Code No. H-8060/PCI

# FACULTY OF PHARMACY

**M. Pharmacy (PCI) - Pharmaceutical Chemistry/Pharmaceutics/Pharmacology /Pharmaceutical Analysis/Ph.Quality Assurance**
**I - Semester (Backlog) Examination, December 2025**
**(Common paper for all Streams)**

**Subject: Modern Pharmaceutical Analytical Techniques**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1. (a) State and Explain Beer- Lambert's law. Add a note on the deviations from Beer's law.
   (b) Explain the principle of flame photometry (7+8 Marks)
2. (a) Explain the sampling techniques in IR spectroscopy.
   (b) List and explain the IR detectors. (7+8 Marks)
3. (a) Define chemical shift. What are the factors affecting chemical shift?
   (b) Explain the spin-spin coupling in NMR spectroscopy with suitable example. (7+8 Marks)
4. What is the principle of MS? With a neat labelled diagram briefly explain the components of MS instrumentation. (15 Marks)
5. Explain the principle, instrumentation and application of capillary electrophoresis giving a neat labelled diagram. (15 Marks)
6. (a) Explain Bragg's equation and derive the equation.
   (b) List and explain the different **methods** used for X-ray diffraction studies. (7+8 Marks)
7. (a) What is the principles of Fluorescence? Add a note on the factors affecting fluorescence and quenchers in fluorescence.
   (b) What are the applications of AAS? (9+6 Marks)
8. (a) Explain the principle and instrumentation of HPLC.
   (b) List and explain any 3 GC detectors. (7+8 Marks)

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OU - 1702 OU - 1702

Code No: H-8067/PCI

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I - Semester (PCI) (Backlog) Examination, Dec. 2025**

**Subject: Advanced Pharmacology - I**

**Time: 3 hours** **Max. Marks: 75**

**Note: Answer any Five Questions** **(5x15=75)**

1. a) Discuss the physiological role of dopamine transmission in CNS.
   b) Explain in brief about morphine. (8+7 Marks)

2. a) Discuss the pharmacology of acetyl choline.
   b) Write the physiological role of G-protein coupled receptors (7+8 Marks)

3. a) Classify anti-adrenergic drugs. Write the pharmacology of propranolol.
   b) Write the physiological role of nuclear receptors. (8+7 Marks)

4. a) Explain in brief about linear and nonlinear pharmacokinetic.
   b) Write a note on d-Tubocurarine. (8+7 Marks)

5. a) Explain the pharmacology of heparin.
   b) Write a note on HMG-COA reductase inhibitors. (8+7 Marks)

6. a) Write about the pathophysiology of hyperlipidaemia and drugs used in this condition.
   b) Write a note on digoxin. (8+7 Marks)

7. a) Classify antipsychotics. Write the pharmacology of haloperidol. (8+7 Marks)
   b) Explain the MOA, therapeutic uses and adverse effects of ondansetron.

8. a) Classify antiepileptic agents. Write the pharmacology of phenytoin.
   b) Write a note on 5-HTantagonists. (10+5 Marks)

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OU - 1702 OU - 1702

**Code No: H-8069/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Backlog)**
**Examination, December 2025**

**Subject: Cellular and Molecular Pharmacology**

**Time: 3 Hours** **Max Marks: 75**

**Note: Answer any Five questions** **(5 x 15 = 75 Marks)**

1. (a) Define Cell biology. Write a note on structure and function of cell and its organelles. [9M]
   (b) Explain how cell cycle will be regulated. [6M]

2. (a) Define cell signalling. Write a note on G-protein coupled receptors. [10M]
   (b) Write briefly about cyclic AMP signalling pathway. [5M]

3. (a) Explain in detail Cyclic- AMP, Cyclic-GMP, IP3 and NO. [10M]
   (b) Explain in detail JAK and STAT signalling pathways. [5M]

4. (a) Write a note on principle and applications of genomic tools. [7M]
   (b) Explain principle and application of DNA electrophoresis. [8M]

5. (a) Explain recombinant DNA technology. [8M]
   (b) Define pharmacogenomics. Add a note on application of genomics & nutrigenomics. [7M]

6. What are the various types of immunotherapeutic? Discuss its uses in clinical practices. [15M]

7. (a) Define cell culture media. Add a note on various types of cell culture. [8M]
   (b) What are the basic equipment used in cell culture lab. [7M]

8. (a) Explain the principle and applications of flow cytometry. [10M]
   (b) Write the significance of biosimilars. [5M]

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OU - 1702 OU - 1702

**Code No: H-8068/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I - Semester (PCI) (Backlog)**
**Examination, December 2025**

**Subject: Pharmacological and Toxicological Screening Methods - I**

**Time: 3 hours** **Max. Marks: 75**

**Note: Answer any Five questions** **(5 x 15 = 75 Marks)**

1. a) Write a note on production and maintenance transgenic animals. (7 Marks)
   b) Describe about the good laboratory practice (8 Marks)

2. a) Write any two screening methods for CNS depressants. (8 Marks)
   b) Write a note on writhing test. (7 Marks)

3. a) Write any four screening methods for antifertility agents. (12 Marks)
   b) Write a note on pylorus ligation method. (03 Marks)

4. a) Explain any four screening methods for hepatoprotective agents. (12 Marks)
   b) Write a note on MTT assay. (03 Marks)

5. a) Write any two screening methods for anti-arrhythmic agents. (8 Marks)
   b) Write a note on Immunoassay. (7 Marks)

6. a) Explain in brief about Rota rod test and acto-photometer test. (8 Marks)
   b) Write a note on MES induced epilepsy. (7 Marks)

7. a) Explain any two screening methods for anti-Psychotics. (8 Marks)
   b) Explain the limitations of animal experimentations. (7 Marks)

8. a) Explain about the CPCSEA guideline for to conduct experiments on animals. (10 Marks)
   b) Write a note on receptor screen. (5 Marks)

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OU - 1702 OU - 1702

**Code No. G-13122/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (PCI) I – Semester (Main & Backlog) Examination, June 2025**
**Subject: Modern Pharmaceutical Analytical Techniques**
**(Common to All)**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1. (a) Write Beer –Lambert's law and explain the deviations to it. (7 Marks)
   (b) Explain the instrumentation of FTIR. (8 Marks)

2. (a) Write principle involved in proton NMR spectroscopy. Discuss on chemical shift (7 Marks)
   (b) Explain the instrumentation of NMR with labelled schematic diagram. (8 Marks)

3. (a) Discuss about different ionization techniques of mass spectroscopy. (7 Marks)
   (b) Brief out the fragmentation patterns and rules of different organic compounds. (8 Marks)

4. (a) Write instrumentation details of HPLC with labelled schematic diagram. (10 Marks)
   (b) Differentiate between HPTLC and HPLC. (5 Marks)

5. (a) Explain about gel electrophoresis. (8 Marks)
   (b) What is X-ray crystallography? Write Brag's law. (7 Marks)

6. Write notes on
   (a) Sampling in IR spectroscopy
   (b) FT-NMR. (2 x 7.5 = 15 Marks)

7. Give informative note on
   (a) Flame emission spectroscopy
   (b) Gas chromatography (2 x 7.5 = 15 Marks)

8. (a) Explain the instrumentation of UV-Visible spectrophotometer. (10 Marks)
   (b) Write about any one X-ray crystallographic method. (5 Marks)

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OU - 1702 OU - 1702

**Code No: G-13137/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I - Semester (PCI) (Main & Backlog) Examination, June 2025**
**Subject: Advanced Pharmacology-I**

**Time: 3 Hours** **Max. Marks:75**

**Note: Answer Any Five Questions. All Questions Carry Equal Marks**

1. a) Write a note on drug excretion process. (8 Marks)
   b) Describe in detail about enzyme linked receptors. (7 Marks)

2. a) Write a note on passive and active transport of drug absorption. (8 Marks)
   b) Write a note on linear pharmacokinetics. (7 Marks)

3. a) Discuss the steps involved in neurotransmission. (8 Marks)
   b) Explain in brief about role of histamine transmission in CNS. (7 Marks)

4. a) Discuss the pharmacology of adrenaline. (8 Marks)
   b) Write a note on cholinesterase inhibitors. (7 Marks)

5. a) Describe the pharmacology of morphine. (8 Marks)
   b) Describe the pharmacology of chlorpromazine. (7 Marks)

6. a) Describe the pharmacology of benzodiazepines. (8 Marks)
   b) Classify antihypertensive agents. Write the pharmacology of ACE inhibitors. (7 Marks)

7. a) Describe the pharmacology of digoxin. (8 Marks)
   b) classify anti-hyperlipidemics. Write a note on HMG- COA reductase inhibitors. (7 Marks)

8. a) Explain the pharmacology of anti-histamines. (8 Marks)
   b) Write a note on 5-HT antagonists. (7 Marks)

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OU - 1702 OU - 1702

**Code No: G-13139/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I - Semester (PCI) (Main & Backlog) Examination, June 2025**

**Subject: Cellular and Molecular Pharmacology**

**Time: 3 Hours** **Max Marks: 75**

**Note: Answer any five Questions. All Questions carry equal marks.**

1. (a) Write a note on gene mapping. [8 Marks]
   (b) Describe about cell structure and their functions. [7 Marks]

2. (a) Write the physiological role of enzyme linked receptors. [8 Marks]
   (b) Write a note on cAMP and NO. [7 Marks]

3. (a) Write the structure and functions of nuclear receptors. [8 Marks]
   (b) Write a note on AMP signaling pathway. [7 Marks]

4. (a) Explain about the SDS page and ELISA. [8 Marks]
   (b) Write a note on micro array technique. [7 Marks]

5. (a) Write the clinical uses of immunotherapeutics. [8 Marks]
   (b) Write a note on genetic variations in drug metabolism. [7 Marks]

6. (a) Explain in brief about metabolomics and nutrigenomics. [8 Marks]
   (b) Write a note on cell viability assays. [7 Marks]

7. (a) Explain about principle and applications RT-PCR. [8 Marks]
   (b) Write a note on siRNA and microRNA. [7 Marks]

8. (a) Explain about the glucose uptake assay and calcium influx assay. [8 Marks]
   (b) Write a note on genetic variations in G-protein coupled receptors. [7 Marks]

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OU - 1702 OU - 1702

**Code No. G-13138/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (PCI) I - Semester (Pharmacology) (Main & Backlog) Examination, June 2025**

**Subject: Pharmacological and Toxicological Screening Methods – I**

**Time: 3 Hours** **Max.Marks:75**

**Note: Answer any five questions. All questions carry equal marks.**

1) a) Describe the production and applications of transgenic animals. (8 Marks)
   b) Discuss briefly about the physical euthanasia techniques of experimental animals.(7 Marks)

2) Define Parkinsonism. Enlist the models available to screen drugs used for the treatment of Parkinsonism and explain any two methods. (15 Marks)

3) Describe the screening methods to evaluate a compound for (8 Marks)
   a) Antiulcer activity (7 Marks)
   b) Anti-inflammatory activity

4) Discuss the *in vitro* and *in vivo* techniques for screening of anticancer agents. (15 Marks)

5) Enlist the various screening models of immunomodulators. Explain any two methods in detail. (15 Marks)

6) Write short notes on:
   a) Immunoassay of insulin (7 Marks)
   b) Alternate animal experiments (8 Marks)

7) What is Diabetes? List out the methods available for induction of diabetes experimentally. Discuss streptozotocin induced method for the screening of antidiabetic agents. (15 Marks)

8) Describe the preclinical screening procedures for the following:
   a) Antiasthmatic agents (8 Marks)
   b) Anxiolytics (7 Marks)

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OU - 1702 OU - 1702

Code No : G-13001/PCI

# FACULTY OF PHARMACY

## M. Pharmacy I-Semester (PCI) (Common to All) (Backlog) Examination, December 2024

### Subject: Modern Pharmaceutical Analytical Techniques

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any Five questions. All questions carry equal marks.**

1. (a) State and explain Beer-Lambert's law. Add a note on the deviations from Beer's law. 9
   (b) Explain the electronic transitions in UV spectroscopy. 6

2. Explain the principle, sample handling techniques and any three 3 detectors of IR spectroscopy. 2+5+8

3. Explain the principle, working of Hallow cathode lamp, any three Interferences with remedy and Applications of Atomic Absorption Spectroscopy. 2+5+5+3

4. (a) What is the significance of chemical shift? What are the factors affecting chemical shift? 8
   (b) Write a note on spin-spin coupling, coupling constant and its Importance. 7

5. (a) Write different modes of fragmentation and fragmentation rules in Mass Spectroscopy. 9
   (b) Define Base peak, molecular ion peak and metastable ion. 6

6. (a) Write the principle and instrumentation of Capillary electrophoresis. 8
   (b) Write the principle and Instrumentation of Gel Electrophoresis. 7

7. (a) Define Braggs law and its importance. 5
   (b) Write in detail about rotating crystal technique and the applications of X-ray Diffraction. 10

8. Discuss the principle, instrumentation, working and application of 8+7
   (a) Affinity Chromatography
   (b) Gel Chromatography

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OU - 1702 OU - 1702

**Code No: G-13008/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I – Semester (PCI) (Backlog) Examination, December 2024**

**Subject: Advanced Pharmacology - I**

**Time: 3 Hours** **Max.Marks:75**

**Note: Answer any five questions. All questions carry equal marks.**

1. (a) Explain in brief about phase-1 metabolism and protein binding. [8]
   (b) Write the physiological role of enzyme linked receptors. [7]

2. (a) Discuss the pharmacology of atropine. [7]
   (b) Explain in brief about pharmacology of morphine. [8]

3. (a) Discuss the steps involved in neurotransmission. [8]
   (b) Write a note on d-Tubocurarine. [7]

4. (a) Explain in brief about linear and nonlinear pharmacokinetic. [8]
   (b) Write the physiological role of nuclear receptors. [7]

5. (a) Explain about the haematinics. [10]
   (b) Write a note on 5-HTantagonists. [5]

6. (a) Classify diuretics and write the pharmacology of spironolactone. [8]
   (b) Write a note on digoxin. [7]

7. (a) Explain the pharmacology of heparin. [8]
   (b) Write a note on HMG-COA reductase inhibitors. [7]

8. (a) Describe the pharmacology of chlorpromazine. [8]
   (b) Explain about the pathological role of prostaglandins and opioid autacoids. [7]

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OU - 1702 OU - 1702

**Code No. G-13010/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I – Semester (PCI) (Backlog) Examination, December 2024**

**Subject: Cellular and Molecular Pharmacology**

**Time: 3 Hours** **Max.Marks:75**

**Note: Answer any five questions. All questions carry equal marks.**

1. (a) Write about a Genome organization. Add a note on gene expression and its regulation. [9M]
   (b) Importance of cell cycle and its regulation. [6M]

2. (a) Write a note on tyrosine kinase receptors and nuclear receptors. [10M]
   (b) Write briefly about gene mapping-&-Gene sequencing. [5M]

3. (a) Explain in detail various types of gene transfer techniques with its clinical application.
   (b) Write about recent advances in gene therapy. [15M]

4. (a) Write the application of DNA electrophoresis. [7M]
   (b) Explain in detail principle and applications of recombinant DNA technology. [8M]

5. (a) Discuss the importance of PCR & Western blotting in pharmacy. [8M]
   (b) Discuss the importance of ELISA & nutrigenomics in pharmacy. [7M]

6. (a) What are the various types of immunotherapeutic. [8M]
   (b) Write a descriptive note on gene sequencing and micro array technique. [7M]

7. (a) Explain various techniques used for isolation of animal cells. [8M]
   (b) Discuss the principle and application of cell viability assay. [7M]

8. (a) Discuss the principle and application of flow cytometry. [10M]
   (b) Write a note on glucose uptake assay. [5M]

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OU - 1702 OU - 1702

**Code No: G-13009/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Backlog) Examination, December 2024**

**Subject: Pharmacological and Toxicological Screening Methods-I**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions.** **(5 x 15 = 75 Marks)**

1. (a) Write the composition and functions of IAEC. (7)
   (b) Describe the maintenance and breeding of laboratory animals. (8)

2. (a) Write any two screening methods for CNS stimulants. (8)
   (b) Write a note on pole climb test and elevated plus maze test. (7)

3. (a) Write any four screening methods for anti-depressants. (12)
   (b) Write a note on writhing test. (3)

4. (a) Explain any three screening methods for anti-diabetic agents. (12)
   (b) Write a note on animal model for CCL4 induced hepatotoxicity. (3)

5. (a) Write any two screening methods for immune-suppressants. (8)
   (b) Write a note on limitations of animal experimentations. (7)

6. (a) Explain any two screening methods for diuretics. (8)
   (b) Write the immune-assay of insulin. (7)

7. (a) Describe any two screening methods for anti-Parkinson's agents. (8)
   (b) Explain the extrapolation of preclinical data to humans. (7)

8. (a) Explain about the in-vitro and in-vivo screening methods for anti-cancer agents. (10)
   (b) Write a note on PTZ induced epilepsy. (5)

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OU - 1702 OU - 1702

Code No: F-7239/PCI

# FACULTY OF PHARMACY

**M. Pharmacy I - Semester (PCI) (Common to All) (Main & Backlog) Examination, June 2024**

**Subject: Modern Pharmaceutical Analytical Techniques**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any Five questions. All questions carry equal marks.**

1. (a) Explain different methods of single component and Multicomponent analysis of Pharmaceutical formulation by UV-Visible Spectroscopy. [9]
   (b) Explain the electronic transitions in UV spectroscopy. [6]

2. (a) Explain the molecular vibrations in IR. [8]
   (b) Write the sampling methods in IR spectroscopy. [7]

3. (a) Explain the principle of fluorescence. Add a note on quenching effect.
   (b) With a diagram explain the instrumentation for AAS. [8+7]

4. (a) Explain the principle and Instrumentation of NMR Spectroscopy. [8]
   (b) Write a note on spin-spin coupling and Applications of NMR [7]

5. (a) Classify the ionization techniques in MS. Explain any three methods in detail. [9]
   (b) Define Base peak, molecular ion peak and metastable ion. [6]

6. (a) Write the principle and instrumentation of flame photometry. [7]
   (b) Write notes on any two GC detectors with a neat labeled diagram. [8]

7. (a) Briefly explain the source of AA. [8]
   (b) List and explain the interferences. [7]

8. Discuss the principle, instrumentation working and application of [7+8]
   (a) Paper electrophoresis
   (b) Gel electrophoresis

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OU - 1702 OU - 1702

**Code No: F-7248/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I – Semester (PCI) (Main & Backlog) Examination, June 2024**

**Subject: Cellular and Molecular Pharmacology**

**Time: 3 Hours** **Max.Marks:75**

**Note: Answer any five questions. All questions carry equal marks.**

1. (a) Explain in detail various cell organelles with neat labelled diagram.
   (b) Write a note on apoptosis.

2. (a) Define. Cell signaling. Write a note on tyrosine kinase receptors.
   (b) Write a brief note on secondary messengers.

3. (a) Write a note on IP3 and NO secondary messengers.
   (b) Enlist various gene transfer techniques with their applications.

4. (a) Write a note on principle and applications of genomic tools.
   (b) Explain in detail principle and applications of micro array.

5. (a) Discuss the principle and applications of ELISA and western blotting.
   (b) Give the applications of metabolomics and nutrigenomics.

6. Write a descriptive note on immunotherapeutics with its clinical application.

7. (a) Explain various techniques used for isolation of animal cells.
   (b) Write a note on various types of culture media used in cell culture.

8. (a) Explain principle and applications of flow cytometry.
   (b) Write a note on biosimiliars and glucose uptake assay.

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OU - 1702 OU - 1702

**Code No: F-7247/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I - Semester (PCI) (Main & Backlog) Examination, June 2024**

**Subject: Pharmacological and Toxicological Screening Methods-I**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions.** **(5 x 15 = 75 Marks)**

1. (a) Write a note on common laboratory animals. (7)
   (b) Describe the production and applications transgenic animals. (8)

2. (a) Write any two screening methods for muscle relaxants. (8)
   (b) Write a note on active and passive avoidance test. (7)

3. (a) Write any three screening methods for analgesics. (12)
   (b) Write a note on pylorus ligation method. (3)

4. (a) Explain any three screening methods for anti-hypertensive agents. (12)
   (b) Write a note on MTT assay. (3)

5. (a) Write any two screening methods for immune-stimulants. (8)
   (b) Write a note on immune assay. (7)

6. (a) Explain in brief about GLP. (8)
   (b) Write a note on Rota rod test and swim despair test. (7)

7. (a) Describe the types of bioassay. (8)
   (b) Explain the alternative to animal experiments in drug discovery. (7)

8. (a) Explain about the CPCSEA (CCSEA) guideline. (10)
   (b) Write a note on MES induced epilepsy. (5)

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OU - 1702 OU - 1702

**Code No: F-7246/PCI**

# FACULTY OF PHARMACY

## M. Pharmacy (Pharmacology) I – Semester (PCI) (Main & Backlog) Examination, June 2024

## Subject: Advanced Pharmacology - I

**Time: 3 Hours** **Max.Marks:75**

**Note: Answer any five questions. All questions carry equal marks.**

1. (a) Discuss the pharmacology of acetylcholine. [8]
   (b) Explain in brief about GABA receptors. [7]

2. (a) Write a note on passive and active transport of drug absorption. [8]
   (b) Describe in detail about G-Protein Coupled Receptors. [7]

3. (a) Explain the significance of drug protein binding. [8]
   (b) Explain in brief about Non Adrenergic and Non Cholingeric (NANC). [7]

4. (a) Classify antihypertensive agents. Write the pharmacology of propranolol. [8]
   (b) Write a note on heparin and clopidogrel. [7]

5. (a) Explain the pharmacology of serotonin. [8]
   (b) Write a note on antihistamines. [7]

6. (a) Write a note on prostacycline and kinins. [8]
   (b) Explain the MOA, therapeutic uses and adverse effects of ondansetron. [7]

7. (a) Classify general anaesthetics. Write the pharmacology of halothane. [8]
   (b) Write a note on COMT inhibitors and atypical antipsychotics. [7]

8. (a) Explain the pharmacotherapy for heart failure. [8]
   (b) Write about the pathophysiology of hyperlipidaemia and drugs used in this condition. [7]

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OU - 1702 OU - 1702

**Code No: E-12421/PCI**

# FACULTY OF PHARMACY

**M.Pharmacy I-Semester (PCI) (Common to all) (Backlog) Examination, November-2023**

**Subject: Modern Pharmaceutical Analytical Techniques**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any Five Questions. All Questions carry Equal marks.**

1. a) Explain the electronic transitions with suitable examples
   b) State and explain Beer- Lambert's law. Add a note on the deviations from Beer's law. (6+9)

2. a) Explain the sampling techniques in IR spectroscopy.
   b) What are the applications of IR spectroscopy (9+6)

3. a) What is the principles of flame photometrty? Explain the instrumentation.
   b) What are the factors affecting fluorescence? (9+6)

4. a) Explain chemical shift and the factors affecting chemical shift ?
   b) Draw a schematic NMR spectrum and explain splitting $\alpha$ signal intensity. (10+5)

5. With a neat labelled diagram, explain MS instrumentation. Draw MS spectrum for any two compounds $\alpha$ explain its peaks.

6. a) Classify the ionization techniques in MS. Explain any three methods in detail.
   b) Explain the fragmentation rules in MS. (9+6)

7. a) Explain HPLC instrumentation with a labelled diagram.
   b) Explain the factors affecting resolution & peak symmetry. (8+7)

8. a) Explain the principle and applications of capillary electrophoresis
   b) Classify the types of crystals and add a note on the applications of X-ray diffraction. (8+7)

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OU - 1702 OU - 1702

**Code No: E-12430/PCI**

# FACULTY OF PHARMACY

## M. Pharmacy (Pharmacology) I Semester (PCI) (Backlog) Examination, November 2023

## Subject: Cellular and Molecular Pharmacology

**Time: 3 Hours** **Max.Marks:75**

**Note: Answer any five questions. All questions carry equal marks.**

1. (a) Discuss about tissue necrosis and autophagy.
   (b) Explain how cell cycle will be regulated.

2. (a) Write a descriptive note on G protein coupled receptors.
   (b) Write a brief note on Cyclic AMP signaling pathway.

3. (a) Write a note on JAK and STAT signaling pathway.
   (b) Enlist various gene transfer techniques with its applications.

4. (a) Write a note on principle and applications of genomic tools.
   (b) Explain in detail principle and applications of recombinant DNA technology.

5. (a) Discuss the principle and applications of PCR and DNA electrophoresis.
   (b) Give the applications of metabolomics and nutrigenomics.

6. Write a descriptive note on immunotherapeutic with its significance in clinical practice.

7. (a) Write a note on glucose uptake and calcium influx assay.
   (b) Write a note on various types of cell culture techniques.

8. (a) Explain principle and applications of flow cytometry.
   (b) Write a note on biosimiliars and cryopreservation.

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OU - 1702 OU - 1702

**Code No: E-12429/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I Semester (PCI) (Backlog) Examination, November 2023**

**Subject: Pharmacological and Toxicological Screening Methods - I**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1. a) Describe in detail about regulations for laboratory animal care as per CPCSEA guidelines. [10]
   b) Discuss the principle and applications of bioassay [5]

2. List out and explain in detail any two screening methods of following classes of drugs:
   a) Anxiolytics [7]
   b) Drugs for Alzheimer's disease [8]

3. Describe the screening methods used to evaluate a compound for
   a) Anti-inflammatory activity [8]
   b) Anti-asthmatic activity [7]

4. Define diabetes. List out the methods available to induce diabetes experimentally and describe streptozotocin induced method. [15]

5. Define immunoassay. Outline principles of immunoassay and describe different types of immunoassay. [15]

6. Write short notes on:
   a) Alternate animal experiments [7]
   b) Immunoassay of digoxin [8]

7. Define Parkinsonism. Enlist the models available to screen drugs for Parkinsonism and describe any two methods. [15]

8. Describe the preclinical screening procedures for the following:
   a) Hepatoprotective agents [9]
   b) Antifertility agents [6]

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OU - 1702 OU - 1702

**Code No: E-12428/PCI**

# FACULTY OF PHARMACY

## M. Pharmacy (Pharmacology) I Semester (PCI) (Backlog) Examination, November 2023

## Subject: Advanced Pharmacology – I

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1. a) Write a note on drug absorption process. [7]
   b) Describe in detail about G-Proteins. [8]

2. a) Discuss the pharmacology of dopamine. [8]
   b) Explain in brief about role of histamine transmission in CNS. [7]

3. a) Classify cholinergic agents. Write the pharmacology of acetylcholine. [8]
   b) Write a note on NANC. [7]

4. a) Classify antipsychotics. Write the pharmacology of haloperidol. [8]
   b) Write a note on local anesthetics. [7]

5. a) Write a note on digoxin and nitroglycerine. [10]
   b) Write a note on heparine. [5]

6. a) Explain in brief about significance of protein binding. [6]
   b) Write the physiological role of nuclear receptors. [9]

7. a) Describe the pharmacology of adrenaline. [10]
   b) Write a note on diazepam. [5]

8. a) Explain about the anti-platelet drugs. [10]
   b) Write a note on opioid receptors. [5]

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OU - 1702 OU - 1702

**Code No: E-12297/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy I Semester (PCI) (Common to all) (Main & Backlog) Examination, May 2023**

**Subject: Modern Pharmaceutical Analytical Techniques**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any Five Questions. All Questions carry Equal marks.**

1. a) With a neat labelled diagram explain UV/Visible instrumentation.
   b) What are the criteia in the solvent selection for UV spectroscopy? Give examples for solvents. What is meant by solvent effect? (9+6)

2. a) Explain the Principle, advantages and instrumentation of FTIR with a neat labelled diagram.
   b) Explain the molecular vibrations in IR spectroscopy. (10+5)

3. a) Explain the principle of fluorescence. Add a note on quenching effect
   b) With a diagram explain the instrumentation for AAS. (8+7)

4. a) Explain the principle of proton NMR spectroscopy.
   b) Explain the spin-spin coupling in NMR spectroscopy with suitable example. (7+8)

5. a) Explain the principle of mass spectroscopy.
   b) Explain any two mass analysers used in MS in detail. (7+8)

6. a) Explain GC instrumentation with a labelled diagram.
   b) Explain the applications of XRD technique. (9+6)

7. a) Explain the instrumentation & working of HPLC. (8+7)
   b) Explain the factors affecting resolution & Peak symmetry.

8. Define and classify the electrophoretic techniques. Explain the principle and applications of gel electrophoresis. (15)

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OU - 1702 OU - 1702

**Code No: E-12304/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Main & Backlog)**
**Examination, May 2023**
**Subject: Advanced Pharmacology-I**

**Time: 3 Hours** **Max Marks: 75**

**Note: Answer Any Five Questions. ALL Questions carry Equal Marks.**

1. a) Write a note on drug metabolism process. [7]
   b) Describe in detail about ion channel receptors. [8]

2. a) Discuss the pharmacology of atropine. [8]
   b) Explain in brief about role of GABA transmission in CNS. [7]

3. a) Classify anti-adrenergic drugs. Write the pharmacology of propranolol. [2+8]
   b) Write a note on cholinesterase inhibitors. [5]

4. a) Classify anti-anginal agents. Write the pharmacology of nitroglycerine. [2+6]
   b) Write a note on verapamil. [7]

5. a) Write the pharmacology of histamine. [10]
   b) Write a note on prostaglandins. [5]

6. a) Explain the pharmacology of morphine. [10]
   b) Write the physiological role of G-Proteins. [5]

7. a) Describe the pharmacology of phenytoin sodium. [10]
   b) Write a note on ondansetron. [5]

8. a) Explain the pharmacology of heparin. [10]
   b) Write a note on HMG- COA reductase inhibitors. [5]

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OU - 1702 OU - 1702

**Code No: E-12305/PCI**

**FACULTY OF PHARMACY**

**M. Pharmacy (Pharmacology) I Semester (PCI) (Main & Backlog) Examination, May 2023**

**Subject: Pharmacological and Toxicological Screening Methods - I**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1. a) Discuss briefly about the euthanasia techniques of experimental animals. [8]
   b) Discuss about the role of animals in experimental pharmacology. [7]

2. Define Alzheimer's disease. Enlist the models available to screen drugs for Alzheimer's disease and explain any two methods. [15]

3. Describe the screening methods for the evaluation of the following activities of a compound:
   a) Antifertility activity [7]
   b) Anti-ulcer activity [8]

4. What is hypertension? List out the methods available for induction of hypertension and describe three models in the screening of antihypertensive agents. [15]

5. Explain the in vitro and in vivo screening methods for immunomodulators. [15]

6. Write short notes on:
   a) Immunoassay of insulin [8]
   b) Alternate animal experiments [7]

7. Define diuretics. Enlist the models available to screen diuretics and explain any two methods. [15]

8. List out the methods available to induce inflammation and describe one acute and one chronic model in the screening of anti-inflammatory agents. [15]

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OU - 1702 OU - 1702

**Code No**: **E-12306/PCl**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I - Semester (PCl) (Main & Backlog) Examination, May 2023**

**Subject: Cellular and Molecular Pharmacology**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal mark**

1. (a) Write about the Genome organization. Add a note on humanisation antibody therapy. [9]
   (b) Discuss about intrinsic and extrinsic pathways of apoptosis. [6]

2. (a) Define cell signaling. Write a note on tyrosine kinase receptors and nuclear receptors. [10]
   (b) Write briefly about gene mapping-&-Gene sequencing. [5]

3. Define gene therapy. Enlist various types of gene transfer techniques with clinical applications. [15]

4. (a) Write the application of DNA electrophoresis. [7]
   (b) What are the principles involved in genomic & proteomic tools. [8]

5. (a) Discuss the importance of , PCR & Western blotting in pharmacy. [8]
   (b) Define pharmacogenomics. Add a note on genetic variation and its role in health or pharmacology. [7]

6. What are the various types of immunotherapeutic. Discuss its significance in clinical practices. [15]

7. (a) Define cell culture media. Add a note on various types of cell culture. [9]
   (b) Discuss the Genetic variation in drug transporters. [6]

8. (a) Discuss the principle and application of flow cytometry. [9]
   (b) Write about the glucose uptake assay-&-Biosimilars. [6]

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OU - 1702 OU - 1702

**Code No. E-12084/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Common to All) I - Semester (PCI) (Backlog) Examination, December 2022**

**Subject: Modern Pharmaceutical Analytical Techniques**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1 (a) With a neat labelled diagram explain UV/Visible spectrophotometer instrumentation.
(b) What are the applications of UV spectroscopy?

2 (a) Explain the molecular vibrations in IR.
(b) Write the sampling methods in IR spectroscopy.

3 (a) Explain the principle of fluorescence.
(b) With a diagram explain the instrumentation for flame photometry.

4 (a) Explain the principle of proton NMR spectroscopy.
(b) Explain the following in NMR spectroscopy: Shielding and deshielding, chemical shift.

5 (a) Explain the principle of mass spectroscopy.
(b) Explain any two mass analysers used in MS in detail.

6 (a) Explain GC instrumentation with a labelled diagram. Add a note on the different types of GC columns.
(b) List and explain any 2 GC detectors.

7 (a) Explain Braggs equation and derive the equation.
(b) Explain the principle and types of Paper electrophoresis.

8 (a) Explain the principle and applications of ELISA?
(b) Explain the principle and applications of capillary electrophoresis.

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OU - 1702 OU - 1702

**Code No. E-12091/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I Semester (PCI) (Backlog) Examination, December 2022**

**Subject: Advanced Pharmacology – I**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1 (a) Define the term metabolism and write a note on drug metabolism process.
(b) Describe about the concept of linear and nonlinear pharmacokinetics.

2 (a) Discuss the physiological role of histamine transmission in CNS.
(b) Explain in brief about role of serotonin transmission in CNS.

3 (a) Classify Parasymapthomimitics. Write the pharmacology of acetylcholine.
(b) Write a note on NANC.

4 (a) Classify antiepileptic agents. Write the pharmacology of phenytoin.
(b) Describe the pharmacology of chlorpromazine.

5 (a) Classify anti-ischemic agents and write the pharmacology of organic nitrates.
(b) Write a note on heparin and warfarin.

6 (a) Explain in brief about BBB.
(b) Write the physiological role of enzyme linked receptors.

7 (a) Describe the pharmacology of isoprenaline and dobutamine.
(b) Write a note on lithium carbonate.

8 (a) Explain about the pathological role of prostaglandins and opioid autacoids.
(b) Write a note on 5-HT antagonists.

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OU - 1702 OU - 1702

**Code No. E-12093/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I - Semester (PCI) (Backlog) Examination, December 2022**

**Subject: Cellular and Molecular Pharmacology**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1 (a) Define Cell biology. Write a note on structure and function of cell and its organelles.
(b) Importance of cell cycle and its regulation.

2 (a) Define cell signaling. Write a note on G-protein coupled receptors.
(b) Write briefly a note on secondary messenger.

3 Define gene therapy. Enlist various types of gene transfer techniques with clinical applications.

4 (a) Write the application of recombinant DNA technology.
(b) What are the principles involved in genomic & proteomic tools.

5 (a) Discuss the importance of PCR & Western blotting in pharmacy.
(b) Define pharmacogenomics. Add a note on application of genomics & nutrigenomics.

6 What are the various types of immunotherapeutic? Discuss its uses in clinical practices.

7 (a) Define cell culture media. Add a note on various types of cell culture.
(b) Discuss the principle and application of cell viability assay.

8 (a) Discuss the principle and application of flow cytometry.
(b) Write the significance of biosimilars.

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OU - 1702 OU - 1702

**Code No. E-12092/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I - Semester (PCI) (Backlog) Examination, December 2022**

**Subject: Pharmacological and Toxicological Screening Methods – I**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1 (a) Describe in detail about regulations for laboratory animal care as per CPCSEA guidelines.
(b) Discuss about the applications of animals in experimental pharmacology.

2 Define epilepsy. List out the methods available to induce epilepsy and describe any three models in the screening of antiepileptics.

3 Describe the screening methods for the evaluation of the following activities of a compound:
(a) Antifertility activity
(b) Analgesic activity

4 What is Diabetes? List out the methods available for induction of diabetes experimentally. Discuss alloxan and streptozotocin induced methods for the screening of antidiabetic agents.

5 Define immunoassay. Outline principles of immunoassay and describe different types of immunoassays.

6 Write short notes
(a) Immunoassay of digoxin
(b) Alternate animal experiments

7 Define inflammation. List out the methods available to induce inflammation and describe one acute and chronic model in the screening of anti-inflammatory agents.

8 List out and explain in detail any two screening methods of following classes of drugs
(a) Diuretics
(b) Antiatherosclerotic agents

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OU - 1702 OU - 1702

**Code No. D-8261/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy I - Semester (Common to All) (PCI) (Main & Backlog) Examination, May 2022**

**Subject: Modern Pharmaceutical Analytical Techniques**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions.** **(5 x 15 = 75 Marks)**

1 (a) State and explain Beer-Lambert's Law. Add a note on the deviations from Beer's law.
(b) Explain the concept of chromophore, auxochrome and bathochromic shift with suitable examples.

2 (a) Explain the instrumentation of FTIR with a neat labelled diagram. Add a note on the advantages of FTIR.
(b) Explain the mplecular vibrations in IR.

3 (a) What is the principle AAS? Explain the instrumentation.
(b) List the differences between AAS and flame photometry.

4 What is the significance of chemical shift? What are the factors affecting chemical shift? Name the internal standard and justify its selection as internal standard in NMR spectroscopy.

5 What is the principle of Mass Spectrometry? With a neat labelled diagram briefly explain the components of MS instrumentation.

6 (a) Classify the ionization techniques in MS. Explain any three methods in detail.
(b) Define Base peak, molecular ion peak and metastable ion.

7 (a) Explain the principle of X-ray diffraction.
(b) Explain HPLC instrumentation with a labelled diagram.

8 (a) Explain the experimental set up required for gel electrophoresis.
(b) Describe the principle and applications of RIA.

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OU - 1702 OU - 1702

**Code No. D-8270/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Main & Backlog) Examination, May 2022**

**Subject: Cellular and Molecular Pharmacology**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions.** **(5 x 15 = 75 Marks)**

1 (a) Write about the Genome organization. Add a note on gene expression and its regulation.
(b) Discuss about necrosis and autophagy.

2 (a) Define cell signaling. Write a note on G-protein coupled receptors.
(b) Write briefly about cyclic AMP signaling pathway.

3 Define gene therapy. Enlist various types of gene transfer techniques with clinical applications.

4 (a) Write the application of recombinant DNA technology.
(b) What are the principles involved in genomic & proteomic tools.

5 (a) Discuss the importance of ELISA & Western blotting in pharmacy.
(b) Define pharmacogenomics. Add a note on genetic variation and its role in health or pharmacology.

6 What are the various types of immunotherapeutics? Discuss its significance in clinical practices.

7 (a) Define cell culture media. Add a note on various types of cell culture.
(b) Discuss the principle and application of cell viability assay.

8 (a) Discuss the principle and application of flow cytometry.
(b) Write about the glucose uptake assay.

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OU - 1702 OU - 1702

**Code No. D-8269/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Main & Backlog) Examination, May 2022**

**Subject: Pharmacological and Toxicological Screening Methods – I**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions.** **(5 x 15 = 75 Marks)**

1 (a) Define and Discuss principle and applications of bioassays.
(b) Discuss briefly about the euthanasia techniques of experimental animals.

2 Define Parkinsonism. Enlist the models available to screen drugs for Parkinsonism and explain any two methods.

3 Describe the preclinical screening procedures for the following:
(a) Aphrodisiacs
(b) Anti-asthmatics.

4 Define hypertension. List out the methods available to induce hypertension and describe three models in the screening of antihypertensive agents.

5 Explain the in vitro and in vivo screening methods for immunomodulators.

6 List out and explain in detail any two screening methods of following classes of drugs:
(a) Noontropics
(b) Anxiolytics

7 Define ulcer. Enlist the in vitro and in vivo preclinical models of antiulcer drugs and describe any two models.

8 Describe the screening methods for the evaluation of a compound for:
(a) Anticancer agents
(b) Hepatoprotective agents.

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OU - 1702 OU - 1702

**Code No. D-8268/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Main & Backlog) Examination, May 2022**

**Subject: Advanced Pharmacology – I**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions.** **(5 x 15 = 75 Marks)**

1 (a) Define the term absorption and write a note on drug absorption process.
(b) Describe about the ion-channel receptors.

2 (a) Discuss the physiological role of dopamine transmission in CNS.
(b) Explain in brief about role of GABA transmission in CNS.

3 (a) Classify Sympatholytics. Write the pharmacology of propranolol.
(b) Write a note on peripherally acting skeletal muscle relaxants.

4 (a) Classify general anaesthetics. Write the pharmacology of halothane.
(b) Describe the pharmacology of morphine.

5 (a) Classify diuretics and write the pharmacology of thiazide diuretics.
(b) Write a note on anti-platelet drugs.

6 (a) Explain in brief about protein binding of drugs.
(b) Write the physiological role of G-Protein coupled receptors.

7 (a) Describe the pharmacology of prazocin and esmolol.
(b) Write a note on imipramine.

8 (a) Explain about the pathological role of histamine and Kinins.
(b) Write a note on digoxin.

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OU - 1702 OU - 1702

**Code No. D8001/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy I Semester (PCI) (Suppl) Examination, December 2021**
**(COMMON TO ALL)**

**Subject: Modern Pharmaceutical Analytical Techniques**

**Time: 2 Hours** **Max. Marks: 75**

**Note: Answer any three questions. All questions carry equal marks.**
**(3 x 25 = 75 Marks)**

1 (a) State and explain Beer-Lambert's law. Add a note on the deviations from Beer's law.
(b) Explain the electronic transitions in UV spectroscopy.

2 (a) Explain the principle and instrumentation of FTIR with a neat labelled diagram.
(b) Explain the named advantages of FTIR.
(c) What are the major differences between Dispersive instruments and FTIR?

3 (a) What is the principle of Fluorescence? Explain the radiative and non radiative pathways of relaxation.
(b) Add a note on the factors affecting fluorescence.

4 (a) Explain NMR instrumentation with a diagram.
(b) Briefly explain shielding and deshielding with suitable example.

5 (a) What is the principle of MS? With a neat labelled diagram briefly explain the components of MS instrumentation.

6 (a) Classify the ionization techniques in MS. Explain any three methods in detail.
(b) Define Base Peak, molecular ion peak and metastable ion.

7 (a) Explain GC instrumentation with a labelled diagram.
(b) What are the applications of HPLC?

8 (a) Explain the experimental set up required for capillary electrophoresis.
(b) Describe the principle and application of ELISA.

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OU - 1702 OU - 1702

**Code No. D8009/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Suppl.) Examination, December 2021**

**Subject: Pharmacological and Toxicological Screening Methods – I**

**Time: 2 Hours** **Max. Marks: 75**

**Note: Answer any three questions. All questions carry equal marks.**
**(3 x 25 = 75 Marks)**

1 (a) Describe in detail about regulations for laboratory animal care as per CPCSEA guidelines.
(b) Discuss briefly about the applications of transgenic animals.

2 List out and explain in detail any two screening methods of following classes of drugs.
(a) Drugs for Alzheimer's disease
(b) Antidepressants

3 Describe the screening methods used to evaluate a compound for
(a) Anti-inflammatory activity
(b) Antiulcer activity

4 Define hypertension. List out the methods available to induce hypertension and describe three models in the screening of antihypertensive agents.

5 Define immunoassay. Out line principles of immunoassay and describe different types of immunoassay.

6 Write short notes on:
(a) Immunoassay of digoxin
(b) Alternate animal experiments

7 Define epilepsy. Enlist the in vitro and in vivo preclinical models of antiepileptic drugs and describe any two models.

8 Describe the preclinical screening procedures for the following:
(a) Antifertility agents
(b) Hepatoprotective agents

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OU - 1702 OU - 1702

**Code No. D8008/PCI**

# FACULTY OF PHARMACY
## M. Pharmacy (Pharmacology) I-Semester (PCI) (Suppl. )
## Examination, December 2021

**Subject: Advanced Pharmacology- I**

**Time: 2 Hours** **Max. Marks: 75**

**Note: Answer any three questions. All questions carry equal marks.**
**(3 x 25 = 75 Marks)**

1 (a) Write a note on drug excretion process.
(b) Describe in detail about enzyme linked receptors.

2 (a) Discuss the pharmacology of acetylcholine.
(b) Explain in brief about role of glycine transmission in CNS.

3 (a) Classify anti-adrenergic drugs. Write the pharmacology of propranolol.
(b) Write a note on cholinesterase inhibitors.

4 (a) Classify anti-anginal agents. Write the pharmacology of nitroglycerine.
(b) Write a note on verapamil.

5 (a) Write the pharmacology of histamine.
(b) Write a note on prostaglandins.

6 (a) Explain the pharmacology of morphine.
(b) Write the physiological role of G-Proteins.

7 (a) Describe the pharmacology of phenytoin sodium.
(b) Write a note on ondansetron.

8 (a) Explain the pharmacology of heparin.
(b) Write a note on HMG-COA reductase inhibitors.

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OU - 1702 OU - 1702

**Code No. D8010/PCI**

# FACULTY OF PHARMACY

## M. Pharmacy (Pharmacology) I-Semester (PCI) (Suppl.) Examination, December 2021

**Subject: Cellular and Molecular Pharmacology**

**Time: 2 Hours** **Max. Marks: 75**

**Note: Answer any three questions. All questions carry equal marks.**
**(3 x 25 = 75 Marks)**

1 (a) Define genome organization. Write a note on gene expression and its regulation.
(b) Importance of gene mapping & sequences.

2 (a) Define cell signaling. Write a note on G-protein coupled receptors.
(b) Write brief note on secondary messenger.

3 Define Gene Therapy. Enlist various types of gene transfer techniques with clinical applications.

4 (a) Write the application of recombinant DNA technology.
(b) What are the principles involved in genomic & proteomic tools.

5 (a) Discuss the importance of ELISA & Western blotting in pharmacy.
(b) Define pharmacogenomics. Add a note on application of genomics & proteomics.

6 What are the various types of immunotherapeutics. Discuss its uses in clinical practices.

7 (a) Define Cell Culture Media. Add a note on various types of cell culture.
(b) Discuss the principle and application of cell viability assay.

8 (a) Discuss the principle and application of flow cytometry.
(b) Write the application of biosimilars.

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OU - 1702 OU - 1702

**Code No. 12115/PCI**

**FACULTY OF PHARMACY**
**M.Pharmacy I Semester (PCI) (Main & Backlog) Examination, July 2021**
**(COMMON TO ALL)**

**Subject: Modern Pharmaceutical Analytical Techniques**

**Time: 2 Hours** **Max. Marks: 75**

**Note: Answer any three from the following questions.** **(3 x 25 = 75 Marks)**

1 (a) With a neat labelled diagram explain UV/Visible instrumentation.
(b) Briefly explain the electronic transitions with examples.

2 (a) Explain the molecular vibrations in IR.
(b) Write the sampling methods in IR spectroscopy.

3 (a) Explain the principle of flame photometry.
(b) With a diagram explain the instrumentation for flame photometry.
(c) List some metals that can be analysed by flame photometry.

4 (a) Explain the principle of proton NMR spectroscopy.
(b) What is the significance of chemical shift? What are the factors affecting chemical shift?
(c) What is the internal standard used in NMR spectroscopy? Why it is selected as internal standard?

5 (a) List and explain the steps in MS.
(b) What are the mass analysers used in MS? Explain any two in detail.

6 (a) Explain HPLC instrumentation with a labelled diagram.
(b) List and explain any 2 GC detectors.

7 (a) Explain Bragg's equation and derive the equation.
(b) Explain the principle and the materials required for Paper electrophoresis.

8 (a) Explain the principle and types of RIA?
(b) Briefly explain Zone electrophoresis and Moving boundary electrophoresis.

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OU - 1702 OU - 1702

**Code No. 12131/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Main & Backlog) Examination, July 2021**

**Subject: Pharmacological and Toxicological Screening Methods – I**

**Time: 2 Hours** **Max. Marks: 75**

**Note: Answer any three questions.** **(3 x 25 = 75 Marks)**

1 (a) Define and discuss principles and applications of bioassays.
(b) Discuss about the role of animals in experimental pharmacology.

2 Define Parkinsonism. Enlist the models available to screen drugs for Parkinsonism and explain any two methods.

3 Describe the screening methods for the evaluation of the following activities of a compound:
(a) Anti-asthmatic activity
(b) Analgesic activity

4 What is Diabetes? List out the methods available for induction of diabetes experimentally. Discuss streptozotocin induced method for the screening of antidiabetic agents.

5 Explain the in vitro and in vivo screening methods for immunomodulators.

6 Write short notes on:
(a) Immunoassay of insulin
(b) Alternate animal experiments

7 Discuss the in vitro and in vivo techniques for screening of Anticancer agents.

8 List out the methods available to induce inflammation and describe one acute and one chronic model in the screening of anti-inflammatory agents.

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OU - 1702 OU - 1702

**Code No. 12130/PCI**

**FACULTY OF PHARMACY**
**M.Pharmacy (Pharmacology) I Semester (PCI) (Main & Backlog) Examination, July 2021**

**Subject: Advanced Pharmacology-I**

**Time: 2 Hours** **Max. Marks: 75**

**Note: Answer any three of the following questions.** **(3 x 25 = 75 Marks)**

1 (a) Write a note on drug distribution process.
(b) Describe in detail about G-Protein receptors.

2 (a) Discuss the pharmacology of GABA.
(b) Explain in brief about role of glutamate transmission in CNS.

3 (a) Classify anti-cholinergics. Write the pharmacology of atropine.
(b) Write a note on ANS.

4 (a) Classify anti-hypertensive's. Write the pharmacology of furosemide.
(b) Write a note on quinidine.

5 (a) Write a note on antihistamines.
(b) Write a note on serotonin.

6 (a) Explain in brief about significance of protein binding.
(b) Write the physiological role of nuclear receptors.

7 (a) Describe the pharmacology of adrenaline.
(b) Write a note on diazepam.

8 (a) Explain about the anti-platelet drugs.
(b) Write a note on opioid receptors.

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OU - 1702 OU - 1702

**Code No. 12132/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Main & Backlog) Examination, August 2021**

**Subject: Cellular and Molecular Pharmacology**

**Time: 2 Hours** **Max. Marks: 75**

**Note: Answer any three questions.** **(3 x 25 = 75 Marks)**

1 (a) Write the sequence of events involved in cell cycle and how it is regulated.
(b) Discuss about necrosis and autophagy.

2 (a) Define cell signaling. Write a note on G-protein coupled receptors.
(b) Write briefly about cyclic AMP signaling pathway.

3 Define Gene Therapy. Enlist various types of gene transfer techniques with clinical applications.

4 (a) Write the application of recombinant DNA technology.
(b) What are the principles involved in genomic & proteomic tools.

5 (a) Discuss the importance of ELISA & Western blotting in pharmacy.
(b) Define pharmacogenomics. Add a note on application of nutrigenomics.

6 What are the various types of immunotherapeutics. Discuss its uses in clinical practices.

7 (a) Define cell culture media. Add a note on various types of cell culture.
(b) Discuss the principle and application of cell viability assay.

8 (a) Discuss the principle and application of flow cytometry.
(b) Write the application of biosimilars.

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OU - 1702 OU - 1702

**Code No: 6346/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Suppl.)**

**Examination, November 2019**

**Subject : Cellular and Molecular Pharmacology**

**Time: 2 Hours** **Max. Marks: 75**

**Note: Answer any Three questions.** **(3 x25=75 Marks)**

1. a) Explain intrinsic and extrinsic pathways of apoptosis
   b) Explain cell necrosis in detail

2. a) What are secondary messengers.
   b) Give detail classification of receptor.

3. a) What is the importance of RNA e micro RNA
   b) Explain in detail various intra cellular signaling pathways.

4. a) Explain principle and application of DNA electrophoresis.
   b) Give various clinical applications of gee therapy.

5. a) Write a note on ELISA ad western blotting technique.
   b) Explain recombinant DNA technology.

6. a) Explain how drug polymorphism will affect drug metabolism.
   b) Write a note on proteomics and genomic

7. a) Explain in detail immunotherapeutics and its types.
   b) What are the basic equipments used in cell culture lab.

8. a) Give the principle and application of cell viability assay & glucose take assay.
   b) Explain principle and application of how cytometry.

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OU - 1702 OU - 1702

**Code No. 6345/PCl**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCl) (Suppl.)**

**Examination, November 2020**

**Subject : Pharmacological and Toxicological Screening Methods - I**

**Time: 2 Hours** **Max. Marks: 75**

**Note: Answer any Three questions.** **(3 x 25 = 75 Marks)**

1. a) Define Bioassay. Discuss the principle and methods of bioassay.
   b) Discuss about euthanasia of experimental animals.

2. Define epilepsy. List out the methods available to induce epilepsy and describe any three models in the screening of antiepileptics.

3. Describe the preclinical screening procedures for the following:
   a) Aphrodisiacs
   b) Anti ulcer drugs

4. Discuss the *in vitro* and *in vivo* techniques for screening of anticancer agents.

5. Define immunoassay. Outline principles of immunoassay and describe different types of immunoassays.

6. Define inflammation. List out the methods available to induce inflammation and describe one acute and one chronic model in the screening of anti-inflammatory agents.

7. Describe the screening methods for the evaluation of a compound for
   a) Anxiolytics.
   b) Antiarrythmics.

8. Define hypertension. List out the methods available to induce hypertension and describe three models in the screening of antihypertensive agents.

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OU - 1702 OU - 1702

**CODE NO: 6102/PCI**

# FACULTY OF PHARMACY

## M. Pharmacy I – Semester (Main & Backlog) Examination, January 2020
## (Common Paper for all Except Pharmacy Practice)

### Subject : Modern Pharmaceutical Analytical Techniques

**Time: 3 Hours** **Max. Marks: 75**

**Note:** Answer any Five Questions. All Questions Carry Equal Marks.

1. (a) State and explain Beer- Lambert's law. Add a note on the deviations from Beer's law. 8
   (b) Explain solvents and the selection criteria for UV/Visible spectroscopy. 4
   (c) What is solvent shift? 3

2. (a) Explain the principle and instrumentation of FTIR with a neat labelled diagram. 8
   (b) Explain about the sampling techniques and applications of FR spectroscopy 7

3. (a) What is the principle of Fluorescence? Explain the radiative and non radiative pathways of relaxation. 7
   (b) Add a note on the factors affecting fluorescence and quenchers in fluorescence. 6
   (c) What are the criteria for a molecule to exhibit the phenomena of fluorescence 2

4. (a) Explain the principle of proton NMR spectroscopy. 5
   (b) What is the significance of chemical shift. What are the factors affecting chemical shift ? 6
   (c) Explain about spin-spin crippling and it's importance in NMR 4

5. (a) Classify the ionization techniques in MS. Explain any three methods in detail. 12
   (b) Differentiate between Base peak and molecular ion peak. 3

6. (a) Explain HPLC instrumentation. 10
   (b) What are the applications of HPLC? 5

7. (a) Explain Braggs equation and derive the equation. 8
   (b) What is the principle involved in rotating crystal technique? 7

8. Explain the principle, working and applications of
   (a) Capillary electrophoresis $7^{1/2}$
   (b) Gel electrophoresis $7^{1/2}$

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OU - 1702 OU - 1702

**Code No: 6117/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I – Semester (PCI) (Main & Backlog) Examination, February 2020**

**Subject: Advanced Pharmacology-I**

**Time: 3 Hours** **Max.Marks:75**

**Note: Answer any five questions. All questions carry equal marks.**

| | | |
|---|---|---|
| 1. | a) Write a note on drug absorption process. | 7 |
| | b) Describe in detail about ion-channel receptors. | 8 |
| 2. | a) Discuss the pharmacology of dopamine. | 8 |
| | b) Explain in brief about role of glycine transmission in CNS. | 7 |
| 3. | a) Classify anti-depressants. Write in brief about imipramine. | (2+ 8) |
| | b) Write a note on paracetamol. | 5 |
| 4. | a) Classify diuretics. Write the pharmacology of spirinolactone. | (2+6) |
| | b) Write a note on digoxin. | 7 |
| 5. | a) Write a note on prostaglandins. | (4+4) |
| | b) Write a note on cetrizine. | 7 |
| 6. | a) Explain in brief about significance of protein binding. | (4+4) |
| | b) Write the physiological role of G-protein receptors. | 7 |
| 7. | a) Describe the pharmacology of phenylephrine. | 7 |
| | b) Write a note on phenytoin and fluoxetine. | (4+4) |
| 8. | a) Explain about the fibrinolytics. | 7 |
| | b) Write a note on opioid autacoids. | 8 |

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OU - 1702 OU - 1702

**Code No: 6119/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Main & Backlog) Examination, January 2020**

**Subject: Cellular and Molecular Pharmacology**

**Time: 3 Hours** **Max. Marks: 75**

**Note:** Answer any Five questions. All questions carry equal marks

| | | | |
|---|---|---|---|
| 1. | a) | Explain cell cycle and its regulation. | 8 |
| | b) | Explain in detail various cell organelles. | 7 |
| 2. | a) | What do you understand by the term tissue necrosis and autophagy. | 8 |
| | b) | Write a note on G-protein coupled receptors. | 7 |
| 3. | a) | Explain in detail CAMP, CGMP, IP3 and NO. | 10 |
| | b) | Explain in detail JAK and STAT signaling pathways. | 5 |
| 4. | a) | Explain principle and application of micro array technique. | 8 |
| | b) | Give various recent advances in Gene therapy. | 7 |
| 5. | a) | Explain recombinant DNA technology. | 8 |
| | b) | Write a note on cloning of diseased gene. | 7 |
| 6. | a) | Explain the role of genetic variation in heath/pharmacology. | 7 |
| | b) | Write a note on proteomics and metabolomics. | 8 |
| 7. | a) | Explain in detail immunotherapeutics with its types. | 10 |
| | b) | Explain various techniques used for isolation of animal cells. | 5 |
| 8. | a) | Write a note on flow cytometry and cryopreservation. | 10 |
| | b) | Write a note on Biosimilars. | 5 |

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OU - 1702 OU - 1702

**Code No. 6118/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Main & Backlog) Examination,**

**January 2020**

**Subject: Pharmacological and Toxicological Screening Methods - I**

**Time: 3 Hours** **Max. Marks: 75**

**Note:** Answer Any Five Questions. All Questions Carry Equal Marks.

1 (a) Describe in detail about regulations for laboratory animal care as per CPCSEA Guidelines. 10
(b) Enlist the applications of transgenic animals in preclinical research. 5

2 Define memory. List out the animal models for evaluating the test drug for improving memory and describe any three models. 15

3 Describe the preclinical screening procedures for the following:
(a) Antifertility agents 8
(b) Analgesics 7

4 Define diabetes. List out the methods available to induce diabetes and describe three models in the screening of anti-diabetic agents. 15

5 Explain the *in vitro* and *in vivo* screening methods for immunomodulators. 15

6 Write short notes on:
(a) Alternate animal experiments 7
(b) Immunoassay for digoxin 8

7 Describe the screening methods for the evaluation of the following activities of a compound
(a) Hepatoprotective drugs 8
(b) Anti ulcer agents 7

8 Describe the screening methods used to evaluate the therapeutic activity of the following:
(a) Anti-asthmatics 8
(b) Diuretics 7

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OU - 1702 OU - 1702

**Code No. 13303/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Common paper for all Specialization) I-Semester (PCI) (Suppl.) Examination, August 2019**

**Subject : Modern Pharmaceutical Analytical Techniques**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1 a) Write Beer-Lambert's law and derive the expression 5

b) Mention the different methods of quantitative analysis by uv-visible spectroscopy. Explain any one method in detail. 10

2. a) Explain the interpretation procedure of IR spectra of different organic compounds in detail. With examples of schematic IR spectra.

b) What is fluorescence? Write the factors affecting fluorescence. 5

3. a) What is chemical shift? Write the factors influencing chemical shift? 8

b) Write a note on FT-NMR 7

4. a) Explain the instrumentations and working of mass spectrometer with schematic diagram. 8

b) Write the fragmentation patterns of different organic compounds observed in mass spectroscopy. With the help of schematic mass spectra of a few compounds 7

5. Describe the components and working procedure of HPLC with a neat labeled block diagram. 15

6. a) Write the principle, instrumentation and working of zone electrophoresis. 8

b) Write the principle and theory of X-ray diffraction study using Brag's law 7

7. a) Write the principle and instrumentation of flame photometry 7

b) Write notes on any two GC detectors 8

8. Explain the principle, equipment, procedure, advantages and applications of IR Spectrophotometer 15

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OU - 1702 OU - 1702

**Code No: 13312/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I – Semester (PCI) (Suppl.) Examination, Aug. 2019**

**Subject: Cellular and Molecular Pharmacology**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1. a) Write a note on cell death, intrinsic and extrinsic pathways of apoptosis. 8M
   b) Explain in detail necrosis and autophagy. 7M
2. a) What do you understand about intercellular cell signaling? 8M
   b) Write descriptive notes on tyrosine kinase and G-protein coupled receptors. 7M
3. Explain in detail various types of gene transfer techniques with its clinical application. Write about recent advances in gene therapy. 15M
4. a) Write a note on ELISA and western blotting techniques. 8M
   b) What do you understand about recombinant DNA technology? 7M
5. a) Write a note on genetic variation in G protient coupled receptors. 8M
   b) Explain in detail genomics and proteomics. 7M
6. a) Explain basic principle involved in recombinant DNA technology. 8M
   b) How polymorphism of drug affect the metabolism. 7M
7. a) Write a descriptive note on immunotherapeutics. 8M
   b) Explain various types of cell culture techniques. 7M
8. a) Write a note on principle and application of flow cytometry. 8M
   b) Write notes on cryopreservation. 7M

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OU - 1702 OU - 1702

**Code No: 13310/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) - I Semester (PCI) (Suppl.) Examination Aug. 2019**

**Subject: Advanced Pharmacology-I**

**Time: 3 Hours** **Max.Marks:75**

Note: Answer any **five** questions. All questions carry equal marks.

1. a) Write a note on drug distribution.

   b) Describe the role of G-Proteins in drug action.

2. a) Discuss the steps involved in neurotransmission.
   b) Explain in brief about role of histamine transmission in CNS.

3. a) Classify anti-psychotic agents. Write in brief about atypical anti-psychotics.
   b) Write a note on d-Tubocurarine.

4. a) Classify anti-ischemic agents. Write the pharmacology of organic nitrates.
   b) Write a note on calcium channel blockers.

5. a) Write a note on thromboxane-$A_2$ and cetirizine.
   b) Write a note on serotonin.

6. a) Explain in brief about elimination and concept of linear pharmacokinetic.
   b) Write the physiological role of nuclear receptors.

7. a) Describe the pharmacology of adrenaline**.**
   b) Write a note on sodium valproate and lithium carbonate**.**

8. a) Explain about the haematinics
   b) Write a note on 5-HT antagonists**.**

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OU - 1702 OU - 1702

**Code No: 13311/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I – Semester (PCI) (Suppl.) Examination, Aug. 2019**

**Subject: Pharmacological Toxicological Screening Methods – I**

**Time: 3 Hours** **Max.Marks:75**

**Note: Answer any Five questions. All questions carry equal marks**

1. a) Define and discuss principles and applications of bioassays (7)

   b) Discuss briefly about production and applications of transgenic animals (8)

2. List out and explain in detail any two screening methods of following classes of drugs

   a) Sympathomimetics

   b) Anti-psychotics (8+7)

3. a) Write a note on IAEC (7)

   b) Name the screening methods for nootropics. Explain any two models (8)

4. List out and explain in detail any two screening methods of following classes of drugs

   a) Anti-asthmatics

   b) Diuretics (8+7)

5. Discuss about screening methods of anti-inflammatory drugs (15)

6. List out and explain in detail any two screening methods of following classes of drugs

   a) Anti-anginal drugs

   b) Multiple sclerosis (8+7)

7. Discuss about screening methods of anti-diabetic drugs (15)

8. a) Discuss about screening models of immunomodulators (7)

   b) Discuss about immunoassay of digoxin (8)

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OU - 1702 OU - 1702

**CODE NO: 13147/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Common Paper for all Specialization) I – Semester**

**(Main & Backlog) Examination, January 2019**

**Subject : Modern Pharmaceutical Analytical Techniques**

**Time: 3 Hours** **Max. Marks: 75**

**Note:** Answer any Five Questions. All Questions Carry Equal Marks.

1) a) With a neat labeled diagram explain UV/Visible instrumentation. 8

b) Briefly explain the electronic transitions with examples 8

2) a) Explain the factors affecting vibrational frequencies in IR. 8

(b) Write the sampling methods in IR spectroscopy. 7

3 (a) Briefly explain the source of AAS. 8

(b) List and explain the interferences. 5

(c) List some metals that can be analysed by AAS. 2

4 (a) Explain NMR instrumentation. 8

(b) Briefly explain spin-spin coupling with a suitable example. 7

5 (a) What is the principle of MS. With a neat labelled diagram briefly explain the components of MS instrumentation. 8

(b) Explain Quadrupole and time of flight analysers in detail. 7

6. (a) What are the column efficiency parameters? 7

(b) List and explain any 2 GC detectors. 8

7. Explain the principle and application of capillary electophoresis. Give a labelled diagram to indicate the components of the instrument.

8 (a) Discuss the principle, instrumentation working and application of

a. Paper electrophoresis

b. Gel electrophoresis 7+8

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OU - 1702 OU - 1702

**Code No: 13156/PCI**

# FACULTY OF PHARMACY

## M. Pharmacy (Pharmacology) I – Semester (PCI) (Main & Backlog) Examination, February 2019

### Subject: Cellular and Molecular Pharmacology

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

| | | |
|---|---|---|
| 1 | a) Explain structure and function of cell organelles and genome organization. | 8 |
| | b) Explain how cell cycle will be regulated? | 7 |
| 2 | a) What do you understand about secondary messenger? | 8 |
| | b) Write descriptive notes on tyrosine kinase and nuclear receptors. | 7 |
| 3 | Explain in detail various types of intracellular signaling pathways (Cyclic AMP, MAOK, JAK and STAT). | 15 |
| 4 | a) Write a note on principle and application of genomic tools. | 8 |
| | b) What do you understand about DNA electrophoresis? | 7 |
| 5 | a) Write a note on gene mapping and cloning of disease gene. | 8 |
| | b) Write a note on metabolomics and proteomics. | 7 |
| 6 | a) Explain in detail various types of gene transfer techniques. | 8 |
| | b) Write a descriptive note on gene sequencing and micro array technique. | 7 |
| 7 | a) Write a descriptive note on glucose uptake and calcium influx assay. | 8 |
| | b) Explain various types of cell culture techniques. | 7 |
| 8 | a) Write a note on principle and application of various cell viability assays. | 10 |
| | b) Write a note on Biosimilars. | 5 |

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OU - 1702 OU - 1702

**Code No: 13155/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I–Semester (PCI) (Main &Backlog) Examination, February 2019**

**Subject: Pharmacological Toxicological Screening Methods – I**

**Time: 3 Hours** **Max.Marks:75**

**Note: Answer Any Five Questions. All Questions Carry Equal Marks**

1. a) What are different types of bioassays? Discuss about quantal bioassays. (7)
   b) Discuss about role of animals in experimental pharmacology. (8)

2. List out and explain in detail any two screening methods of following classes of Drugs
   a) Anti-epileptics
   b) Nootropics (8+7)

3. a) Discuss about anesthesia and euthanasia of experimental animals. (7)
   b) Discuss alternatives to animal screening methods. (8)

4. List out and explain in detail any two screening methods of following classes of drugs
   a) Anti-dyslipidemics
   b) Anti-ulcers (8+7)

5. Discuss about screening methods of analgesics. (15)

6. List out and explain in detail any two screening methods of following classes of drugs
   a) Diuretics
   b) Anxiolytics (8+7)

7. Discuss about screening methods of anti-hypertensive drugs. (15)

8. a) Discuss about screening models of immunosuppressant drugs. (7)
   b) Discuss about immunoassay of insulin. (8)

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OU - 1702 OU - 1702

**Code No: 13154/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) - I Semester (PCI) (Main & Backlog) Examination, January 2019**

**Subject: Advanced Pharmacology-I**

**Time: 3 Hours** **Max.Marks:75**

**Note: Answer any five questions. All questions carry equal marks.**

1. a) Write a note on significance of protein binding. 7
   b) Describe in detail about mechanism of drug action. 8

2. a) Discuss the pharmacology of acetylcholine. 8
   b) Explain in brief about role of dopamine transmission in CNS. 7

3. a) Classify anti-Parkinson agents. Write in brief about L-DOPA and carbidopa. (2+8)
   b) Write a note on morphine. 5

4. a) Classify anti-diuretics. Write the pharmacology of furosemide. (2+6)
   b) Write a note on ACE inhibitors. 7

5. a) Write a note on prostacycline and ondansetron. (4+4)
   b) Write a note on kinins. 7

6. a) Explain in brief about phase - II metabolism and Active transport. (4+4)
   b) Write the physiological role of ion-channel receptors. 7

7. a) Describe the pharmacology of phenylephrine. 7
   b) Write a note on diazepam and fluoxetine. (4+4)

8. a) Explain about the fibrinolytics. 7
   b) Write a note on opioid autacoids 8

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OU - 1702 OU - 1702

Code No. 1289/PCI

# FACULTY OF PHARMACY

## M. Pharmacy (Common to All) I-Semester (PCI) (Suppl.) Examination,

## August 2018

**Subject: Modern Pharmaceutical Analytical Techniques**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1 (a) Discuss the instrumentation of double beam UV visible spectrophotometer with a neat labeled diagram. (10)
(b) What is Isobestic point? Explain with a labeled UV spectrum giving tow examples. (5)

2 (a) Compare the instrumentation and working a dispersive and foruier transform IR spectrometers. Write the advantages and disadvantages of the two techniques. (10)
(b) Draw a schematic IR spectrum for any one compound and indicate the absorption wave number regions for any four functional groups in the compound. (5)

3 (a) Explain
(i) Chemical shift and factors influencing chemical shift. (6)
(ii) Spin-spin coupling and coupling constant. (6)
(b) Draw a schematic HNMR spectrum for any one compound and explain the following:
(i) Chemical shift values (ii) Nature of protons (iii) Number of protons (3)

4 (a) Discuss the theory and principle of mass spectroscopy and explain the instrumentation and working of mass spectrometer with a neat labeled diagram. (10)
(b) What is fragmentation? Explain the following by taking a simple example
(i) Fragmentation peaks (ii) Molecular ion peak (iii) Base peak (5)

5 (a) Discuss the theory of HPLC. Describe the instrumentation and working of HPLC with a neat labelled diagram. (10)
(b) Draw a schematic HPLC chromatomgram and explain
(i) Retention time (ii) Resolution (iii) Peak Asymmetry (5)

6 (a) Discuss the theory and principle of electrophoresis. Explain the method of capillary electrophoresis and its applications with examples. (12)
(b) What is isoelectric focusing? (3)

7 (a) Discuss the theory and principle of Gas chromatography. Explain the instrumentation and working of Gas chromatography and explain various stationary and mobile phases used in GC. (11)
(b) How non voralile compounds can be analysed by GC. Explain the technique with few examples? (4)

8 Write a note on :
(a) Flame emission spectroscopy (6)
(b) Instrumentation and application of Florescence spectroscopy (9)

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# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Supple.) Examination,**

**August 2018**

**Subject: Advanced Pharmacology - I**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1 (a) Write a note on passive and active transport of drug absorption. 4+4
(b) Describe in detail about G-Protein Coupled Receptors. 7

2 (a) Discuss the pharmacology of adrenaline. 8
(b) Explain in brief about NANC. 7

3 (a) Classify anti-epileptic agents and write in brief about any two drugs used in epilepsy. 2+8
(b) Write a note on opioid receptor. 5

4 (a) Classify antihypertensive agents. Write the pharmacology of propranolol. (2+6)
(b) Write a note on heparin and clopidogrel. (4+3)

5 (a) Explain the pharmacology of histamine. 8
(b) Write a note on antihistamines. 7

6 (a) Explain in brief about phase-1 metabolism and protein binding. (4+4)
(b) Write the physiological role of enzyme linked receptors. 7

7 (a) Describe the pharmacology of atropine. 7
(b) Write a note on COMT inhibitors and atypical antipsychotics. (4+4)

8 (a) Explain the pharmacotherapy for heart failure. 7
(b) Write about the physiology of hyperlipedimia and drugs used in this condition. (4+4)

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OU - 1702 OU - 1702

**Code No. 1297/PCI**

# FACULTY OF PHARMACY

## M. Pharmacy (Pharmacology) I-Semester (PCI) (Suppl.) Examination, August 2018

### Subject: Pharmacological and Toxicological Screening Methods – I

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1 Discuss experimental animal models to evaluate the test drug for learning and memory. (15)

2 Describe the preclinical screening procedures for the following:
(a) Analgesics (7)
(b) Anti-asthmatics (8)

3 Write short notes on:
(a) Advantages of transgenic animals in screening techniques (8)
(b) Euthanasia of experimental animals (7)

4 Define hypertension. List out the methods available to induce hypertension and describe three models in the screening of antihypertensive agent. (15)

5 Explain the *in vivo* and *in vitro* screening methods for immunomodulatory activity.(15)

6 Describe the screening methods used to evaluate a compound for
(a) Antipyretic activity (6)
(b) Anti-inflammatory activity (9)

7 Describe screening methods for the evaluation of a compound for
(a) Antidiabetic activity (8)
(b) Anti ulcer activity (7)

8 Discuss the in-vitro and in-vivo techniques for screening of Anticancer agents. (15)

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OU - 1702 CU - 1702

**Code No. 1298/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Supple.) Examination, August 2018**

**Subject: Cellular and Molecular Pharmacology**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

| | | |
|---|---|---|
| 1 | (a) Describe about the gene mapping and sequencing techniques. | (5+5) |
| | (b) Write a note on siRNA. | 5 |
| 2 | (a) Discuss in brief about G proteins and cAMP. | (5+5) |
| | (b) Write a note on ligand gated ion channel receptors. | 5 |
| 3 | (a) Explain about the restriction enzymes. | 7 |
| | (b) Write a note on ELISA and Western Blotting technique. | (5+3) |
| 4 | (a) Describe in detail about genetic variations in drug transporters . | 10 |
| | (b) Write a note on nutrigenomics. | 5 |
| 5 | (a) Explain the various types of cell culture techniques. | 8 |
| | (b) Write a note on cell viability assays. | 7 |
| 6 | (a) Explain in detail about intrinsic and extrinsic pathway of apoptosis. | 15 |
| | (b) Write the structure and functions of cell membrane. | |
| 7 | (a) Describe in brief about micro-array technique and PCR. | (5+5) |
| | (b) Write the clinical applications of immunotherapeutics. | 5 |
| 8 | (a) Explain the principle and applications of flow cytometry. | 6 |
| | (b) Write a note on biosimilars and glucose uptake assays. | (5+4) |

OU - 1702 OU - 1702

**Code No. 1147/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Common to All) I-Semester (PCI) (Main) Examination,**
**February 2018**

**Subject: Modern Pharmaceutical Analytical Techniques.**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1 (a) Derive the expression for Beer-Lambert law and explain the deviations with examples. (9)
(b) Explain the solvent effect with examples. (3)
(c) Discuss the principle and functions of monochromators in UV spectrophotometer. (3)

2 (a) Draw a schematic IR spectrum for any one compound and indicate the absorption wave numbers regions for any four functional groups in the compound. (5)
(b) Explain various kinds of IR vibrational modes and their energy levels. (5)
(c) Explain the sampling methods for liquids and solid samples for taking IR spectra. (5)

3 (a) Explain the principle and instrumentation of NMR spectroscopy. (10)
(b) Draw a schematic HNMR spectrum for any one simple compound and explain the following:
(i) Chemical shift values (ii) Nature of protons (ii Number of protons (5)

4 (a ) Explain about the ionization techniques - electron impact, chemical ionization, FAB and MALDI and their advantages and disadvantages. (12)
(b) What are isotopic peaks and how are they identified? What is the importance of isotopic peaks? (3)

5 (a) Discuss the theory of HPLC. Describe the instrumentation and working of HPLC with the help of a neat labeled diagram. (10)
(b) Draw a schematic HPLC chromatogram and explain
(i) Resolution (ii) Tailing (iii) Peak (5)

6 **(a)** Discuss the theory and principle of electrophoresis. Explain the method of gel electrophoresis and its applications with examples. (12)
b) What is isoelectric focusing? (3)

7 **(a)** Discuss about various types of detectors used in gas chromatography. (11)
(b) Explain about moving boundary electrophoresis with required labeled diagram. (4)

8 Write a note on:
(a) Emission spectroscopy (6)
(b) Instrumentation and application of fluorescence spectroscopy (9)

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OU - 1702 OU - 1702

**Code No. 1149/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Main) Examination, February 2018 Subject:**

**Pharmacological and Toxicological Screening Methods – I**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1 (a) Describe in detail about regulations for laboratory animal care as per CPCSEA guidelines. (10)
(b) Define Bioassay. Discuss the principle involved in bioasssay. (5)

2 Define Parkinsonism. Enlist the models available to screen drugs for Parkinsonism and explain any two methods. (15)

3 Describe the preclinical screening procedures for the following:
(a) Anti ulcer (7)
(b) Anti-asthmatics (8)

4 Describe the screening methods for the evaluation of the following activities of a compound
(a) Antiarrythmics (8)
(b) Hepatoprotective drugs (7)

5 Describe the screening methods used to evaluate the therapeutic activity of the following:
(a) Drugs for Alzheimer's disease (8)
(b) Antiepileptics (7)

6 Define immunoassay. Outline principles of immunoassay and describe different types of immunoassays. (15)

7 List out the methods available to induce inflammation and describe the use of acute and chronic model in the screening of anti-inflammatory agents. (15)

8 What is diabetes? List out the methods available for induction of diabetes experimentally. Discuss streptozotocin induced method for the screening of antidiabetic agents. (15)

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**Code No. 1149/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Main) Examination, February 2018 Subject:**

**Pharmacological and Toxicological Screening Methods – I**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1 (a) Describe in detail about regulations for laboratory animal care as per CPCSEA guidelines. (10)
(b) Define Bioassay. Discuss the principle involved in bioasssay. (5)

2 Define Parkinsonism. Enlist the models available to screen drugs for Parkinsonism and explain any two methods. (15)

3 Describe the preclinical screening procedures for the following:
(a) Anti ulcer (7)
(b) Anti-asthmatics (8)

4 Describe the screening methods for the evaluation of the following activities of a compound
(a) Antiarrythmics (8)
(b) Hepatoprotective drugs (7)

5 Describe the screening methods used to evaluate the therapeutic activity of the following:
(a) Drugs for Alzheimer's disease (8)
(b) Antiepileptics (7)

6 Define immunoassay. Outline principles of immunoassay and describe different types of immunoassays. (15)

7 List out the methods available to induce inflammation and describe the use of acute and chronic model in the screening of anti-inflammatory agents. (15)

8 What is diabetes? List out the methods available for induction of diabetes experimentally. Discuss streptozotocin induced method for the screening of antidiabetic agents. (15)

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OU - 1702 OU - 1702

**Code No. 1148/PCI**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCI) (Main) Examination, February 2018 Subject:**

**Advanced Pharmacology - I**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

1 Discuss about the pharmacokinetics of Linear and non-linear component models. 15

2 (a) Discuss the pharmacology of acetylcholine. 8
(b) Explain in brief about GABA receptors. 7

3 (a) Classify anti-depressants and write about any two drugs used in anxiety. (2+8)
(b) Write a note on paracetamol. 5

4 (a) Classify diuretics. Write the pharmacology of furosemide and spironolactone. (2+6)
(b) Write a note on coagulants and fibrinolytics. (3+4)

5 (a) Explain the pharmacology of serotonin. 8
(b) Write the therapeutic uses of 5-HT antagonists. 7

6 (a) Explain in brief about BBB and drug transporters. (4+4)
(b) Write a note on G-Proteins. 7

7 (a) Discuss the patho physiology of Arrthymya. Write about the pharmacology and toxicology of two drugs used in Arrythmyia. (7 ½ )
(b) Discuss the pathophysiology of hyperlipedimia. Write about the pharmacology of any two drugs used in hyperlipedimia. (7 ½)

8 (a) Describe the MOA, adverse effects and therapeutic uses of ACE inhibitors. 7
(b) Explain the physiological role of prostacycline and bradykinin. (4+4)

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**Code No. 1150/PCl**

# FACULTY OF PHARMACY

**M. Pharmacy (Pharmacology) I-Semester (PCl) (Main) Examination, February 2018 Subject:**

**Cellular and Molecular Pharmacology**

**Time: 3 Hours** **Max. Marks: 75**

**Note: Answer any five questions. All questions carry equal marks.**

| | | |
|---|---|---|
| 1 | (a) Describe the structure and functions of any four cell organelles. | 8 |
| | (b) Write a note on apoptosis. | 7 |
| 2 | (a) Discuss in brief about JAK-STAT Pathway and MAP kinase pathway. | (5+5) |
| | (b) Write a note on nuclear receptor. | 5 |
| 3 | (a) Describe the various types of gene delivery techniques. | 8 |
| | (b) Write a note on PCR and SDS-PAGE. | (4+3) |
| 4 | (a) Describe in detail about genetic variations in drug metabolism . | 10 |
| | (b) Write a note on metabolomics. | 5 |
| 5 | (a) Explain about the basic equipments used in cell culture lab. | 10 |
| | (b) Write a note on calcium influx assays. | 5 |
| 6 | (a) Explain any two gene sequencing techniques. | (4+4) |
| | (b) Write a note on nitric oxide and cGMP. | (4+3) |
| 7 | (a) Describe the various types of cloning vectors. | 9 |
| | (b) Write a note on immunotherapeutics. | 6 |
| 8 | (a) Explain the principle and applications of flow cytometry. | 6 |
| | (b) Write a note on biosimilars and glucose uptake assays. | (5+4) |

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