



Code No: H-8094/PCI

FACULTY OF PHARMACY

**M.Pharmacy- II Semester (PCI) (Pharmaceutics) (Main & Backlog)
Examination, December 2025**

Subject: Molecular Pharmaceutics (Nano technology and Targeted DDS)

Time: 3 Hours

Max.Marks:75

Note: Answer any Five questions.

(5 x 15 = 75 Marks)

1. a) Explain different types of drug targeting and write in detail about first order targeting with examples (8)
b) What do you mean by ligand mediated targeting? (7)
2. a) Explain various transport mechanisms across blood brain barrier. (8)
b) What are the ideal properties of carrier? (7)
3. a) Discuss the preparation methods of Niosomes. (8)
b) Describe in detail about various methods of preparation of microspheres. (7)
4. Write about methods of preparation and applications of phytosomes and electrosomes. (15)
5. a) Write about containers, propellants and evaluation tests for pharmaceutical aerosols. (8)
b) Explain about intranasal drug delivery systems. (7)
6. a) Explain about in-vivo and ex-vivo gene therapy. (8)
b) Discuss in detail about dry powder inhaler. (7)
7. Explain the methods of preparation and evaluation of nanoparticles. (15)
8. a) Write about aptamers. (8)
b) Explain in detail about tumor targeting. (7)



Code No.: H-8091/PCI

FACULTY OF PHARMACY
M.Pharmacy II Semester (PCI) (Pharmaceutics) (Main & Backlog)
Examination, December 2025

Subject: Advanced Biopharmaceutics & Pharmacokinetics

Time: 3 Hours

Max. Marks: 75

Note: Answer any five questions.

(5 x 15 = 75 Marks)

1. a) Explain the theories of drug dissolution?
b) Explain physicochemical properties influencing drug absorption
2. a) Write a note on in vitro- in vivo correlation?
b) Discuss the different methods of dissolution testing?
3. The equation that best fits the plasma level time curve of drug after an IV bolus dose of 2000 mg is: $C=143 e^{-0.87t}$
 - a) What is V_d , $t_{1/2}$,
 - b) Plasma concentration after 6 hours,
 - c) How much of drug left in body after 6 hours,
 - d) When the next dose should be given if the drug becomes ineffective when the plasma level falls below $50 \mu\text{g/ml}$
 - e) How long will the plasma level lie in the therapeutic window if the above dose is given as IV bolus?
4. Describe the dose dependent kinetics? Explain the Michaelis-Menten equation?
5. a) Discuss the pharmacokinetic drug interactions with suitable examples?
b) Explain the various methods for permeability studies?
6. Write in detail about the bioequivalence protocol?
7. Discuss the pharmacokinetic of novel drug delivery systems using examples.
8. a) Define clearance and explain the parameters with the equation.
b) Write a note on dose adjustment in renal failure patients.



Code No: H-8092/ PCI

FACULTY OF PHARMACY
M. Pharmacy (Pharmaceutics) (PCI) II - Semester (Main & Backlog)
Examination, December 2025

Subject: Computer Aided Drug Delivery System

Time: 3 Hours

Max. Marks: 75

Note: Answer any Five questions.

(5 x 15 = 75 Marks)

1. i) Role of computers in Pharmaceutical research and development.
ii) Statistical modeling in pharmaceutical research.
2. Write a note on following
 - i) ICH Q8 guidelines
 - ii) Quality-by-Design (QbD) in pharmaceutical product development.
3. (a) Write about i) P-gp ii) OCT iii) Hpept1 iv) BBB-Choline transporters
4. What is the concept of optimization? Write the optimization parameters in formulation development. Explain factorial design.
5. Write a note on
 - i) Development of pharmaceutical emulsion by optimization design.
 - ii) Legal protection of innovative uses of computers in pharmaceutical R&D.
6. Write a brief note on
 - i) Gastrointestinal absorption simulation
 - ii) IVIVC and Bio waiver considerations.
 - iii) Computer simulation for whole organism and isolated tissues.
7. i) Write about clinical data collection and management.
ii) Write a brief note on regulation of computer systems.
8. Write a note on
 - i) Artificial intelligence and robotics in pharmacy.
 - ii) Pharmacy automation applications, advantages and robotics current challenges in pharmaceutical product development.

FACULTY OF PHARMACY

M. Pharmacy (PCI) II - Semester (Pharmaceutics) (Backlog) Examination, June 2025
Subject: Advanced Biopharmaceutics and Pharmacokinetics

Time: 3 Hours

Max.Marks:75

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

1. (a) Discuss Ph-partition hypothesis and its limitations? (8)
(b) Explain dosage form factors influencing drug absorption? (7)
2. (a) Explain compendial methods of in vitro drug dissolution. (10)
(b) Write a note on IVIVC (5)
3. (a) Define clearance and explain the parameters with the equation (8)
(b) Write a note on dose adjustment in renal failure patients. (7)
4. (a) What is compartmental analysis? (5)
(b) Derive the equation of IV Bolus one compartment model with estimation of all the parameters? (10)
5. A dose of 5mg of metaclopramide was given as IV bolus injection to a female patient and following concentration time data was obtained. Assuming that the drug follows one compartment open model drug disposition. Calculate all the possible pharmacokinetic parameters

Time in hrs	0.5	1	2	3	4	5	6	8	10	12	14
Plasma Concentration Of Metaclopramide ($\mu\text{g/mL}$)	50	47	40	33	28	23	20	14.5	10	7.2	5.3

6. (a) Explain the evaluation of data and various study designs for bioequivalence study. (12)
(b) Explain the clinical significance of bioequivalence study. (3)
7. (a) Discuss the pharmacokinetic drug interactions? (8)
(b) Write a note on pharmacokinetics of proteins and peptides? (7)
8. (a) Explain ADME by non-linear drug kinetics? (10)
(b) Describe the dosage regimen calculations in multiple dosing? (5)

FACULTY OF PHARMACY

M. Pharmacy (PCI) II - Semester (Pharmaceutical Chemistry) (Backlog) Examination,
June 2025

Subject: Advanced Organic Chemistry-II

Time: 3 Hours

Max. Marks: 75

Note: Answer any five questions. All questions carry equal marks. (5 x 15 = 75 Marks)

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| 1. | (a) Discuss the basic Principles of green chemistry.
(b) Write a note on solvents used in microwave assisted synthesis. | (8+7) | 1. |
| 2. | (a) Give a note on Fmoc and t-Boc protocols in solid phase peptide Synthesis.
(b) Write a note on coupling reactions in peptide synthesis. | (8+7) | 1. |
| 3. | (a) Discuss the basic principles of photochemical reactions.
(b) Explain in detail about Cycloaddition reactions mechanism with examples. | (8+7) | 2. |
| 4. | (a) What is heterogeneous catalysis? Write the advantages and disadvantages.
(b) Discuss about phase transfer catalysis and its applications. | (8+7) | 3. |
| 5. | (a) Discuss about relative and absolute configuration.
(b) Write the about catalytic asymmetric organic synthesis. | (8+7) | 4. |
| 6. | (a) Write any five synthetic applications of Ultra sound assisted reactions.
(b) Discuss about side reactions in peptide synthesis. | (8+7) | 5. |
| 7. | (a) Explain about photo oxidation and photo fragmentation.
(b) Write a note on applications of enzymes in organic synthesis. | (8+7) | 5. |
| 8. | (a) Explain about Cahn, Ingold, Prelog sequence rule with examples.
(b) What are racemates? Explain resolution of recemates and its applications. | (8+7) | 6. |



Code No: G-13126/PCI

FACULTY OF PHARMACY

M. Pharmacy (PCI) II - Semester (Pharmaceutics) (Backlog) Examination, June 2025

**Subject: Molecular Pharmaceutics
(Nano Technology & Targeted DDS)**

Time: 3 Hours

Max. Marks: 75

Note: Answer any five questions. All questions carry equal marks. (5 x 15 = 75 Marks)

1. (a) Define drug targeting and explain about concepts and biological process involved in drug targeting. (8 Marks)
(b) Explain about tumor targeting. (7 Marks)
2. (a) Define liposomes and classify liposomes. (5 Marks)
(b) Explain about the preparation and evaluation of liposomes. (10 Marks)
3. (a) What are monoclonal antibodies and write the preparation method for monoclonal antibodies? (7 Marks)
(b) Explain about the preparation and applications of aquasomes. (8 Marks)
4. (a) Explain the method of preparation of niosomes. (10 Marks)
(b) Write the applications of niosomes. (5 Marks)
5. (a) What are aerosols? Explain various propellants used in the manufacturing of aerosols? (5 Marks)
(b) Explain about intra nasal drug delivery systems. (5 Marks)
(c) Explain the evaluation of aerosols. (5 Marks)
6. (a) Explain about liposomal gene drug delivery system. (8 Marks)
(b) Write about various diseases treated using gene therapy. (7 Marks)
7. Define microspheres. Write in detail preparation and evaluation methods of Microspheres. (15 Marks)
8. (a) Explain about therapeutic antisense molecules. (8 Marks)
(b) Explain about aptamers. (7 Marks)



Code No: G-13127/PCI

FACULTY OF PHARMACY

M. Pharmacy (PCI) II - Semester (Pharmaceutics) (Backlog) Examination, June 2025
Subject: Advanced Biopharmaceutics and Pharmacokinetics

Time: 3 Hours

Max.Marks:75

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

1. (a) Discuss Ph-partition hypothesis and its limitations? (8)
(b) Explain dosage form factors influencing drug absorption? (7)
2. (a) Explain compendial methods of in vitro drug dissolution. (10)
(b) Write a note on IVIVC (5)
3. (a) Define clearance and explain the parameters with the equation. (8)
(b) Write a note on dose adjustment in renal failure patients. (7)
4. (a) What is compartmental analysis? (5)
(b) Derive the equation of IV Bolus one compartment model with estimation of all the parameters? (10)
5. A dose of 5mg of metaclopramide was given as IV bolus injection to a female patient and following concentration time data was obtained. Assuming that the drug follows one compartment open model drug disposition. Calculate all the possible pharmacokinetic parameters

Time in hrs	0.5	1	2	3	4	5	6	8	10	12	14
Plasma Concentration Of Metaclopramide (µg/mL)	50	47	40	33	28	23	20	14.5	10	7.2	5.3

6. (a) Explain the evaluation of data and various study designs for bioequivalence study. (12)
(b) Explain the clinical significance of bioequivalence study. (3)
7. (a) Discuss the pharmacokinetic drug interactions? (8)
(b) Write a note on pharmacokinetics of proteins and peptides? (7)
8. (a) Explain ADME by non-linear drug kinetics? (10)
(b) Describe the dosage regimen calculations in multiple dosing? (5)



Code No: G-13214/PCI

FACULTY OF PHARMACY
M. Pharmacy (Common to All) III - Semester (PCI) (Main & Backlog) Examination,
June 2025

Subject: Research Methodology and Biostatistics

Time: 3 Hours

Max Marks: 75

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

1. (a) Write a note on types of research. (7)
(b) What are the strategies to eliminate errors/bias? (8)
2. (a) Write a note on paired and unpaired student t test. (7)
(b) Explain in brief about importance of sample size in research. (8)
3. (a) Describe in brief about values in medical ethics. (7)
(b) Write a note on euthanasia and informed consent. (8)
4. (a) Describe about the necessary SOPs required to maintain laboratory animals. (7)
(b) Write a note on treatment and control of diseases in laboratory animals. (8)
5. (a) Write a note on history of declaration of Helsinki. (7)
(b) Write the basic principles of medical research. (8)
6. (a) Explain in brief about objectives of research (7)
(b) Write a note on placebo and blinding technique. (8)
7. (a) Write about t-test. (7)
(b) Write a note on correlation co-efficient. (8)
8. (a) Explain about the double effect and medical research ethics committee. (7)
(b) Write a note on transport of laboratory animals. (8)
