BACHELOR OF TECHNOLOGY (CBCS - 2023)
B. Tech. Sem-II Computer Science & Business Systems : WINTER: 2025
SUBJECT: PRINCIPLES OF ELECTRONICS ENGINEERING

Day : Friday
Date : 28/11/2025

W-27710-2025

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.:
1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Draw neat diagrams **WHEREVER** necessary.
4) Assume suitable data, if necessary.

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**Q. 1** Describe the valence band, conduction band and forbidden energy gap with the help of energy level diagram. **(10)**

**OR**

**Q. 1** Draw and explain P – type and N – type Extrinsic semiconductors in detail with diagram. Also define majority and minority carriers in both types of extrinsic semiconductors. **(10)**

**Q.2** Explain forward and reverse biasing of P – N junction diode with the help of circuit diagram and waveforms. Also show knee voltage for Silicon and Germanium diode on characteristic graph. **(10)**

**OR**

**Q. 2** What is mean by DC load line and explain Quiescent (Q) Point. Draw and explain linear Piecewise model for diode. **(10)**

**Q. 3** Write short notes on the following: **(10)**
i) Advantages of transistor ii) Operating point iii) d.c. load line

**OR**

**Q. 3** Define the current amplification factor for common emitter configuration, common base configuration and common collector configuration. Derive the relation between them. **(10)**

**Q. 4** Explain the working principle of CMOS in detail. Give the advantages and disadvantages of CMOS. **(10)**

**OR**

**Q. 4** Describe the construction and operation of N – channel JFET in detail. Also draw the drain characteristics and transfer characteristics graph. **(10)**

**Q. 5** Draw and explain the operation of Op-Amp as Integrator and differentiator in detail. **(10)**

**OR**

**Q. 5** Describe the effect of positive feedback in amplifier circuit. Explain Barkhausen criteria for oscillation. **(10)**

**Q. 6** Explain in detail the following flip – flops with their truth table. **(10)**
i) S-R flip flop ii) D flip flop iii) J-K flip – flop iv) T flip –flop

**OR**

**Q. 6** i) Describe the operation of S-R clocked flip – flop with the help of Truth table **(10)**
ii) Describe 1:2 De – multiplexer with suitable diagram.

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