain the synthesis of mercaptopurine

SHORT ANSWERS 02 MARKS

1. Write the synthesis and uses of mercaptopurine
2. Write the mechanism of action of alkylating agents
3. Write the mechanism of action of antimetabolites.

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Chapter 7- Cardiovascular agents

LONG ESSAY 10 MARKS

1. Define and Classify antihypertensive agents? Explain the MOA of Angiotensin Receptor Blockers. Write the synthesis of Methyl Dopa.
2. Classify antihypertensive agents with examples? Write the MOA of Calcium channels blockers and give the synthesis of Isosorbide dinitrite.
3. Define antihistaminic agents, classify them with examples. Give the synthesis of promethazine and Triprolidine.
4. Define and classify antihistaminic agents with suitable examples and explain the synthesis of diphenhydramine HCl
5. What are H1 receptor antagonists? Explain their mechanism of action? Outline the synthesis of Diphenhydramine HCl and Promethazine HCl.
6. Define and Classify Antihistaminic agents with examples. Outline the method for synthesis of Diphenhydramine and Promethazine.
7. Classify antihypertensive agents with examples? Write the MOA of Calcium channels blockers and give the synthesis of Isosorbide dinitrite.
8. Define antihistaminic agents, classify them with examples. Give the synthesis of promethazine and Triprolidine.
9. Define and Classify H1 receptor antagonists with suitable examples. Outline the synthesis of promethazine and triprolidine HCl.
10. What are antihypertensive agents? Classify with examples and explain the mechanism of action of clonidine.
11. Classify anti-arrhythmic and antihypertensive agents? Explain the MOA of angiotensin receptor rblockers. Write the structure and uses of Losartan.
12. Classify antihypertensive agents? Explain the MOA of ACE inhibitors. Write the synthesis and uses of warfarin.
13. Classify antihypertensive agents? Discuss the MOA of calcium channels blockers & beta blockers with examples. Write the synthesis of propranolol.

14. What are calcium channel blockers? Describe their effect on cardiovascular system. Write the synthesis of Warfarin
15. Classify antihypertensive agents? Write a note on antianginal agents? Give the structure and uses of any two nitro vasodilators
16. Classify antiarrhythmic agents? Explain the MOA of antihyperlipidemic agents? Write the structure and uses of atorvastatin and lovastatin
17. What are cardiovascular drugs? Classify them with examples. Give the synthesis of Warfarin
18. Write any two structure and uses of the following a) Calcium channel blocker b) ACE Inhibitor c) Beta blocker d) Antianginal agents e) Antihyperlipidemic agents.
19. Write the structure and specific uses of Isosorbide dinirate b) Verapamil c) Propronolol d) Captopril e) Clofibrate
20. What is primary hypertension? Describe the role of renin-angiotensin system in the
21. Pathogenesis of essential hypertension. What are the important recently used antihypertensive agents?
22. What is essential hypertension? Classify antihypertensive drugs with examples. Outline thesynthesis of 1) Propronolol 2) Nifedepine
23. What are antiarrhythmic drugs? Write the classification by giving at least one structure for each class of antiarrythmic drugs. Give the synthesis of Procainamide.
24. Classify antihypertensive agents. Explain the following with suitable examples
25. Calcium Channels and their blockers. (b) Beta blockers.
26. Classify cardiovascular agents with examples. Write an account on calcium channel blockers. Give the synthesis of Diltiazem

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SHORT ESSAY 05 MARKS

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

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SHORT ANSWERS 02 MARKS

1. Write the structure uses of propranolol
2. Write the structure and uses of amiodarone and diltiazem.
3. What are ACE inhibitors? Give two examples.
4. Name any two calcium channel blockers with their uses.
5. Write the structure and uses of minoxidil
6. Write the structure and uses of felodipine
7. Write the structure and uses of Nifedipine
8. Give the structure and uses of Isosorbide dinitrate.
9. What are vasodilators, give examples.
10. Write the structure and uses of captopril
11. Give the structure and uses of Propronolol and phenytoin.
12. Chemical structure and specific uses of Amyl nitrate.
13. Write the synthesis of Warfarin.
14. Name any two anticoagulants with their mechanism of action.
15. Write the structure and specific uses of quinidine
16. Write the structure and uses of alpha1 antagonist
17. Write the structure and uses of alpha2 agonist.
18. Write the structure and uses of any two beta blockers
19. What is the use of Angiotensin receptor blockers, Give one structure and use
20. Write the MOA of antianginal agents
21. Write the structure of any two anti hyperlipidemic agents.
22. What are antihyperlipidimic agents? Write the structure of Atorvastatin
23. What are antihyperlipidimic agents? Write the structure of Lovastatin.
24. Write the structure and uses of Phenindione
25. Write the structure and uses of dicoumorol
26. What are antianginal agents give examples
27. Write the structure uses of propronolol

28. Write the structure and uses of amiodarone and diltiazem.
29. What are ACE inhibitors? Give two examples.
30. Name any two calcium channel blockers with their uses.
31. Write the structure and uses of minoxidil
32. Write the structure and uses of felodipine
33. Write the structure and uses of Nifedipine
34. Give the structure and uses of Isosorbide dinitrate.
35. What are vasodilators, give examples.
36. Write the structure and uses of captopril
37. Give the structure and uses of Propranolol and phenytoin.
38. Chemical structure and specific uses of Amyl nitrate.
39. Write the synthesis of Warfarin.
40. Name any two anticoagulants with their mechanism of action.
41. Write the structure and specific uses of quinidine
42. Write the structure and uses of the alpha1 antagonist
43. Write the structure and uses of alpha2 agonist.
44. Write the structure and uses of any two beta blockers
45. What is the use of Angiotensin receptor blockers, Give one structure and use
46. Write the MOA of antianginal agents
47. Write the structure of any two anti hyperlipidemic agents.
48. What are antihyperlipidimic agents? Write the structure of Atorvastatin
49. What are antihyperlipidimic agents? Write the structure of Lovastatin.
50. Write the structure and uses of Phenindione
51. Write the structure and uses of dicoumorol
52. What are antianginal agents give example

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Chapter 8 -Hypoglycemic Agents

SHORT ESSAY 05 MARKS

1. Write a note on insulin and its derivatives. Define and classify hypoglycemic agents. Write the mechanism of action and synthesis of tolubutamines.
2. Define and classify oral hypoglycaemic agents with examples and write the synthesis of tolbutamide.
3. Define the term hypoglycemic agents. Give the structure of any two sulfonylyreas and outline the synthesis of Tolbutamide.
4. Define antidiabetic drugs. Write the structure and uses of metformin, pioglitazone, glipizide and acrabose.
5. What are hypoglycemic agents? Discuss about Glucosidase inhibitors as antidiabetic agents.
6. Define Diabetes? Classify antidiabetic agents with examples. Give the mechanism of action and synthesis of Tolbutamide.

SHORT ANSWERS 02 MARKS

1. Give the synthesis of chlorpropamide
2. Give the structure and uses of Meglitinide
3. Write the structure and uses of Pioglitazone
4. Write the structure and uses of Rosiglitazone
5. Define diabetes? Name any two drugs used in the treatment of diabetes
6. Write the structure and uses of glipizide.
7. Give two drug names of thiazolidinediones used as hypoglycemic agents.
8. Define Hyperglycemia? Name any two biguanides used in the treatment of diabetes
9. Define hypoglycemia? Name any two sulfonyl urea derivatives
10. Mention the uses of Insulin and its derivatives

11. Give the MOA of Biguanides
12. Give the MOA of sulphonylureas
13. Give the MOA of Meglitinide
14. Write the structure and uses of Glibenclamide
15. Write the structure and uses of Metformin
16. Write the structure and uses of Phenformin
17. Write the symptoms of diabetes mellitus
18. Name any four drugs used in the treatment of type-2 diabetes
19. Give the MOA of Rosiglitazone
20. Give the MOA of Anagliptin

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Chapter 9-Thyroid and Antithyroid agents

SHORT ESSAY 05 MARKS

1. What are thyroid drugs? Classify thyroid drug. Write the biosynthesis of thyroid hormones. Write the structure of any two thyroid drugs.
2. What are anti-thyroid drugs. Write the mechanism of action. Write the structure of any two anti-thyroid drugs.

SHORT ANSWERS 02 MARKS

1. What are hormones? How are they classified chemically? Name any two hormones secreted by thyroid gland.
2. Define hormones. Why they are transported through blood in combination with certain fractions of protein.
3. Define hormones and classify them on the basis of source
4. What are antithyroid drugs? Why are they called goitrogens?
5. What are hormones? How are they classified chemically? Name any two hormones
6. secreted by thyroid gland.
7. Define hormones. Why they are transported through blood in combination with certain
8. fractions of protein.
9. Define hormones and classify them on the basis of source
10. What are antithyroid drugs? Why are they called goitrogens?

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Chapter 10- Diuretics

LONG ESSAY 10 MARKS

1. What are thiazide diuretics? Write the mechanism of action. Write the general mechanism of action of thiazide diuretics. Write the synthesis of chlorothiazide.
2. Define and classify diuretics with examples. Explain the mechanism of action of loop diuretics and write the synthesis of Furosemide.
3. Define and classify Diuretics with examples? Explain the mechanism of action of carbonic anhydrase inhibitors and give the synthesis of acetazolamide.
4. Define and classify Diuretics with examples? Explain the mechanism of action of carbonic anhydrase inhibitors and give the synthesis of acetazolamide.

SHORT ANSWERS 02 MARKS

1. Write the structure and uses of Amiloride.
2. Structure and uses of triampterene
3. What are high ceiling diuretics? Give examples
4. Synthesis of furosemide
5. Structure and uses of furosemide
6. Synthesis of ethacrynic acid
7. Structure and uses of ethacrynic acid
8. Mechanism of acetazolamide
9. Structure and uses of acetazolamide
10. What are carbonic anhydrase inhibitors give examples
11. Write the structure and uses of spironolactone
12. Write the structure and uses of hydrochlorothiazide
13. Write the structure and uses of Benzthiazide
14. What are potassium sparing diuretics give examples
15. Give the structure and use of any one aldosterone antagonists

16. MOA of thiazide diuretics
17. How does carbonic anhydrase inhibitors acts as diuretics? Give examples
18. What are carbonic anhydrase inhibitors give examples
19. 1What are loop diuretics? Give examples
20. Give the MOA of mercurials
21. Give the MOA of carbonic anhydrase inhibitors

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Chapter 11- Diagnostic agents

SHORT ESSAY 05 MARKS

1. Define and classify diagnostic agent. Give the structure and uses of 1) Propyl iodine 2) Indigotin disulfonate 3) Evans blue.
2. What are diagnostic agents? Give a brief account of radio opaques.

SHORT ANSWERS 02 MARKS

1. What are diagnostic agents? Classify them with examples.
2. Name any two drugs used for examination of Gall bladder.
3. Name any two drugs used for examination of Gastric function.
4. Name any two drugs used for examination of Liver function.
5. Name any two drugs used for examination of ophthalmic diagnostic aid.
6. Name any two drugs used for examination of pancreatic function.
7. Name any two drugs used for examination of Kidney function.
8. Name any two drugs used for examination of Lymphatic system.
9. Name any two dyes used as diagnostic agents.
10. Name the drug used for examination of Drug-hyper sensitivity.
11. Name any two drugs used in X- ray contrast media.
12. Name any two drugs used for examination of Angiography and Urogrphy
13. Name any two drugs used for examination of Cholecystography.
14. Name any two drugs used for examination of Mylography.

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Chapter 12- Steroidal hormones and Adrenocorticoids

LONG ESSAY 10 MARKS SHORT ESSAY 05 MARKS SHORT ANSWERS 02 MARKS

1. What are steroids? Name any one drug containing Estrane nuclei
2. What are adrenocorticoids? Give example.
3. What are sex hormones? Give example
4. What are steroidal drugs? Name any two steroidal drugs with their uses
5. Classify steroidal drugs with examples
6. Write any steroidal drugs and their uses
7. Write the structure and uses of Estrogen and Progesterone
8. What are steroids? Name any one drug containing androstane nuclei
9. What are steroids? Name any one drug containing Pregnane nuclei

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Pharmaceutical Formulations

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Bengaluru – 560049, Karnataka

Chapter 1: PHARMACEUTICAL DOSAGE FORMS

SHORT ESSAYS 02 MARKS

1. Define elixirs and linctuses.
2. Define ointment and paste.
3. Classify liquid dosage forms with examples.
4. Give four advantages of liquid orals.
5. Classify pharmaceutical dosage forms.
6. Define dusting powders and dentifrices.
7. Give two examples each for non sterile semisolids and sterile ophthalmic formulations.
8. How are liquid dosage forms classified? Mention examples for each.
9. Define biphasic dosage forms. Give two examples.
10. Classify dosage forms with one example each.

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Chapter 2: TABLETS

LONG ESSAYS 10 MARKS

1. (A) With a neat labeled diagram, explain rotary compression process of tablet manufacturing. (B) Describe the defects in film coating process.
2. A) Discuss the tablet compression cycle by multistation rotary press.

B) Write the reasons and remedies for capping and lamination.

3. Describe dry granulation technique and list advantages and disadvantages.
4. Classify granulation techniques. Describe the wet granulation method along with equipment used in each step.
5. Give a detailed account of the different excipients and their functions used in the tablets.

SHORT ANSWERS 05 MARKS

1. Describe quality control tests for tablets.
2. Describe formulation of chewable and sublingual tablets.
3. Describe the steps involved in sugar coating with suitable examples of ingredients used in each step.
4. Describediluents and disintegrants used in tablet preparation.
5. Emphasize on different stages involved in sugar coating of compressed tablets.

SHORT ESSAYS 02 MARKS

1. Differentiate disintegrants and super disintegrants with examples.
2. Significance of bland excipient in buccal tablets.
3. Differentiate diluents and directly compressible vehicles by giving examples.
4. What are disintegrant? Give two examples.
5. What are chewable tablets? Give their advantages
6. What are enteric coating polymers? Name any two examples.
7. What tablet troches and lozenges?
8. List the lubricants used in tablets.
9. List in-process quality control tests for tablets.
10. Write a note on chewable tablets.
11. List the manufacturing defects of tablets.

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Chapter 3: CAPSULES

SHORT ESSAYS 05 MARKS

1. Give the quality control tests for hard gelatin capsules.
2. Write the filling of hard gelatin capsules.
3. Explain the formulation of hard gelatin capsules.
4. Explain the working of rotary die machine.
5. Explain the different steps involved in the production of hard gelatin capsule shell.
6. Explain in detail extraction of gelatin.
7. Describe briefly the manufacturing of soft gelatin capsules.
8. Write a note on the nature of capsule content in case of soft gelatin capsules.
9. Write a note on formulation of powder in manufacturing of hard gelatin capsules.
10. Explain the nature of the soft gelatin capsule shell.
11. Write a note on stability of capsules.
12. Write on manufacturing of hard gelatin capsules.
13. Write on the nature of hard gelatin capsule shell.

SHORT ANSWERS 02 MARKS

1. Differentiate between hard gelatin and soft gelatin capsules.
2. Give the storage conditions for capsules.
3. List out the finishing techniques of hard gelatin capsules.
4. Write the advantages of soft gelatin capsules.
5. Define base adsorption and minim/gram factor.
6. Write weight variation test for capsules.
7. Write a note on finishing of capsules.
8. What is the role of humidity in the storage of hard gelatin capsules?
9. Mention the difference between type A and type B gelatin.
10. Name the quality control tests for capsules.

11. Give the different sizes of hard gelatin capsules.
12. Define bloom strength and write its importance.
13. Writing the importance of plasticizers in making capsules, give one example.
14. Write the pharmaceutical applications of soft gelatin capsules.
15. Write the role of viscosity in manufacturing of soft gelatin capsules.
16. Write the effect and limit of iron content in soft gelatin capsules shell.
17. Define base adsorption and name the factors influencing it.
18. What is minim/gram factor and give its formula?
19. What is base adsorption and give its formula?
20. Name the packings used for capsules.
21. Name four different shapes of soft gelatin capsules.
22. Give diagrammatic representation of type Agelatin.
23. Give diagrammatic representation of type B gelatin.
24. Name four machines used to fill hard gelatin capsules.
25. Write on the viscosity of liquids to be encapsulated in soft gelatin capsules.
26. Write on the pH of the liquids to be encapsulated in soft gelatin capsules.
27. Name two substances which can’t be a major content in soft gelatin capsules.

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Chapter 4: PARENTERAL PRODUCTS

LONG ESSAYS 10 MARKS

1. Explain the excipients used in the manufacture of parenterals giving their functions and examples.
2. Describe the formulation requirements for the manufacture of parenterals.
3. Classify injections as per USP. Describe parenteral suspensions and parenteral emulsions.
4. Describe in detail the production facilities required to be maintained for parenterals.
5. With a layout, explain the facilities required in production of parenterals.
6. Explain in detail, the production of parenteral products including the facilities and process of production.
7. Explainthe finished product quality control tests conducted on parenterals.
8. How do you design an aseptic area for the manufacturing of parenterals? Explain the role of additives in parenteral products.
9. Describe environmental control and maintenance of environment in parenteral production in detail along with cleaning and sterilization techniques.
10. Explain the importance of air control and the methods to control. Explain the sources of contamination in parenteral production giving the methods to overcome.
11. Explain stabilizers used in parenterals. Highlight the importance of tonicity.
12. Write the specifications and methods of preparation of WFI.Write the importance of non-aqueous vehicles in the formulation of parenterals giving suitable examples.
13. Define pyrogens. What are the sources of pyrogens and methods to eliminate the same
14. Explain the method to determine the presence of pyrogens in parenteral products using animals.
15. Describe LAL testand rabbit method to determine the presence of pyrogens in parenteral products.
16. Explain the methods of sterilization of parenteral products. How is test for sterility performed for injections?
17. Explain the methods of manufacture of sterile dry powder for injection.

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SHORT ANSWERS 02 MARKS

1. In what way small volume parenterals are different from large volume parenterals?
2. What is the difference between Drug injectable suspension (Methylprednisolone acetate suspension USP) and Drug for injectable suspension (Sterile chloramphenicol for suspension)?
3. What is the difference between Drug injection (Ex: Insulin injection USP) and Drug for injection (Ex: Penicillin G potassium for injection)?
4. Classify vehicles used in parenterals.
5. Write a note on types of waters used in parenterals.
6. Classify non-aqueous vehicles used in parenterals.
7. What are the requirements of oily vehicles used in parenterals?
8. What are depot injections?
9. Classify antioxidants used in parenterals.
10. List the preservatives used in parenterals.
11. Why is preservative in general not suitable for ampules unlike multidose vials?
12. What is the use of buffers in parenteral formulation?
13. Name the methods of adjustment of isotonicity.
14. Write the significance of isotonicity in parenteral products.
15. How are isotonic solutions different from paratonic solutions?
16. Name the methods to prepare sterile powders for injection.
17. Name the immediate containers used to supply parenterals.
18. Enumerate the glass containers used to supply parenterals. Suggest corresponding tests to determine their chemical resistance.
19. What is the rationality in conducting water attack test on only on type II glass containers?
20. What is the maximum quantity of injection can be stored in ampule, vial, and infusion bottle?
21. How many maximum number of doses can be present in vials? Compare this with the dose of the ampule.
22. Why is preservative not required in ampules and infusion bottles but required in multidose vials?
23. What are prefilled syringes?
24. What is the composition of rubber?

25. Write the examples of polymers used in the manufacture of rubber closures.
26. What should be the properties of rubber closures?
27. What are the disadvantages of rubber closures?
28. How are rubber closures tested for their quality?
29. Define pyrogens.
30. List two sources of pyrogens. Suggest two methods of eliminating the pyrogens.
31. Write *in vitro* method for testing of pyrogens.
32. What for LAL test is performed? How can the results be interpreted?
33. Compare the advantages of LAL test and rabbit method to determine pyrogens.
34. What is the full form of LAL in LAL test? What is the use of this test?
35. How is leakage test performed for parenterals?
36. How is clarity test performed?
37. What are the different methods of sealing of ampoules?
38. Compare pull sealing technique and tip sealing technique.
39. What are the advantages and disadvantages of pull sealing technique?
40. What are the advantages and disadvantages of tip sealing technique?
41. Name the materials used to coat the walls and floor of aseptic area.
42. How is surface disinfection done in parenterals manufacturing area?
43. What is the full form of HEPA? Write its efficiency.
44. What do you mean by 'class 100' clean area?
45. How is class 100 clean room is different from class 10,000 clean room and class 1,00,000 clean room?
46. What are the materials used to manufacture the uniforms of personnel working in parenterals?
47. If colouring agents are not added in parenteral products, then what is the reason for colour of a few parenteral products?
48. Write the composition of glass used as a material of construction for packaging of parenterals.
49. Write the composition of plastic used as a material of construction for packaging of parenterals.
50. Write the composition of rubber as a material of construction for closures used for packaging

of parenterals.

51. How is rubber evaluated for its quality?
52. Explain powder glass test for glass containers used for packaging of parenterals.
53. Explain water attack test for glass containers used for packaging of parenterals.
54. Explain evaluation of plastic used as a material of construction for packaging of parenterals.
55. What are primary packaging materials of parenteral dosage forms? Give examples.
56. Write the merits and demerits of glass as a packaging material for parenterals.

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Chapter 5: OPHTHALMIC FORMULATIONS (SEMI SOLIDS)

SHORT ESSAYS 05 MARKS

1. Write a note on containers for ophthalmic preparations
2. Discuss the formulation of an eye ointment.
3. Write a note on evaluation of an eye ointment.
4. Write a note on evaluation of eye drops.
5. Describe formulation of ophthalmic gels.
6. Describe formulation of ophthalmic suspensions.
7. Explain the formulation of eye drops
8. Explain the manufacturing of ophthalmic ointment
9. Explain the requirements for the ophthalmic preparations

SHORT ANSWERS 02 MARKS

1. Write the ideal requirements of ophthalmic suspension
2. Advantages of ophthalmic
3. Role of viscosity modifiers in ophthalmic
4. Importance of sterilization for ophthalmic dosage forms.
5. Stabilizing agents used in eye drops
6. Name the any four preservatives used in ophthalmic.
7. Name any four preservatives used in ophthalmic preparations
8. Name sterilization methods for eye ointment

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Chapter 6: LIQUID ORALS

SHORT ESSAYS 05 MARKS

1. Describe various methods used for improving the solubility of poorly water soluble drugs.
2. Explain the factors influencing solubility of drugs, while preparing liquid orals.
3. Explain the approaches for enhancing aqueous solubility of poorly soluble drugs.
4. Write on formulation of oral liquid dosage forms.
5. Explain in detail various instability conditions of emulsions and its stabilization methods.
6. Give an account of additives used in formulation of oral liquids.
7. Explain the various methods used for filling of liquid orals.
8. Write the various methods used for evaluation of emulsions.
9. Explain evaluation 4 of suspensions.
10. Write on stabilization of suspensions.

SHORT ANSWERS 02 MARKS

1. Give examples of two anti-oxidants and preservatives used in liquid orals.
2. What is co-solvency? Give two examples of two co-solvents.
3. Define creaming and cracking.
4. What is sedimentation volume?
5. Write on self-preservation of syrups.
6. Write the method of preparation of purified water I.P.
7. Write two advantages and disadvantages of liquid orals.
8. Define micellar solubilization
9. Write any two approved dyes and flavors in liquid orals.
10. Write the significance of viscosity in liquid orals.
11. Write the advantages of constant level filling mechanism.
12. Write the importance of overages in vitamin formulations.
13. Name any instrument/ technique used to test any two physical changes in liquid orals.
14. How is the problem with foam formation minimized in liquid products?
15. Enlist the types of ingredients used for suspensions.
16. Classify preservatives with examples.

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Chapter 7: NOVEL DRUG DELIVERY SYSTEMS

SHORT ESSAYS 05 MARKS

1. Write on concepts of novel drug delivery systems.
2. Explain various approaches used in rate pre-programmed drug delivery systems.
3. Explain various physicochemical factors to be considered in designing controlled drug delivery systems.
4. Explain various biological factors to be considered in designing controlled drug delivery systems.
5. Write various approaches used in parentral controlled drug delivery system.
6. Write the various formulation approaches used in transdermal drug delivery systems.
7. Write the advantages and disadvantages of transdermal drug delivery systems.
8. Write a note on components in transdermal patches.
9. Write a note on implants.
10. Write on membrane permeation controlled drug delivery systems with examples.
11. Write a note on site targeted drug delivery systems.
12. Write a note on ocusert.

SHORT ANSWERS 02 MARKS

1. Give 4 advantages of buccal drug delivery.
2. Give 2 formulation approaches in buccal drug delivery.
3. What are targeted drug delivery systems?
4. What do you mean by first order targeting? Give an example.
5. Give examples of two marketed transdermal patches.
6. Compare plasma conc. time profile of controlled drug delivery systems with conventional dosage forms.
7. Enlist various components of TDDS.
8. Write any two applications of nasal drug delivery systems.

9. Give 4 examples of mucoadhesive polymers.
10. What is ocusert?
11. What are liposomes?
12. Give 2 examples of drug delivery systems prepared by matrix diffusion controlled approach.
13. What is osmotic pump?
14. Define nanoparticles.

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**.