

Roll No.

Total No. of Pages : 02

Total No. of Questions : 8

M.Tech. (ECE) (Sem.-2)

NANO-ELECTRONICS

Subject Code : MTEC-PE4A-18

M.Code : 76265

Date of Examination : 19-12-22

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.

2. Each question carries TWELVE marks.

1.
 - a) Discuss the various scale down technology nodes of integration and recent development in nano-scaled technology nodes.
 - b) Discuss optical, electrical, and mechanical properties of Nanomaterials.
2.
 - a) Explain Ball milling method of fabrication of Nanomaterials.
 - b) Discuss the structure of Multi-walled Carbon Nanotubes with suitable diagram.
3.
 - a) Explain construction and working of Laser method for fabrication of carbon Nano tube (CNT).
 - b) Explain applications of CNT in Hydrogen storage and electronics.
4.
 - a) Explain Raman Spectroscopy in detail with suitable diagrams.
 - b) Define Bragg's law and explain working of X-RD spectroscopy.
5.
 - a) Explain the working principle of Electron microscopy (SEM and TEM).
 - b) What is the difference between Single Electron Transistor and CNT based Transistor?
6.
 - a) Discuss the Quantum interface transistor with neat diagram.
 - b) What is high electron mobility transistor? Explain in detail.

7.
 - a) What are bottle neck issues need to be addressed for the fabrication of carbon nanotube-based devices at deep-sub micron technology nodes?
 - b) Define the following in terms of nanomaterials:
 - i) Wells
 - ii) Wires
 - iii) Quantum dots
8. Write short notes on :
 - a) Structure of DNA
 - b) AFM

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.