

2017

CHEMISTRY

Paper : 206

NANOCHEMISTRY

Full Marks: 40

Time: 1.5 hours

The Figures in the margin indicate full marks for the questions

1. **Answer the following** 2+4+2+4=12
- a. Bottom up technique is more convenient for nano-fabrication. Explain.
 - b. Discuss the synthesis of oxide nano particles by thermolysis or chemical method.
 - c. What are donors and acceptors? How deep traps affect the manufacture of semiconductors?
 - d. Write a short note on semiconductor nanoparticles with suitable examples.

Or

How particle size of nanomaterial is studied? Discuss how SEM and TEM can be used for characterisation of nanomaterials.

2. Discuss Top down and Bottom up paths in nanoscience. 3

3. **Answer the following** (*any three*)

5x3=15

- a. What are polymeric nanofibres? Write any one synthesis of polymeric nanofibres.
- b. Discuss the structure of CNTs. How they are classified on the basis of structural morphology?
- c. Write the uses of carbon nanotubes on different fields.
- d. Discuss synthesis of CNT by laser ablation method.

4. **Answer the following questions** (*any two*)

5x2=10

- a. Discuss electrical and optical properties of nano particles. How they are useful?
- b. What do you understand by Quantum dots? Explain with examples. How quantum dots are useful?
- c. Write a short note on quantum confinement.
