

[Time: 2½ Hours]

[Marks:60]

Please check whether you have got the right question paper.

- N.B:**
1. All questions are compulsory.
 2. All questions carry equal marks.
 3. Draw neat labelled diagrams wherever necessary.

- Q.1 a. Explain the synthesis of nanomaterials using electric arc deposition. 06
 b. Elaborate on the characterization of nanoparticles using SEM. 06
 OR
 a. Justify – Nanomaterials can be synthesized using protein molecules. 06
 b. Comment on the role of XRD in characterization of nanoparticles. 06
- Q.2 a. Write an elaborate note on the applications of CNTs. 06
 b. Justify the labeling of the flagellar motor as a biobot. 06
 OR
 a. Why is the ATPase molecule called a nanomotor? 06
 b. Comment on the various properties of CNTs. 06
- Q.3 a. What are the new possibilities in drug delivery offered by nanotechnology? 06
 b. How can nanoparticles be used as diagnostic tools? 06
 OR
 a. Give the application of nanorobotics in the field of medicine. 06
 b. Explain the principle, working and applications of nanosensors. 06
- Q.4 a. Elaborate on – Risks associated with use of nanoparticles in cosmetics. 06
 b. Nanotechnology has a number of applications in agriculture – Comment. 06
 OR
 a. Justify – Nanotechnology contributes to environmental management. 06
 b. What are the applications of nanotechnology in the food industry? 06
- Q.5 Write short notes on any three of the following: 12
 (a) Optical properties of nanoparticles.
 (b) Types of CNTs.
 (c) Role of nanotechnology in development of surgical aids.
 (d) Nanotechnology and bioremediation.
 (e) Synthesis of nanomaterials using microbial systems.
 (f) Nano-enabled drug delivery systems.