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Question Paper Code: 92014

M.E. DEGREE EXAMINATION, MAY 2014.

Elective

CAD / CAM

01PCD521 – SYNTHESIS AND CHARACTERIZATION OF NANO MATERIALS

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Distinguish between top down approach and bottom down approach.
2. State the principle of mechanical milling method.
3. Define self assembly.
4. What is meant by emulsion polymerization?
5. Mention any two applications of scanning probe patterning.
6. What is meant by epitaxial growth?
7. What are Nano porous materials?
8. What are the applications of nano sponges?
9. List down the defects in nano materials.
10. Mention the advantages of optical spectroscopy.

PART - B (5 x 14 = 70 Marks)

11. (a) Explain the process of solgel processing for particle preparation and thin film coatings. (14)

Or

(b) Explain the inert gas condensation technique and its applications. (14)

12. (a) Write short notes on

(i) Langmuir – Blodgett (LB) films. (7)

(ii) Pulsed electro chemical deposition. (7)

Or

(b) (i) Discuss the method of template synthesis. (7)

(ii) With an example explain the biometric approach. (7)

13. (a) Explain how the nano structured coating are developed by Magnetron sputtering. (14)

Or

(b) Discuss in detail about any two types lithographic technique and its application. (14)

14. (a) With neat sketch explain the synthesis of carbon nano tubes. (14)

Or

(b) Briefly explain about transparent conducting oxides and their applications. (14)

15. (a) Write short notes on

(i) Scanning Electron Microscope. (7)

(ii) Transmission Electron Microscope. (7)

Or

(b) Briefly explain about X ray characterization and their applications. (14)

PART - C (1 x 10 = 10 Marks)

16. (a) Describe the nano bots in medical applications. (10)

Or

(b) Discuss in detail about the applications of carbon nano tubes. (10)