Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 08

M.Tech. (ECE) (Sem–2)

NANO ELECTRONICS

Subject Code : MTEC-PE4A-18

M.Code : 76265

Date of Examination : 02-06-2023

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. Explain quantum dots, wells and wires in nanotechnology with the help of suitable diagrams. (12)

2. a) How energy discreetness occur in nano materials? (4)

   b) Explain with simple example why is the surface to volume ratio large for nano particles compared to the bulk materials? (4)

   c) Draw the energy *vs.* wave vector diagram for a parabolic quantum well and list the features. (4)

3. Explain ball milling and Laser methods for the formation of carbon nanotubes. (12)

4. Write a short note on following :

   a) Hydrogen storage (4)

   b) Applications of Nanotubes in electronics (4)

   c) Types of Nanotubes. (4)

5. Explain the principle, construction and working of :

   a) Transmission Electron Microscope (6)

   b) Atomic Force Microscopy. (6)

6. Write a short note on following :

a) Magnetic Force microscope (6)

b) Chemical vapor deposition of formation of nanotubes. (6)

7. a) Explain the principle of carbon nanotube transistors and its three different types. (6)

b) Explain basic operation of DNA and DNA computer. (6)

8. a) Enlist and explain the misconceptions, which exist in nanotechnology. (4)

b) What do you understand by Photoemission Spectroscopy, explain? (4)

c) Explain High Electron Mobility Transistor (HEMT) quantum electronic device. (4)

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.