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JM—02—2025

FACULTY OF SCIENCE AND TECHNOLOGY

M. Pharma. (First Semester) EXAMINATION

FEBRUARY, 2026

(CBCS PCI)

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES

Paper–MPH-101T

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

Time— Three Hours *Maximum Marks—75*

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

(*ii*) Answer the questions to the point.

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

1. Answer the following questions : 20

(*a*) What is transverse relaxation ?

(*b*) What is effect of hydrogen bonding on U.V. Spectrum ?

(*c*) Give the difference between PMR and NMR

(*d*) Give the application of Isotopic peak.

(*e*) What is H.E.T.P. ?

P.T.O.

(*f*) What is the wavelength range of overtone region and vibration region ?

(*g*) Why does C_6^{12} not show NMR spectra ?

(*h*) Give the principle of Ion-exchange chromatography.

(*i*) Explain the significance of Fingerprint region of I.R. spectrum.

(*j*) Enlist the various buffers in gel electrophoresis.

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

(*a*) Discuss the principle, instrumentation and application of DSC in pharmaceutical industries.

(*b*) What is Braggs' law ? Discuss X-ray powder technique.

(*c*) What is spin-spin coupling ? Give pharmaceutical application of NMR spectroscopy.

3. Solve any *seven* : 7×5=35

(*a*) Discuss different steps involved in HPTLC.

(*b*) Explain the factors affecting vibration frequencies in I.R. Spectroscopy.

(*c*) Discuss the construction and working of TOF analyser in Mass Spectroscopy.

(*d*) Explain Mac-Lafferty rearrangement in carbonyl compound.

(*e*) Discuss Van-diameter equation in chromatography.

(*f*) Explain derivative spectroscopy in UV-visible spectroscopy.

(*g*) Compare FES with AAS. Explain which is more superior in both.

(*h*) What is shift-reagents ? Discuss the application in NMR spectrum interpretation.

(*i*) Discuss the detectors used in HPLC.

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JM—15—2025

FACULTY OF PHARMACEUTICAL SCIENCES

M. Pharm. (First Semester) EXAMINATION

FEBRUARY, 2026

(CBCS PCI)

DRUG DELIVERY SYSTEM

Paper MPH-102T

(Thursday, 26-2-2026) **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 side indicate full marks.

(*iii*) Draw well labelled diagram wherever required.

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

(*a*) Define personalized medicines.

(*b*) Write criterias for selection of drugs for CRDDS.

(*c*) Define GRDDS and TDDS.

(*d*) Write the principle of Mucoadhesion.

P.T.O.

(*e*) Define permeation enhancer with example.

(*f*) Enlist physicochemical factors affecting CRDDS.

(*g*) Enlist theories of Mucoadhesion.

(*h*) What are the advantages of TDDS ?

(*i*) Define rate controlled drug delivery system.

(*j*) Enlist barriers for protein drug delivery.

2. Solve any *two* questions from the following : 2×10=20

(*a*) Explain various approaches to formulate GRDDS system.

(*b*) Explain various evaluation parameters of transdermal drug delivery system.

(*c*) Define vaccine. Write a note on uptake of antigens and permeation of vaccines through mucosal route.

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

(*a*) Write a note on telepharmacy.

(*b*) What are advantages and disadvantages of TDDS ?

(*c*) Enlist and explain various components of transdermal patches.

(*d*) Discuss osmotic activated drug delivery system with giving suitable example.

(*e*) Explain various biological factors affecting controlled release drug delivery system.

(*f*) Define and classify polymers with examples.

(*g*) How will you evaluate protein and peptide drug delivery system ?

(*h*) What are the stages of Mucoadhesion ?

(*i*) Write a note on formulation of vaccine drug delivery system.

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JM—27—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

FEBRUARY, 2026

(CBCS PCI)

MODERN PHARMACEUTICS

Paper MPH-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*) Figures to the right indicate full marks.

(*iii*) Answer to the point only.

1. Answer the following : 10×2=20

(*a*) Write objectives of cGMP.

(*b*) What is consolidation ?

(*c*) Give applications of ANOVA test.

P.T.O.

(*d*) What are objectives of plant lay-out ?

(*e*) Define validation.

(*f*) Give the importance of preformulation studies.

(*g*) What is operational qualification ?

(*h*) What do you mean by sales forecasting ?

(*i*) Explain the term material management.

(*j*) Give the applications of factorial designs.

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

(*a*) Define preformulation. Discuss in detail physicochemical parameters for drug substance in preformulation.

(*b*) What is optimization ? Discuss in detail various techniques for optimization in pharmaceutical formulations.

(*c*) Explain in detail dissolution and pharmacokinetic parameters.

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

(*a*) Discuss in detail physics of tablet compression.

(*b*) Explain in brief concept of Total Quality Management (TQM).

(*c*) Discuss validation and calibration of master plan.

(*d*) Write a short note on inventory management and control.

(*e*) Discuss physiological and formulation consideration in parenteral formulations.

(*f*) Write in brief about student t-test.

(*g*) Discuss in brief about ICH and WHO guidelines for calibration of equipments.

(*h*) Write a note on contour design.

(*i*) Explain in detail kinetics of stability.

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JM—39—2025

FACULTY OF PHARMACEUTICAL SCIENCES

M. Pharm. (First Semester) EXAMINATION

FEBRUARY/MARCH, 2026

(CBCS PCI)

PHARMACEUTICAL REGUCATORY AFFAIR

Paper MPH104-T

(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*) Answer to the point only.

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

1. Answer *all* the following : 10×2=20

(*a*) DMF is never approved or disapproved. Justify.

(*b*) What is done in phase 4 of clinical trials ?

(*c*) Enlist ICH-Q guidelines.

P.T.O.

(*d*) Name regulatory bodies in Australia and Japan.

(*e*) What does it mean by innovator product ?

(*f*) What is purpose of establishment of ICH ?

(*g*) Enlist general contents in BMR.

(*h*) Give the exemption period for orphan drugs and pediatric drugs.

(*i*) Enlist various types of INDs

(*j*) What is the role of sponsor in clinical trial ?

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

(*a*) Write a note on informed consent process.

(*b*) Write a note on master formula record.

(*c*) Describe in detail about CTD and *e*-CTD.

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

(*a*) Elaborate on types of DMF.

(*b*) Describe important process of getting new drug approval.

(*c*) Write a note on important provisions of Hatch Waxman Act.

(*d*) Write in brief about HIPAA.

(*e*) Highlight the role of principal investigator in clinical trials.

(*f*) Describe constitution and functions of IRB.

(*g*) Write a note on outsourcing BA and BE studies to CRO.

(*h*) Write in short about ANDA approval process.

(*i*) What is post marketing surveillance ?