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.