Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80501

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016

Sixth Semester

Manufacturing Engineering

GE 6081 — FUNDAMENTALS OF NANOSCIENCE

(Common to Sixth Semester Production Engineering and Biotechnology)

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are nanowires?
2. Define Quantum dots.
3. Define 'bottom' up synthesis process.
4. Give the principle of Atomic Layer Epitaxy.
5. What is fullerene?
6. What do you understand by Nanoclays?
7. What is the significance of high resolution imaging in nanomaterial characterization?
8. What are the characteristics that can be identified by surface analysis techniques?
9. Explain the role of nanparticles is bioimaging.
10. Distinguish MEMS and NEMS.

PART B — (5 × 16 = 80 marks)

11. (a) Classify nanostructured materials with suitable examples.

Or

(b) Explain the effect of nano scale on the properties of materials?

12. (a) Explain the bottom – up approach towards synthesis of Nano structured materials. Discuss in detail about any two methods.

Or

(b) Describe the MBE growth technique with a sketch.

13. (a) Discuss in detail about the preparation, properties and applications of quantum dots.

Or

(b) Write a notes on (i) CVD and (ii) Plasma CVD methods of synthesis of CNTs.

14. (a) Discuss in detail the principle and working of XRD.

Or

(b) What is AFM? What are the three modes of AFM? Discuss its working in detail.

15. (a) Discuss the role of Nanostructures in the information storage with examples.

Or

(b) What are Nanosensors? Discuss its application in biotechnology.
