

Total No. of Questions : 6]

SEAT No. :

P433

[Total No. of Pages : 2

BE/Insem/APR - 101

B.E. (Chemical)

NANOTECHNOLOGY

(2012 Pattern) (Elective - IV) (Semester - II)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates :

- 1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6.*
- 2) *Figures to the right indicate full marks.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Assume suitable data, if necessary.*

Q1) a) Write an essay on the Feynmanns hypothesis and the important milestones in the development of nanotechnology. **[4]**

b) Explain in detail electrical, magnetic, optical, thermal, and mechanical properties of nano-structured materials. **[6]**

OR

Q2) a) Explain different modes of classification of Nanomaterials. **[6]**

b) List out challenges faced by Nanotechnology? **[4]**

Q3) a) Explain Chemical Vapor Deposition of Carbon Nanotubes. **[6]**

b) Explain Pulsed Laser Vaporization (PLV) technique for the synthesis of graphite. **[4]**

OR

Q4) a) Explain with neat sketch molecular beam epitaxy for synthesis of nanoparticles? **[5]**

b) Explain high pressure CO conversion method for nanotube synthesis. **[5]**

PTO.

Q5) a) Explain characterization technique based on Atomic Force Microscope. **[5]**

b) Explain the principle of working of x-ray diffraction method? **[5]**

OR

Q6) a) What is Scanning Tunneling Microscope? Explain the operating principle of STM. **[6]**

b) Explain the working of Transmission Electron Microscope for analyzing nano-materials. **[4]**

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