Reg. No. : | | | | | | | | | | |

Question Paper Code: 52914

M.E. DEGREE EXAMINATION, JUNE 2016

Elective

CAD CAM

15PCD521 – SYNTHESIS AND CHARACTERIZATION OF NANOMATERIALS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Which method is suitable for preparation of nano materials in large quantities?

   (a) solgel processing (b) mechanical millinh
   (c) both (a) and (b) (d) none of these

2. Polymer matrix isolation process comes under

   (a) biometric approach (b) electro chemical approach
   (c) both (a) and (b) (d) none of these

3. Which method is did not comes under micro lithography

   (a) photolithography (b) soft lithography
   (c) micromaching (d) matrix isolation

4. Carbon nanotube is a

   (a) 1-D nano material (b) 2-D nano material
   (c) 3-D nano material (d) none of these

5. Defects in nano materials can be identified by

   (a) X ray (b) ultrasonic technique
   (c) TEM (d) none of these

PART B - (5 x 3 = 15 Marks)

6. Write a short note on sol gel processing?

7. Discuss about LB films, clusters, colloids, zeolites.

8. Write a brief about scanning probe patterning?

9. What are smart sunglasses?

10. What are the various choices for the experimental material characterization of nanophase materials?

PART C - (5 x 16 = 80 Marks)

11. (a) Briefly explain the principles of Inert gas condensation technique? (16)

Or

(b) Explain the significant advantages, properties, application and types of nano composite materials? (16)

12. (a) Discuss in detail about Self-Assembled Monolayers (SAMs). (16)

Or

(b) Explain the differences between Biomimetic Approaches and Electrochemical Approaches? (16)

13. (a) Explain the basic principles of photolithography technique? (16)

Or

(b) Explain in detail about micromachining? (16)

14. (a) What are Nanoporous Materials? Explain its various types with applications? (16)

Or

(b) Explain the striking feature, mechanical properties, types and synthesis procedure of Carbon Nano Tubes (CNT)? (16)

15. (a) With the aid of a neat sketch explain the principles of Scanning Electron Microscope? (16)

Or

(b) How would you detect defects in nanomaterials? Suggest a suitable imaging technique. Briefly explain with a neat sketch? (16)

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