



OM—04—2026

FACULTY OF SCIENCE AND TECHNOLOGY

M.Pharm (First Semester) EXAMINATION

July, 2026

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES

(MPL-101T)

(Wednesday, 1-7-2026)

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.*

1 Attempt the following questions : 2×10=20

- (a) Mention *two* applications of UV-visible spectroscopy in pharmaceutical analysis.
- (b) What are fluorescence quenchers ?
- (c) What are quantum numbers and which one is relevant in NMR ?
- (d) Mention *two* types of ionization techniques used in mass spectroscopy.

P.T.O.



- (e) What is role of analyzer in mass spectrometer ?
- (f) Define fragmentation in mass spectrometry.
- (g) Define resolution in chromatography.
- (h) What is electrophoresis ?
- (i) Define isoelectric point and its significance.
- (j) What is an ion selective electrode in potentiometry ?
2. Attempt any *two* : 2×10=20
- (a) Explain in detail the instrumentation of an NMR spectrometer with neat labelled diagram and description of major components.
- (b) Explain the principle, instrumentation, detectors and applications of gas chromatography in drug analysis.
- (c) Describe in detail the principle, instrumentation and pharmaceutical applications of potentiometry.
3. Attempt any *seven* : 7×5=35
- (a) Discuss the difference between normal and derivative spectroscopy with examples.
- (b) Explain the instrumentation of FTIR spectrometer with a neat diagram.



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- (c) Discuss the criteria for selecting solvents used in NMR spectroscopy.
- (d) Explain the time of flight analyzer and its advantages.
- (e) Discuss the rules of fragmentation in structure elucidation.
- (f) Describe the instrumentation of HPTLC.
- (g) Explain the principle and working of capillary electrophoresis.
- (h) Describe rotating crystal technique used in X-ray crystallography.
- (i) Compare DSC and DTA in terms of the principle, data interpretation and applications.

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FACULTY OF SCIENCE AND TECHNOLOGY

M.Pharm. (First Semester) EXAMINATION

July, 2026

ADVANCED PHARMACOLOGY-I

(MPL-102T)

(Friday, 3-7-2026)

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 with appropriate charts/diagrams.

1. Answer all the questions :

10×2=20

(a) Classify opioid analgesics.

(b) What are vasodilators ? Give two examples.

(c) What are Kinins ? Give examples.

(d) Enlist steps in selection of antihypertensive drugs.

(e) Write uses of vitamin K.

P.T.O.



- (f) What is maintenance dose ?
- (g) What is plateau principle ?
- (h) What is anxiety ? Give example of antianxiety drugs.
- (i) What is drug specificity ?
- (j) What is neurohumoral transmission ?

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

- (a) What are prostaglandins ? Discuss physiological and pathological role of prostaglandins.
- (b) What are general anesthetics ? Classify ? Discuss steps in general anesthesia.
- (c) Define diuretics. Classify diuretics. Discuss pharmacology of thiazides.

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

- (a) Classify anti-epileptic drugs. Discuss mechanism of action of phenytoin.
- (b) What are coagulants ? Discuss process of coagulation.
- (c) Discuss physiological and pathological role of histamine.
- (d) Write pharmacotherapy of Parkinson's disease.



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- (e) Discuss agents affecting neuromuscular junction.
- (f) What are NSAIDs ? Classify. Describe pharmacology of paracetamol.
- (g) Discuss pharmacology of morphine.
- (h) Discuss process of biotransformation of drugs.
- (i) Explain neurotransmission in the autonomic nervous system.

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OM—29—2026

FACULTY OF SCIENCE AND TECHNOLOGY

M.Pharm. (First Semester) EXAMINATION

July, 2026

PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS-I

(MPL-103-T)

(Monday, 6-7-2026)

Time : 2.00 p.m. to 5.00 p.m.

Time—3 Hours

Maximum Marks—75

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

(ii) *Answer to the point only.*

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

1. Answer the following questions : 10×2=20

- (a) Give any *two* methods used for production of transgenic animals.
- (b) Write the principle of actophotometer.
- (c) Mention any *two* models used to evaluate antifertility agents.
- (d) What is the principle and purpose of Rotarod test ?

P.T.O.



- (e) Write *one* method to study antidiarrheal activity.
- (f) Differentiate between *in vivo* and *in vitro* screening.
- (g) Write the principle of two kidney, one clip hypertension in mice.
- (h) What are 3Rs in animal experimentation ?
- (i) What is the principle of immunoassay ?
- (j) What is the purpose of quarantine in laboratory animal facilities ?

2. Answer any *two* of the following questions :

2×10=20

- (a) Describe the *In-vivo* and *In-vitro* screening models for analgesic and anti-inflammatory agents.
- (b) Enlist the *In-vivo* and *In-vitro* screening models used for the evaluation of diuretic agents and describe principle, procedure and significance of Lipschitz test.
- (c) Discuss various alternative screening models used in preclinical pharmacology.

3. Answer any *seven* of the following questions :

7×5=35

- (a) Describe in detail pylorus ligation (shay rat) method for screening antiulcer drugs.



- (b) Write a short note on the oral glucose tolerance test (OGTT) and its importance in screening antidiabetic agents.
- (c) Explain the composition and function of IAEC as per CPCSEA guidelines.
- (d) Explain the methods of production of transgenic animals with examples.
- (e) Explain the principles and objectives of Good Laboratory Practice (GLP).
- (f) Explain any one *In-vivo* screening models for hepatoprotective.
- (g) Describe the streptozotocin induced diabetic model used for evaluating antidiabetic activity.
- (h) Describe any one screening models for the evaluation of antipsychotics.
- (i) Enlist the *In-vivo* screening models for antihypertensive agents. Discuss any one screening model.

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FACULTY OF SCIENCE AND TECHNOLOGY

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

July, 2026

CELLULAR AND MOLECULAR PHARMACOLOGY

Paper MPL-104-T

(Wednesday, 8-7-2026)

Time : 2.00 p.m. to 5.00 p.m.

Time—3 Hours

Maximum Marks—75

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

(ii) Answer to the point only.

(iii) Figures to the right indicate full marks.

1. Answer the following :

10×2=20

(a) Define Autophagy and Necrosis.

(b) Give functions of plasma membrane.

(c) Write on CAMP as a secondary messenger.

(d) Define NO and IP.

P.T.O.



- (e) Define DNA electrophoresis.
- (f) Give various types of gene transfer technique.
- (g) Define Proteomics.
- (h) Define Immunotherapeutics.
- (i) Define Biosimilar.
- (j) Enlist basic equipments used in cell survival.

2. Answer any *two* of the following :

2×10=20

- (a) Discuss in detail the various process of cell death. Explain about the apoptotic pathways.
- (b) Classify receptors. Discuss in detail molecular structural ligand gated Ion channels.
- (c) Discuss in detail principle and applications of genomics and explain any *two* proteomic tools.

3. Answer any *seven* of the following :

7×5=35

- (a) Write a note on glucose uptake assay.
- (b) Explain the principle, procedure and applications of MTT Assay.
- (c) Write a short note on DNA electrophoresis.



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- (d) Describe importance of siRNA and miRNA.
- (e) Write a note on cell cycle.
- (f) Write a note on mitogen activated protein kinase (MAPK)
- (g) Explain about cyclic AMP and diacylglycerol secondary messengers.
- (h) Write a note on immunotherapeutics.
- (i) Explain how polymorphism will affect drug metabolism.

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