JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

Make-up Examination-Nov-2025

COURSE CODE (CREDITS): 25B11EC313 (04) MAX. MARKS: 25

COURSE NAME: Electronic Devices and Circuits

COURSE INSTRUCTORS: Dr. Shruti Jain MAX. TIME: 1 Hour 30 Minutes

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Note: Note: *(a) All questions are compulsory.*

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.No	Question	CO	Marks
Q1	a) Differentiate between different regions of BJT. b) Explain Sita the movement of charge carriers when the transistor is operated in the active region. c) What is the significance of each of the four h-parameters?	CO3	1 + 2 + 2
Q2	a) Compare CE, CB, and CC configurations in terms of input impedance, output impedance, and current gain. b) Why are the input resistance of a CB transistor very low and the output resistance very high? Explain with reasoning. c) Design a biasing circuit to stabilize the Q-point against variations in β. Explain the principle of voltage-divider bias.	CO2	1 + 2 + 2
Q3	a) For a given transistor circuit, derive the expression for collector current I_C in terms of base current I_B and current gain β. b) The transistor in a common emitter configuration has β =100. If I_B = 50 μA, find I_C and I_E. c) Draw and explain the DC load line of a transistor amplifier circuit. How do you determine the Q-point?	CO2	1 + 2 + 2
Q4	a) Describe the process of biasing a diode. How does forward bias and reverse bias affect the width of the depletion region? b) Explain the effect of temperature on the characteristics of a PN junction diode. c) Differentiate between an ideal diode and a practical diode with respect to their VI characteristics. d) Explain the concept of dynamic (AC) and static (DC) resistance of a diode and how they are determined from the VI curve. e) What is the purpose of the capacitor in a clamper circuit? Explain the working of a positive clamper.	CO1	1 × 5
Q5	a) Why clipping circuits are also called limiting circuits? b) What is a bridge rectifier? Explain its operation and advantages over a center-tapped rectifier. c) Explain the operation of a Zener diode and its use as a voltage regulator. Draw and describe its characteristics.	CO1	1 + 2 + 2

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