

M.Tech. / Sem. VI

A

CHEMICAL SYNTHESIS AND PROCESS TECHNOLOGIES

Paper - Module 27: SUPRAMOLECULAR CHEMISTRY

(N.C. Admissions of 2008 and onwards)

Time : 2 hours

Maximum Marks : 38

(Write your Roll No. on the top immediately on receipt of this question paper.)

Answer five questions in all including QNo. 1, which is compulsory.

1. Explain the role of hydrogen bonding and sodium salts in the formation of liquid crystal of folid acid in aqueous solution. 06
2. Give stepwise synthesis of [2] catenane containing donor and acceptor aromatic molecules and explain its temperature dependent nmr spectra. 08
3. Give the synthesis of zinc complex of 5 - (4- pyridyl) 10, 15, 20 - triphenyl porphyrin and its role in metal directed self assembly in organic solvents. 08
4. Give the synthesis of bis (N⁺ - p - nitrophenyl ureido) calix [4] arenes and their roles in non - covalent interaction with suitable neutral molecules. 08
5. Give the preparation of cyclodextrins from starch catalyzed by glycosyl transferase and explain their roles in supramolecular interactions with selected aromatic compounds. 08
6. Give the synthesis of porphyrin - fullerene conjugates and their role in the supramolecular photochemical electron transfer in model photosynthesis. 08
7. Give the brief account on any two of the following
 - a) Molecular recognition
 - b) Role of dendrimer in supramolecular chemistry
 - c) Electron transfer in model membranes
 - d) Supra molecular devices
 - e) Functionalization of carbon nanotubes. 2 x 4