



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

QUESTION BANK
M Pharmacy
PHARMACOLOGY
Semester-I



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Modern Pharmaceutical Analytical Techniques

LONG ESSAYS 7.5 MARKS

UNIT-I UV, IR, Fluorimetry

1. Describe and derive the equation for Beer's – Lambert's law. Add a note on deviations and limitations of Beer's law.
2. Explain the principle, instrumentation and applications of UV-Visible spectroscopy.
3. Draw a neat labelled diagram of double beam UV-Visible spectrophotometer and explain the working principle of monochromators and any two detectors.
4. Explain the working of double beam UV-Visible spectrophotometer with the help of neat labelled diagram.
5. Discuss the principle, theory of IR spectroscopy and give its applications.
6. Draw a neat labelled instrumentation layout of IR spectrophotometer and explain the sample handling techniques in IR.
7. Discuss the different sources of radiations & detectors used in IR spectroscopy.
8. Describe the detectors of an IR spectrometer.

UNIT-II NMR spectroscopy

9. Explain in detail the theory and instrumentation of NMR spectroscopy.
10. Explain in detail the principle of NMR spectrometer and explain chemical shift and factors affecting chemical shift.
11. Outline the salient features of NMR spectroscopy which are used in structural elucidation.
12. Discuss chemical shift and its utilization in NMR spectroscopy.

UNIT-III Mass spectroscopy

13. Fragmentation rules used in mass spectroscopy.
14. Explain in detail the theory and instrumentation of Mass spectroscopy.
15. Explain the theory of mass spectroscopy and add a note on matrix assisted laser desorption ionization mass spectroscopy.

UNIT-IV Chromatography

16. Define and classify chromatography with suitable examples.
17. Explain the principle and practical steps involved in TLC for separation of components.
18. Explain the PRINCIPLE and different types of paper chromatography for separation of components
19. Explain the factors affecting efficiency of column in chromatography. Explain the packing method of adsorbent in column chromatography with their merits and demerits.
20. Draw a neat schematic diagram of GC. Explain about columns used in GC
21. Explain the instrumentation of HPLC with block diagram. Explain about the various detectors used in HPLC
22. Describe in brief the principle, instrumentation and applications of gas chromatography.
23. Enlist the Detectors and sample injection techniques used in Gas Chromatography & explain in detail each of two.
24. Explain the instrumentation of HPLC with neat diagram with more emphasis on pumps and detectors used.

Advanced Pharmacology-1

LONG ESSAYS 7.5 MARKS

1. Classify anti-hypertensive with examples. Describe the pharmacotherapy of hypertension and write the mechanism of action of beta blockers.
2. Explain the steps involved in neurohumoral transmission in central nervous system. Add a note on any one neurotransmitter of CNS
3. Define and classify sedatives and hypnotics with examples. Write the pharmacology of Barbiturates..
4. Write the physiological and pathological role of kinins.
5. Explain the extra pyramidal side effect of antipsychotic drug.
6. Write the uses of anti-platelet drugs and give two examples
7. Classify H1 blockers and write the uses and adverse effects of Ranitidine.
8. Explain the role of diuretic as antihypertensive therapy.
9. Discuss the mechanism of action of succinyl choline.
10. Explain the physiological role of serotonin in brain.
11. Write note on drug receptor interaction.
12. Write the uses and adverse effects of Phenytoin. Explain the molecular structure and signal transduction of G-protein coupled receptors through second messenger
13. Plasma half life and its significance.
14. Write a short note on Mania
15. Write a note on Serotonin
16. Define Biotransformation Explain Phase 1 and Phase 11 Reactions in detail
17. Classify Antiepileptics . Explain at least one drug from each class in detail
18. Classify Antihypertensives Explain one drug from each category
19. Explain in detail the pharmacology of Antihistamine.
20. Explain in Detail the Excretion of Drugs

Pharmacological Toxicological Screening Methods– I

LONG ESSAY 7.5 MARKS

1. Explain the importance of transgenic animals in pharmacological screening with suitable example.
2. Explain the importance of bioassay.
3. Write in detail note on Good Laboratory Practice.
4. Explain in brief behavioral study in preclinical screening.
5. Breeding techniques of Laboratory animals
6. Brief out CPCSEA guidelines to conduct experiments on animals
7. Define the term Bioassay ?
8. Write the Principle involved in Bioassay?
9. Explain merits & De-merits of Bioassay?
10. Enlist models for screening of muscle coordination activity. Explain in detail about rod apparatus.
11. Enlist the models for screening of CNS stimulant activity. Write a note on photo actometer.
12. Enlists and describe various screening techniques used for evaluation of Anti-Parkin drugs.
13. Enlist the various in-vivo and invitro anti asthmatic screening methods. Explain a model of asthma in detail.
14. Write a note on orientation behavior in screening of aphrodisiac activity.
15. Discuss in-vivo methods for evaluation of analgesic activity.
16. Enlist different methods for screening of diuretic activity. Write a note on metabolic cages.
17. Write a note on methods used for evaluation of anti-inflammatory activity.

18. Enlist various methods to induce hyperlipidemia. Explain the importance of high diet in pharmacological screening process.
19. Explain different vitro models for screening of anticancer activity.
20. Explain any one screening models for immunopharmacological activity.
21. Enlist different models for induction of type 2 diabetes mellitus. Explain invivo me in detail.
22. Write a note on Lagendorff heart preparation.
23. Explain in brief alternative animal experimentation techniques.
24. To which of the purposes FISH technique is used (Florescence insitu hybridization)
25. What are the principles of Gene therapy?
26. Write a short notes on a) Western blotting technique b) ELISA techniques
27. What is Principle and procedure for testing the sample substances by PCR (re transcription and real time).
28. Define the term gene sequencing? What are its applications
29. What are the basic principle involved in DNA recombinant technology?
30. Write a short note on a) Restriction enzymes b) Applications of DNA recomb technology.
31. Discuss in detail about Genetic variation and its role in health
32. Explain the role of pharmacogenomics in personalized medicine. How can ge variations influence drug response and therapy outcomes?
33. Discuss the concept of single nucleotide polymorphisms (SNPs) in pharmacogeno. How are SNPs identified and utilized in predicting drug efficacy and toxicity?
34. Describe the process of positional cloning. What are the key steps involved in identi and cloning a disease gene using this technique?
35. Explain the methods used in linkage analysis for mapping disease genes. Ho researchers use genetic markers and family studies to locate genes associated inherited disorders?



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Cellular and Molecular Pharmacology

LONG ESSAYS 7.5 MARKS

1. Explain the phases of cell cycle and explain how G/S cell cycle transition is regulated
2. Explain the differences between
 - a) siRNA and miRNA
 - b) Necrosis and apoptosis
3. Explain Tyrosine kinase signalling pathway with suitable example.
4. Classify nuclear receptors with examples and explain activation pathway of any one.
5. Explain the principle, procedure and applications of DNA microarray technique.
6. What is gene therapy? Enumerate various methods used in gene therapy and explain the clinical applications of limitation.
7. Enumerate the different methods of gene cloning, explain the principle and procedure involved in-vitro gene cloning method.
8. Explain the types of immune therapeutics and their applications in clinical practice
9. Explain the principles, applications of glucose uptake assay and calcium influx assay
10. Mention different types of cell culture media and cell lines along with the maintenance of cell lines.
11. Discuss the various phases of cell cycle with neat diagram . Explain the roles of positive and negative regulators of cell cycle.
12. With suitable examples explain the signal transduction pathways which involves CAMP leading to (a) muscle contraction (b) smooth muscle relaxation (c) transcription of genes.
13. Describe the various types of gene transfer techniques. Explain the clinical applications and mention the recent advances in gene therapy
14. what is polymorphism of receptors? Write a note on genetic variation in G-protein couple receptors and its effect.
15. With a neat diagram explain hydrodynamic focusing of cell. With relevant diagram explain me principles involved in different applications of flow cytometric in apoptosis assay
16. what are biosimilars? Explain the opportunities and challenges of biosimilar in drug development?

17. Enlist five cell viability assays, explain in brief any one procedure. Describe the applications.
18. With a neat labelled diagram explain the fluid mosaic model of human cell.
19. Discuss the immunotherapeutic approaches to treat cancer.
20. Outline the steps and process involved in western blotting to identify the expression of a protein in a cell lysate. What is housekeeping gene give example?
21. Explain the intrinsic and extrinsic pathway of apoptosis. Write any one method for apoptosis
22. what are the principles involved in recombinant DNA technology?
23. what are basic equipment used in cell culture lab. Discuss their role and applications.
24. Explain the role of calcium ions, inositol and as secondary messengers.
25. Explain the salient features of various vectors in gene therapy
26. Write a note on RT-PCR techniques and its applications
27. Explain the principles and applications of MTT assay
28. How do biosimillars differ from biological and their applications?
29. Explain the MAPK signalling pathway
30. Explain the principles and applications of flow cytometry.
31. List out the applications of metabolomics and genomics in Pharmacogenomics.
32. write a note on micro array techniques in molecular pharmacology and its applications.
33. write a note on cloning of disease gene.
34. Discuss various types of cell cultures
35. Explain the JAK/STAT signalling pathway.



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.**