Roll No. ☐☐☐☐☐☐☐☐☐☐☐   Total No. of Pages : 02

Total No. of Questions : 19

M.Sc (Chemistry) (Campus) (2015 to 2017) (Sem.-3)
SELF-ASSEMBLED MATERIAL
Subject Code : CHL-503A
M.Code : 74890

Time : 3 Hrs.   Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :
1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains SIX questions carrying FIVE marks each and students have to attempt ALL questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Answer the following :   2×10=20

1. Write the applications of bacterial S-layers.

2. What is fibrin and how is it synthesized?

3. What is metal-organic frameworks and write their applications?

4. Differentiate between positive and negative cooperativity.

5. Write an example of self-assemble coordination polyhedral and its descriptor.

6. Write the stages in the self-assembly of adenine-uracil nucleic acid double helices.

7. What do you understand by normal-phase chromatography?

8. Given an example of [4+4] helicates.

9. Write the truth table for OR logic gate.

10. Draw the structures of [2] and [3] catenanes.

SECTION-B

11. Explain briefly biological self-assemble fibers and layers.   5

12. Discuss with suitable example, how surfactant chemistry is useful in biological systems.
                                                                                    5

13. Write a short note on cooperativity in oxygen transfer.   5

14. Explain thermodynamic model for self-assembly of zinc porphyrin complexes.   5

15. How do self-assembly is helpful for understanding the structure of Tabacco Mosaic Virus?
                                                                                    5

16. Illustrate with suitable examples, how proteins and foldamers are different from each other?   5

SECTION-C

17. a) What are metal-organic polyhedral? Discuss with suitable examples. Write their applications.   6

    b) Write a short note on hydrogen bond assisted supramolecular assembly.   4

18. a) Write a short note on molecular switches.   5

    b) What is the importance of synthetic template? Explain with examples.   5

19. a) Discuss with suitable examples for [6+6] helicates.   5

    b) What do you understand by Catenanes and Rotaxanes? Draw the Truth table and symbols for XOR, XNOR and NAND logic gates.   5

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.