

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(ECE) (Sem.-3)

**ELECTRONIC DEVICES**

Subject Code : BTEC-301-18

M.Code : 76444

Date of Examination : 14-01-23

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) Draw the energy band diagram of intrinsic and extrinsic semiconductors.
- b) Explain the difference between diffusion current and drift current.
- c) State the relation between resistivity and mobility.
- d) Give the V-I characteristics of PN diode.
- e) Define the terms : knee voltage and breakdown voltage.
- f) Differentiate Zener breakdown and Avalanche breakdown.
- g) Define transconductance of MOSFET.
- h) Draw equivalent circuit of an FET.
- i) Describe the equipment used for ion implantation.
- j) How implant damage is repaired by annealing?

## SECTION-B

2. What is biasing of diode? Explain the forward and reverse biasing of diode.
3. How PN junction diode work as rectifier? Compare half wave and full wave rectifier circuits.
4. Draw the small signal equivalent circuit for BJT amplifier in CE configuration.
5. What is the use of Ebers-Moll model?
6. Discuss the steps involved in fabrication of CMOS?

## SECTION-C

7. Write note on :
  - a) Continuity Equation of PN junction
  - b) Photovoltaic effect.
8. Draw the characteristics of n-channel MOSFET.
9. What is the process of ion-implantation? How it is different from diffusion process? Draw and explain the working of ion implanter.

**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.**