

Roll No.

Total No. of Pages : 02

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**M.Tech. (ECE) (Sem.-2)**  
**NANO ELECTRONICS**

**Subject Code : MTEC/PE4A/18**

**M.Code : 76265**

**Date of Examination : 25-05-2024**

**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. Draw Fermi levels related to semiconductors and conductors. 6  
b. Discuss optical, electrical, and mechanical properties of Nanomaterials. 6
2. a. Discuss the time scale and length scale developments in Nanotechnology. 6  
b. Give the advantages and disadvantages of CNT over conventional electrical material used in electronics industry. 6
3. a. Explain the structure of Single-walled Carbon Nano Tube (SWCNT) with neat diagram. Also mention the impedance parameters of SWCNT. 4+3  
b. Explain the method for generation of carbon nano tubes (CNT). 5
4. a. Discuss in detail the construction and working of double beam UV-Visible spectrophotometer. 6  
b. Explain construction and working of Arc discharge method for fabrication of Nanomaterials. 6
5. a. Explain the difference between Electron Microscopy Methods (SEM and TEM). 6  
b. Draw and explain the high electron mobility transistor. 6
6. a. Explain Photoemission Spectroscopy in detail with suitable diagrams. 6  
b. Define Bragg's law and explain working of X-RD spectroscopy. 6
7. a. Discuss the Quantum electron devices. 6  
b. What is DNA computing? Explain the structure of DNA. 6

8. **Discuss following :**

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- a. Single Electron Transistor
- b. Magnetic 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.**