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10MT831

Eighth Semester B.E. Degree Examination, June/July2023
Nanotechnology

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. Discuss the scope of nano technology. **(10 Marks)**
b. Explain the societal implications of nano technology. **(10 Marks)**

2 Explain the principal, working and applications of :
a. Scanning probe microscope **(10 Marks)**
b. X –ray diffraction. **(10 Marks)**

3 a. Discuss about the synthesis methods of fullerenes. **(10 Marks)**
b. Explain the filling of nanotubes and also the mechanism growth of carbon nanotubes. **(10 Marks)**

4 a. What are self-assembled monolayers? What are their properties and mention some few applications. **(10 Marks)**
b. What are the basic techniques of gas phase cluster spectroscopy? Explain any one in details. **(10 Marks)**

PART - B

5 What are Semiconductor quantum dots? Explain synthesis of SQDTs by molecular precursors processes. **(10 Marks)**
Explain the diverse applications of SQDTs. **(10 Marks)**

6 Explain Functionalized metal nano particles and add a note on applications. **(10 Marks)**
What are core shell nanoparticles? Explain different types of core shell nano particles. **(10 Marks)**

7 a. Write a short note on a nanobiology
i) Immunogold labeling
ii) Targeted drug delivery. **(10 Marks)**
b. What are nanosensors? Explain with a neat schematic representation of self assembly. **(10 Marks)**

8 a. Explain in detail Rotaxane and a Catenane with a neat schematic representation. **(10 Marks)**
b. Write a short note on :
i) Switches
ii) Molecular katcht. **(10 Marks)**

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