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Total No. of Pages : 02

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B.Tech.(ECE) (Sem.–3)

ELECTRONIC DEVICES

Subject Code : BTEC-301-18

M.Code : 76444

Date of Examination: 20-12-2023

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) Define a Semiconductor. Classify Semiconductors.

b) What do you mean by Drift current and Diffusion current in semiconductors?

c) Draw the V-I characteristics of a p-n junction diode and label it properly.

d) Define the terms: Current Amplification Factor, Transconductance.

e) What is a Bipolar Junction Transistor? Classify them using their circuit symbols.

f) List some important applications of BJTs.

g) Give the significance of e-k diagrams.

h) What is a MOS Capacitor? Draw its basic structure.

i) List some important steps involved in fabrication of electronic semiconductor devices.

j) What is Ebers-Moll model?

SECTION-B

2. Discuss that how a Zener diode is used for voltage regulation using neat circuit diagram?

3. What are the various configurations in which a BJT can be connected? Discuss them.

4. Explain Photolithography and Chemical Vapor Deposition processes in fabrication of a transistor.

5. How can you describe the concepts of quantum mechanics that are important for the study of semiconductors?

6. Discuss the working principle of a p-n junction diode using neat diagrams.

SECTION-C

7. Describe the generation and recombination of majority and minority carriers in semiconductor diodes in detail.

8. Explain the construction and working of MOSFETs using suitable diagrams along with its V-I characteristics.

9. Write a short note on: Transistor Fabrication Process.

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.