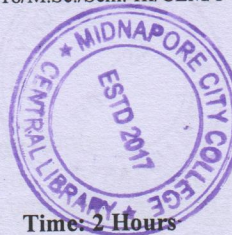


PG (NEW) CBCS
M.Sc. Semester-III Examination, 2019
CHEMISTRY
PAPER: CEM-303
(ORGANIC SPECIAL)



Full Marks: 40

Time: 2 Hours

GROUP-AAnswer any four of the following questions:

2×4=8

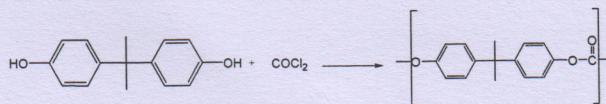
1. What do you mean by atom economy of a chemical reaction? Illustrate with an example.
2. Give a synthesis of adipic acid from benzene.
3. Write a synthesis of adipic acid starting from a renewable material.
4. What is molecular recognition?
5. Define different types of supramolecular interactions.
6. What is hydrophobic effect?
7. Write names and structures of two host molecules for the recognition of cations.
8. What is Micelle?

GROUP-BAnswer any four of the following questions:

4×4=16

9. Write the Ion-transport mechanisms through membranes. 4
10. Show the kinetic study of the effect of various cations on the template synthesis of benzo[18]crown-6. 4
11. In the following synthesis which is a hazardous chemical? What Safer alternative can be used in its place? 2+2

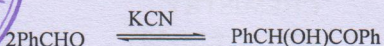
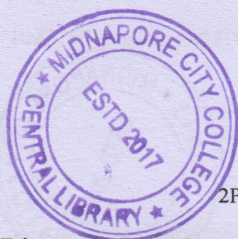
a)



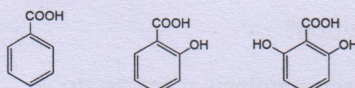
(P.T.O)

(2)

b)



12. Discuss at least four environmental hazards/disasters that make the people believe that chemistry is fouling the planet. 4
13. Write a note on dye-sensitized solar cell with pictorial representation. 4
14. Write a note on binding affinity of crown ether to different cations. 4
15. What is Benesi Hildebrand plot? Explain with reason the acidity order of following benzoic acid derivatives. 2+2



16. Write the names and structures of nitrogen bases present in DNA. Write Watson and Crick model of DNA. 2+2

GROUP-C

Answer any four of the following questions:

8×2=16

17. Write note on following: 2×4
- Hydrogen-bonded self-assembly.
 - Biochemical self-assembly.
 - Oligomerization of a dipeptide.
 - Molecular imprinting.
18. What is a molecular sensor? What are catenanes? Describe the structure of RNA. 2+2+4
19. Describe the replication process of DNA. What is the isoelectric point of an amino acid? Give one examples of each acidic, basic and neutral amino acids. 4+2+2

(P.T.O)

(3)

20. What are essential and nonessential aminoacids? Give examples.

Describe the resin based solid phase synthesis of peptide. The pKa values for the three groups X,Y,Z of aspartic acids are 2.09, 3.86 and 9.82 respectively.

2+3+2+1

Show the base pairing in DNA.