

Code No: 09A50807

R09

Set No. 2

**III B.Tech I Semester Examinations, December 2011
NANOTECHNOLOGY
Chemical Engineering**

Time: 3 hours

Max Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

1. Describe the mechanical, electrical and optical properties of carbon nanotubes. [15]
2. Define energy bands. Explain the energy band structures in metals, semiconductors and insulators. [15]
3. Explain Chemical bath deposition technique in detail. [15]
4. Discuss about the various synthesis methods for fullerenes. Give a short notes on the purification of fullerenes. [15]
5. What is the future of nanomedicine? [15]
6. What is sputtering? Discuss about different types of sputtering. [15]
7. Distinguish between optical microscopies and electron microscopies schematically. [15]
8. Explain the various characterization tools for core-shell nanoparticles. [15]

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Set No. 4

III B.Tech I Semester Examinations, December 2011

NANOTECHNOLOGY

Chemical Engineering

Time: 3 hours

Max Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

1. Define conductor, semiconductor and insulator. Describe the energy band structures in metals, semiconductor and insulator. [15]
2. Explain the different synthesis methods for fullerenes. Explain the purification of fullerenes. [15]
3. What are rotaxanes and catenanes? [15]
4. Explain about hydrolysis and condensation in sol-gel method. [15]
5. What is reactive sputtering? Explain about RF magnetron sputtering. [15]
6. Describe the various characterization tools for core-shell nanoparticles. [15]
7. Define Energy Dispersive Spectrometry (EDS) and Wavelength Dispersive Spectrometry (WDS). Explain how microanalysis of materials is done by using Scanning Electron microscope. [15]
8. Explain the filling of nanotubes and also the mechanism of growth of carbon nanotubes. [15]

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Set No. 1

**III B.Tech I Semester Examinations, December 2011
NANOTECHNOLOGY
Chemical Engineering**

Time: 3 hours

Max Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

1. Discuss in detail about Photoelectron Spectroscopy. [15]
2. Describe the possible applications of nanotechnology. [15]
3. Explain the synthesis and purification methods for carbon nano tubes. [15]
4. Discuss about the optical properties of fullerenes. [15]
5. Write an essay on e-beam evaporation. Distinguish between thermal evaporaton and e-beam evaporation. [15]
6. What are the systems used and how nanoparticles are useful in the field of nanobiology? [15]
7. Explain the biological applications of core-shell nanoparticles schematically. [15]
8. Describe briefly the deposition of some oxide-based nanocrystalline thin film via Sol-Gel dip coating technique. [15]

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Set No. 3

**III B.Tech I Semester Examinations, December 2011
NANOTECHNOLOGY
Chemical Engineering**

Time: 3 hours

Max Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

1. Discuss about targeted drug delivery using nanoparticles. [15]
2. Explain the following:
 - (a) Metallo fullerenes
 - (b) Doped fullerenes
 - (c) Endohedral fullerenes. [15]
3. Write an essay on the density of states at low- dimensional structures. [15]
4. Explain thermal evaporation in detail. [15]
5. What are the synthesis methods available for the preparation of carbon nano tubes? Explain. [15]
6. What are functionalized metal nanoparticles? Describe the advantages of functionalized metal nanoparticles. [15]
7. Describe various stages in Pulsed Laser Deposition process. [15]
8. What is the basic principle in Scanning Electron Microscope? How are they different from Optical Microscopy- Explain. [15]
