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

Total No. of Questions : 08

M.Tech. (ECE) (EL-IV) (2018 Batch) (Sem.–2)

NANO ELECTRONICS

Subject Code : MTEC-PE4A-18

M.Code : 76265

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTIONS TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWELVE marks.**

Q1. a) What is Importance of length scale in science and technology? Discuss in detail.

b) How did the nanoscale science make a revolution in science across the globe?

Q2. a) List all Top Down and Bottom Up approaches in Nanotechnology.

b) Define Quantum Dots, Well and Wires with help of example.

c) Explain with simple example why is the surface to volume ratio large for nanoparticles compared to the bulk materials?

Q3. a) Illustrate the methodology for forming nanostructures using chemical vapour deposition.

b) Briefly discuss the applications of nanotubes in the field of Electronics.

Q4. Write a short notes on following :

a) Space elevators

b) New forms of carbon

c) Ball Milling

Q5. Explain the basic principle, construction and working of Scanning Electron Microscope in detail.

Q6. Briefly explain the X-Ray Diffraction Method used for characterization. What are the drawbacks of XRD method? List the materials that can be characterized by X-ray Diffraction.

Q7. a) Explain the construction and working of High Electron Mobility Transistor. What are the applications of HEMT?

b) Write a short note on DNA Computer.

Q8. a) Explain the principle of carbon nano tube transistors and its three different types.

b) Explain the working principle of Atomic Force Microscope.

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.