Name:
Enrolment No:

UPES
End Semester Examination, May 2025

Course: Medicinal Chemistry **Semester: II**
Program: MSc Chemistry **Time: 03 hrs.**
Course Code: CHEM7055 **Max. Marks: 100**

Instructions:
1. **Read all the questions carefully and attempt questions of one section in one place.**
2. **Question 9 in Section B and Question 11 in Section C have internal choice questions.**

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q1	Define the bioavailability of a drug. What are the different factors that affect the bioavailability of an orally administered drug?	**4**	**CO1**
Q2	Explain the following. a. Pharmacodynamics of drug action b. Advantages of *in vitro* testing over *in vivo* testing.	**4**	**CO2**
Q3	Differentiate between a soft drug and a prodrug with suitable examples. Which of these is recommended for achieving a burst drug release?	**4**	**CO2**
Q4	Discuss drug pharmacokinetics and the various factors that determine the drug metabolism.	**4**	**CO3**
Q5	Justify the statement "Molecular docking may not provide a precise information on ligand behavior within the active site of target protein".	**4**	**CO1**
	SECTION B **(4Qx10M= 40 Marks)**		
Q6	Write a note on the significance of Partitioning Coefficient in medicinal chemistry. How will you determine the partitioning coefficient for a drug experimentally ?	**10**	**CO3**
Q7	Discuss competitive inhibitors and active sites directed irreversible inhibition of enzyme. How will you experimentally verify the competitive inhibition of an enzyme by a drug?	**10**	**CO2**
Q8	How will you distinguish a lead compound from a hit molecule ? Discuss the steps involved in a typical drug discovery paradigm.	**10**	**CO2**
Q9	State the importance of 'Lipinski's rule of five' in medicinal chemistry. How will you determine the key physicochemical parameters associated with this rule? Give examples. **OR**	**10**	**CO1**

	What are drug receptors? Categorize various types of drug receptors based on the nature of drug-receptor interactions.		
SECTION-C (2Qx20M=40 Marks)			
Q10	Write a short note on the following. a. Concept of 'Bioisosterism' with examples. b. Computer programs for molecular modeling. c. Routes of drug administration and their importance.	**20**	**CO2**
Q11	Categorize anticancer drugs based on their mode of action. Also draw the structures of any one commercialized drug molecules under each class of anticancer drugs. **OR** Explain the drug metabolism process, covering Phase I and Phase II metabolism. Discuss their role in the pharmacological action of drugs.	**20**	**CO3**