USN | | | | | | | | | | **06ME834**

Eighth Semester B.E. Degree Examination, May/June 2010
Nano Technology

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting atleast TWO questions from each part.*

PART – A

1   a. Explain the historical background of nano technology.   **(10 Marks)**
    b. What is nanotechnology? Explain the nature and scope of nano technology. **(10 Marks)**

2   a. What are the microscopes available for studying nano materials?   **(02 Marks)**
    b. Explain principal elements of an SEM.   **(10 Marks)**
    c. Explain X – Ray diffraction method for investigating nano materials in the nano scale.
                                                                                 (08 Marks)

3   a. Explain the synthesis and purification of fullerenes.   **(08 Marks)**
    b. Explain orientational ordering of fullerenes.   **(06 Marks)**
    c. Explain the mechanical properties of carbon nano tubes.   **(06 Marks)**

4   a. What are the growth processes of self assembled monolayers? Explain briefly. **(08 Marks)**
    b. Explain the types of clusters.   **(06 Marks)**
    c. What are the important methods to make cluster source in the gas phase?   **(06 Marks)**

PART – B

5   a. Explain the electronic structure of nano crystals, with a neat sketch.   **(10 Marks)**
    b. How do we study quantum dots? Explain briefly.   **(10 Marks)**

6   a. Explain the methods of preparation of monolayer protected metal nano particles. **(06 Marks)**
    b. What are the applications of core shell nano particles? Explain.   **(06 Marks)**
    c. Explain the types of nano shells.   **(08 Marks)**

7   a. Explain electronic effect of biomolecule nano particle interaction.   **(08 Marks)**
    b. What are the future perspective of nanobiology?   **(04 Marks)**
    c. What is a sensor? Explain essential components of a sensor.   **(08 Marks)**

8   a. What are the instruments used for studying tribology on the nano scale? Explain any one
       instrument.   **(10 Marks)**
    b. Explain any two materials for use in diagnostic and therapeutic applications. **(10 Marks)**

*****