

Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

B.Tech. (CSE/EE/EEE/IT/ME) (Sem-7)

ELECTRONIC DEVICES

Subject Code : BTEG/301/18

M.Code : 90606

Date of Examination : 03-05-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a. What is ripple Factor?
- b. Give the Energy band diagrams of Intrinsic and Extrinsic Semiconductors.
- c. Differentiate between Drift current and Diffusion current in a semiconductor.
- d. What do you understand by :
 - i) Depletion region and
 - ii) Potential barrier in a semiconductor
- e. What is Ebers - Moll model in Transistors?
- f. Define MOSFET. Give its types.
- g. What is the purpose of Sputtering in Fabrication process of ICs or devices?
- h. Give reasons why common emitter configuration is widely used in amplifier circuits?

- i. Draw the Input and Output V - I characteristics of a bipolar junction transistor. Label the characteristics wherever required.
- j. What is the significance of Etching.

SECTION-B

2. Discuss the behaviour of pn-junction diode when forward biased as well as reverse biased giving suitable neat diagrams.
3. Explain the construction and working of a MOSFET. Give its V - I characteristics.
4. What are the three important configurations in which the transistor can be connected? Discuss any one of them.
5. Define: Diffusion and Ion-Implantation. What are the various types of Ion-implantation techniques that are commonly used in fab line?
6. A full - wave rectifier uses two diodes, the internal resistance of each diode may be assumed constant at 20Ω . The transformer r.m.s. secondary voltage from centre tap to each end of secondary is 50V and load resistance is 980Ω .

Find :

- i) The mean load current (I_{dc})
- ii) The r.m.s. value of load current

SECTION-C

7. Draw and explain Half-wave and full-wave (center-tapped & bridge) rectifiers with suitable circuit diagram. Which one preferable and why?
8. **Write short notes on :**
 - i) Solar Cell
 - ii) Schottky Diode.
9. List and explain the various important fabrication processes used for the fabrication of BJTs/MOSFETs.

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.