

III B. Tech I Semester Regular/Supplementary Examinations, December -2023**NANO TECHNOLOGY**

(Common to CE,ME,ECE,CSE)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**

All Questions Carry Equal Marks

UNIT-I

1. a) Briefly explain the history of nanoscience with significant milestones. [7M]
b) What are the challenges associated with nanomaterials. [7M]

(OR)

2. Discuss in detail various commercial and scientific applications of nanomaterials. [14M]

UNIT-II

3. a) What are the crystal defects? Mention the different kinds of crystal imperfections. [7M]
b) Explain the various point defects that occur in nanomaterials. [7M]

(OR)

4. a) Write a short note on magnetic properties of nanoparticles. [7M]
b) What are applications of permanent magnetic nanomaterials. [7M]

UNIT-III

5. a) Discuss briefly about the different kinds of lithographic techniques available for nanoparticle synthesis. [7M]
b) Outline the basic principles of laser ablation and inert gas condensation processes. [7M]

(OR)

6. a) Write a short note on sol-gel method of synthesis. [7M]
b) Describe in detail about consolidation of nanopowders. [7M]

UNIT-IV

7. a) Discuss briefly about the procedure how to determine the sizes of nanoparticles. [7M]
b) Explain the principle, procedure and advantages of small angle X-ray scattering method. [7M]

(OR)

8. a) Differentiate SEM from TEM. Which mode of AFM is preferred to characterize delicate nano surfaces? Why? [7M]
b) List out the basic features of STM and AFM. Which one is more suitable for nanoparticle characterization? Justify. [7M]

UNIT-V

9. a) Briefly describe about mechanical and chemical nanosensors. [7M]
b) What materials are being used as nanosensors and why? [7M]

(OR)

10. a) Comment on formulations of nano-pesticides. Discuss the advantages of nano-pesticides. [7M]
b) Outline the potential effects of nanomaterials to environment. [7M]

