

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
PHARM.D. - YEAR - III EXAMINATION - WINTER 2025

Subject Code: 838805

Date: 01-12-2025

Subject Name: Medicinal Chemistry

Time: 10:30 AM TO 01:30 PM

Total Marks: 70

Instructions

- 1. Attempt any five questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**

	Marks
Q.1 (a) 1. Explain the concept of antisense molecules. 2. Illustrate the Hansch QSAR model in brief with its significance in drug design. 3. Enumerate the advantages and limitations of combinatorial chemistry in modern drug discovery.	06
(b) Enlist oral hypoglycemic agents based on their chemical structures and interpret the SAR of sulfonylureas.	04
(c) Summarize the SAR and mechanism of action of HMG-CoA reductase inhibitors.	04
Q.2 (a) Discuss the chemistry and SAR of sulfonamides and outline the synthesis of any one sulfonamide derivative.	06
(b) Define and classify prodrugs. Enlist the pharmaceutical applications of prodrug design with appropriate examples.	04
(c) 1. Give the synthesis and therapeutic category of metronidazole. 2. Compare the structures and therapeutic uses of any two local anti-infective agents.	04
Q.3 (a) Define and classify diuretics. Describe the SAR of thiazide diuretics.	06
(b) 1. Explain the key aspects of thyroid agents. 2. Summarize the mechanism and therapeutic importance of anticoagulants.	04
(c) Discuss the main principles and evaluate the key techniques employed in Computer-Aided Drug Design (CADD).	04
Q.4 (a) 1. Describe the SAR of calcium channel blockers as antihypertensive agents. 2. Outline the classification and therapeutic significance of antiarrhythmic agents.	06
(b) Classify antimetabolites with suitable examples and demonstrate the synthesis of thiotepa.	04
(c) Categorize antiviral drugs and illustrate one representative structure from each class.	04
Q.5 (a) 1. Explain the metabolism and SAR of testosterone. 2. Evaluate the types and significance of oral contraceptive agents.	06

- (b) Analyze the SAR of quinoline derivatives and correlate structural features with antimalarial activity. **04**
- (c) Describe the chemistry, SAR, and outline the synthesis of chloramphenicol. **04**
- Q.6 (a)** 1. Describe the synthesis of glyceryl trinitrate. **06**
2. Write the structure and describe the uses of hydralazine.
3. Draw the structure and state the therapeutic use of clofibrate.
- (b) Summarize the chemistry and explain the nomenclature of steroids. **04**
- (c) Define β -lactam antibiotics and classify them based on their different heterocyclic ring. Explain their nomenclature. **04**
- Q.7 (a)** 1. Justify why tetracycline exhibits three different pKa values. **06**
2. Draw the structures and describe the uses of any two adrenocorticoids.
3. Explain the mechanism of action of macrolide and aminoglycoside antibiotics.
- (b) 1. Construct the synthesis pathway of isoniazid. **04**
2. Identify and illustrate any two drugs containing a triazole ring system.
- (c) Evaluate the importance and applications of diagnostic agents with suitable examples. **04**
