

Reg. No. :

Name :

Fourth Semester M.Sc. Degree Examination, May 2020

Chemistry

CH/CL/CA 241 : CHEMISTRY OF ADVANCED MATERIALS

(2016 Admission onwards)

Time : 3 Hours

Max. Marks : 75

SECTION – A

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

1. (a) Explain hydrothermal method of synthesis of nanomaterials.
(b) What 2D and 3D nanomaterials with eg?
(c) Explain Sol-Gel method of preparation of nano materials.
2. (a) Differentiate Single crystal XRD and powder XRD.
(b) What are applications of SEM?
(c) Explain two methods for functionalization of CNT?
3. (a) Explain anionic polymerisation.
(b) Explain degree of crystallinity.
(c) What is bulk polymerisation?

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4. (a) Explain one method for synthesis of polyaniline.
(b) What are photoresponsive polymers?
(c) What are hetrochain polymers?
5. (a) What is electrochromism?
(b) Give example for pH responsive polymers.
(c) What are self-healing polymers?

(2 × 10 = 20 Marks)

SECTION – B

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

6. (a) How properties of nanomaterials varies with size?
(b) Explain quantum confinement.
7. (a) Explain any two methods for the synthesis of fullerene.
(b) Discuss the applications of nano-technology in effluent treatment.
8. (a) Explain GPC method for molecular weight determination.
(b) Explain Emulsion polymerisation.
9. (a) What is photorefractive polymer?
(b) Explain phase morphology.
10. (a) Give short notes on Photochromic Coordination compounds.
(b) Explain polymorphism.

(5 × 5 = 25 Marks)



SECTION – C

Answer any **three** questions and each question carries **10** marks. :

11. Give short note on optical property of nanoparticle. Explain role of metal nanoparticles in catalysis.
12. With the help of a neat diagram explain the principle, working and applications of AFM.
13. Explain the thermal stability of polymers and how DSC is used for detecting the stability.
14. What are conducting polymers? Explain the synthesis and applications of polyacetylenes?
15. Write short notes on shape memory polymers and dielectric elastomers?

(3 × 10 = 30 Marks]

