

M. SC. IN CHEMISTRY

(MSCCHEM)

Term-End Examination

December, 2025

**MCHE-013 : SUPRAMOLECULAR
CHEMISTRY**

Time : 2 Hours

Maximum Marks : 50

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

1. (a) What are the different types of π - π interactions that take place in supramolecular chemistry ? What is the source of these types of interactions ? 5

- (b) What is meant by complementarity in supramolecular chemistry ? Give a few examples. 5
2. (a) How does preorganisation reduce the entropic penalty during binding ? 5
- (b) Does kinetically stable supramolecular complex always match with the thermodynamically most stable product ? Justify your answer. 5
3. (a) Briefly discuss the various factors which one must take into consideration while designing a molecular receptor for selective binding of a guest molecule. 5
- (b) With the help of suitable diagrams, compare the ways in which podands and macrocycles bind with a guest. 5

4. (a) Discuss the importance of entropic hydrophobic effect in supramolecular chemistry. 5
- (b) Write a short note on photosynthesis and artificial leaves. 5
5. (a) Give the steps involved in supramolecular reactivity and catalysis. 5
- (b) Write a short note on supramolecular electronic ionic and switching devices. Give a suitable example. 5
6. (a) When is a device termed supramolecular ? Discuss. 5
- (b) Define molecular recognition. What are the factors that lead to high molecular recognition ? 5

7. (a) How were crown ethers discovered ?
Explain the Pedersen experiment. 5
- (b) In what ways are anions different from cations in the context of host-guest chemistry ? Explain. 5

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