

Prabhat Kumar College Contai

PG Examination

Class: Chemistry (PG) SEM-III

Paper: CEM 303: Advanced Organic Chemistry-II (Organic Spl.)

F.M: 40

Time: 2 h

Answer any four questions

1. a) What is supramolecular Chemistry? b) What are non-covalent interactions? Give example.
c) What is H-bond? Write in details about the various parameter of H-bond. d) Define co-operativity. 2+3+3+2
2. a) Define macrocyclic effect and selectivity. b) Discuss different types of $\pi \cdots \pi$ interaction? What is the limiting distance for two aromatic rings to interact with each other? c) Why macrocycle formation is favoured over polymerization when using high-dilution techniques. 4+3+3
3. a) Define Complementarity and preorganization. b) Give few examples of electrostatic interaction. c) How Cyclam can be synthesized using a suitable template. 4+3+3
4. a) Describe Kinetic template effect. b) How crown ethers can be prepared. c) Discuss in details about the selectivity of crown ethers to bind with various metal cations. 4+2+4
5. a) Between pentaethylene glycol dimethyl ether, [18] crown 6 and [2,2,2] cryptand which has the higher affinity towards K^+ and why? b) How Adamentyl alcohol can be detected through fluorescence in modified cyclodextrin derivative? c) Define self-assembly. 4+4+2
6. a) Define chiral recognition. b) How p-xylene form 1:1 complex with β -cyclodextrin in water. c) Design and explain the mechanism of a host (naphthalene based) where K^+ can be detected by fluorescence 'ON' and 'OFF'. d) Why β -cyclodextrin is used in drug delivery. 2+2+4+2
7. a) What is supramolecular gel? b) Describe the structural features of cyclodextrine. c) Design a photoresponsive host molecules and describe its utility in host-guest binding. d) Define effective molarity. 2+2+4+2
8. a) What is peptide bond? b) Describe the primary and secondary structure of peptide. c) Write down the principle of Green Chemistry. 2+4+4