

2018

CHEMISTRY

CHM 304

ADVANCED TOPICS IN CHEMISTRY

Full Marks: 80

Time: 3 hours.

The figures in the margin indicate full marks for the questions

1. Answer the following questions 5×4=20
- (a) Write briefly about any five principles of green chemistry. 5
- (b) Write briefly about atom economy in green chemistry with examples. 5
- (c) What are ionic liquid? Explain its utilization in green chemistry with example. 5
- (d) Explain with examples about the roles of catalyst in green chemistry. 1+4
2. Answer the following questions 5×4=20
- (a) Define supramolecule. In what way it differs from a typical molecule? Sketch a molecular level diagram showing a scientific process from molecule to supramolecular chemistry. 1+2+2
- (b) (i) List the basic functions of supramolecular species. 2
- (ii) Supramolecules can serve as devices for transforming information. Explain. 3
- (c) Furnish suitable example of a receptor which can recognize spherical Cs^+ ion. Is it useful for NH_4^+ recognition? Explain. 5

- (d) Briefly discuss the role of supramolecules in catalysis. 5
3. Write short notes(*Any three*) 3×5=15
- (a) Crown ethers
 - (b) Cryptands
 - (c) Cyclodextrins
 - (d) Switching devices
4. What do you mean by the following terms 2+2+1
- (a) Combinatorial chemistry
 - (b) High throughput screening
 - (c) Linker
5. Answer the following questions (*Any two*) 10×2=20
- (a) Outline the basic principle of combinatorial chemistry.
 - (b) Describe Furka's mix and split technique used in combinatorial synthesis.
 - (c) Outline the parallel synthesis method used in combinatorial synthesis.
