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Reg. No. : .....

Name : .....

Fourth Semester M.Sc. Degree Examination, March 2021.

Chemistry

CH/CL/CA 241 : CHEMISTRY OF ADVANCED MATERIALS

(2016 Admission Onwards)

Time : 3 Hours Max. Marks : 75

SECTION – A

Answer any two from (a), (b),(c), of each question. Each sub question carries **2** marks

1. (a) Give examples for D and 3D nano materials.

   (b) What is quantum confinement?

   (c) Write one method for sysnthesis of nano particles.

2. (a) Write two differences between SEM and TEM.

   (b) What is FTIR spectroscopy?

   (c) What is an EDAX?

3. (a) What is meant by chain transfer polymerisation?

   (b) Define the term tacticity.

   (c) Explain glass transition temperature.

P.T.O.

4. (a) What are conducting polymers?

(b) Write one method for the synthesis of polypyrroles.

(c) Explain the term lithography.

5. (a) What is piezoelectricity?

(b) What are shape memory polymers?

(c) Give two examples of self-healing polymers.

(10 × 2 = 20 Marks)

SECTION – B

Answer either (a) or (b) of each question. Each question carries **5** marks.

6. (a) Explain the relation between size and properties of nano materials.

(b) Briefly describe hydrothermal methods for the preparation of nano materials.

7. (a) Describe the principle behind AFM.

(b) Describe the properties of C60.

8. (a) Explain DSC method for determination of Glass transition temperature.

(b) Describe GPC method for determining molecular weight of polymers.

9. (a) Distinguish between Carbon chain and hetero chain polymers.

(b) What are photoresponsive and photorefractive polymers.

10. (a) Give briefing on ferro fluids.

(b) What are spiropyrans and spirooxazines.

(5 × 5 = 25 Marks)

SECTION – C

Answer any three question. each question carries **10** marks.

11. Explain in detail the various methods for synthesis of nano materials.

12. Discuss light scattering method for the determination of molecular weight of polymer.

13. Describe the process of functionalization and reactivity of Carbon nano tube.

14. Write short note on different type of sensors and their applications.

15. Give a brief account

    (a) Shape memory polymers

    (b) Piezoelectric materials.

(3 × 10 = 30 Marks)
