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

## Question Paper Code: 49213

M.E. DEGREE EXAMINATION, MAY 2015.

Elective

CAD / CAM

14PCD521 – SYNTHESIS AND CHARACTERIZATION OF NANO MATERIALS

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (5 x 1 = 5 Marks)

1. Which methods is suitable for synthesis nanothubes
   (a) solgel processing (b) mechanical alloying
   (c) both (a) and (b) (d) none of the above

2. Which one of the electro chemical approach is more productive
   (a) anodic oxidation (b) pulsed electro chemical deposition
   (c) confined nucleation (d) none of the above

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 the above

5. Nano materials better characterized using
   (a) SEM (b) TEM (c) AFM (d) (b) and (c)

PART - B (5 x 3 = 15 Marks)

6. State the principle of mechanical milling methods.

7. What is meant by emulsion polymerization?

8. What is meant by epitaxial growth?

9. What are the applications of nano sponges?

10. Mention the advantages of optical spectroscopy.

PART - C (5 x 16 = 80 Marks)

11. (a) Explain in detail baout
    (i) Mechanical alloying (8)
    (ii) Mechanical milling (8)

Or

(b) Explain in detail about nanopolymers. (16)

12. (a) Write short notes on
    (i) Langmuir – Blodett (LB) films. (8)
    (ii) Pulsed electro chemical deposition (8)

Or

(b) Explain in detail about biomimetic approaches? (16)

13. (a) Explain how he nano structured coating are developed by pulsed laser deposition.(16)

Or

(b) Discuss in detail about any two types lithographic technique and its application. (16)

14. (a) With neat sketch explain the synthesis of carbon nano tubes. (16)

Or

(b) Write short notes on (1) molecular sieves (2) nanosponges (16)

15. (a) Write short notes on
    (i) Scanning electron microscope (8)
    (ii) Transmission electron microscope (8)

Or

(b) Briefly explain about X ray characterization and their application. (16)