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JM—04—2025

FACULTY OF SCIENCE AND TECHNOLOGY

M. Pharm. (First Semester) EXAMINATION

FEBRUARY, 2026

(CBCS PCI)

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES

Paper MPL-101-T

Modern Pharmaceutical Analytical Technique

(Tuesday, 24-2-2026) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right to indicate full marks.

(*iii*) Draw neat labelled diagram and reaction wherever necessary.

1. Answer the following questions : 20

(*a*) Enlist factors affecting on fluorescence.

(*b*) Define coupling constant.

(*c*) Write a note on solvent effect in UV-visibe spectroscopy.

(*d*) What is fingerprint region and its importance ?

(*e*) What is TMS and its application in NMR ?

P.T.O.

(f) Why is silica gel used in TLC ?

(g) State Bragg's law.

(h) Write a short note on TGA.

(i) Principle involved in ion-exchange chromatography.

(j) Differentiate between normal phase and RP-HPLC.

2. Solve any *two* of the following : 20

(a) Discuss the construction and working of FT-IR spectrophotometer with its advantages over dispersive IR. What is an interferogram ?

(b) Classify chromatographic method based on mechanism of separation and add a note on affinity chromatography.

(c) Write about ionization techniques used in mass spectroscopy. Discuss molecule ion and fragment ion with suitable example.

3. Solve any *seven* from the following : 7×5=35

(a) Describe mass fragmentation and its rule.

(b) Discuss X-ray crystallography and applications of X-ray diffraction.

(c) Give the principle, instrumentation and application of potentiometry.

(d) Write a note on ultra-high performance liquid chromatography.

(*e*) What is different method of thermal analysis ? Explain instrumentation and pharmaceutical application of DSC.

(*f*) What is electrophoresis ? Discuss their types.

(*g*) Give the proper NMR signal in the following compounds :

(*i*) Propanol

(*ii*) Acetic acid

(*iii*) Cyclopropane

(*iv*) Diethylether

(*v*) 1, 1, 2-trichloroethane.

(*h*) Compare AAS and FES. Which one is superior and why ?

(*i*) Discuss in detail any *two* detectors used in UV/visible spectrophotometer.

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JM—25—2025

FACULTY OF SCIENCE AND TECHNOLOGY

M. Pharm. (First Year) (First Semester) EXAMINATION

FEBRUARY, 2026

(CBCS PCI)

PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS-I

Paper MPL-103-T

(Saturday, 28-2-2026) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Write your answer to the point.

(*iii*) Draw neat labelled diagram wherever necessary.

1. Solve the following : 10×2=20

(*a*) Enlist common species used in laboratory experiments.

(*b*) Outline methods and techniques used in the production of transgenic animals.

(*c*) Define Anaesthesia and Euthanesia.

P.T.O.

(*d*) What are CPCSEA guidelines ?

(*e*) Enlist various applications of transgenic animals.

(*f*) Define GLP and its significance in experimental research.

(*g*) Describe the principle of bioassay. Give its types.

(*h*) What are the general principles and objectives of preclinical screening ?

(*i*) Define carcinogenesis and mutagenesis.

(*j*) List various techniques to induce hepatotoxicity.

2×10=20

2. Solve any *two* of the following :

(*a*) Enlist in-vitro and in-vivo screening methods for analgesic methods and explain any *two* in-vivo screening methods.

(*b*) What are anti-diabetic agents ? Explain various screening methods employed for anti-diabetic agents.

(*c*) Explain in detail general principles of good laboratory practices.

7×5=35

3. Solve any *seven* of the following :

(*a*) Explain the methods used to evaluate the impact of drugs on muscle co-ordination in pre-clinical experiments.

(*b*) Write a note on LIPSCHITZ test.

(c) Explain any *two* methods used for screening of Immunosuppresive agents.

(d) Discuss various pre-clinical screening methods employed for antiepileplic agents.

(e) Explain various methods and techniques of euthanasia in laboratory animas.

(f) Elaborate screening methods for anti-inflammatory activity.

(g) Write in detail about CPCSFA guidelines.

(h) Describe pre-clinical screening methods of nosotropic drugs.

(i) Discuss screening methods of anti-parkinson agents.

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JM—37—2025

FACULTY OF SCIENCE AND TECHNOLOGY

M. Pharm. (First Year) (First Semester) EXAMINATION

FEBRUARY/MARCH, 2026

(CBCS PCI)

CELLULAR AND MOLECULAR PHARMACOLOGY

Paper MPL-104T

(Wednesday, 4-3-2026) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 Hours *Maximum Marks—75*

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) Answer to the point only.

1. Answer the following : 10×2=20

(*a*) Define the term genomics and proteonomics.

(*b*) Define cryopreservation.

(*c*) Write applications of ELISA.

P.T.O.

(*d*) Give the classification of receptor.

(*e*) Define DNA electrophoresis.

(*f*) Define Autophagy and Necrosis.

(*g*) What is ligand gated ion channel ?

(*h*) Classify different types of gene.

(*i*) Enlist the role of phosphodiesterase.

(*j*) What are the stages of cell cycle ?

2. Answer any *two* of the following : 2×10=20

(*a*) Write in detail about recombinant DNA technology and gene therapy with applications.

(*b*) Classify receptor family and explain their molecular structure.

(*c*) What is meant by cell culture ? Give its types and give general procedure for cell culture.

3. Answer any *seven* of the following : 7×5=35

(*a*) Write on immunotherapeutics.

(*b*) Give genetic variations in drug transporters.

(*c*) Explain cellular death, regulation and its pathways.

(*d*) Write a note on cell cycle.

(*e*) Write a note on western blotting.

(*f*) Write a note on ELISA.

(*g*) Write principle and application of cell viability assay.

(*h*) Explain gene mapping and clonning of disease gene.

(*i*) Explain pharmacogenomics with its applications.