JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2025

B.Tech-I Semester (CSE/IT/ECE/CE)

COURSE CODE (CREDITS): 25B11EC111 (4)   MAX. MARKS: 25

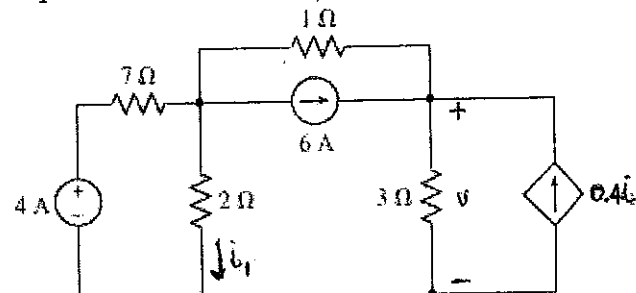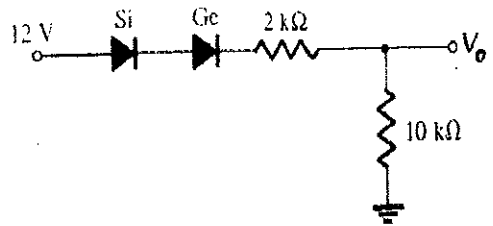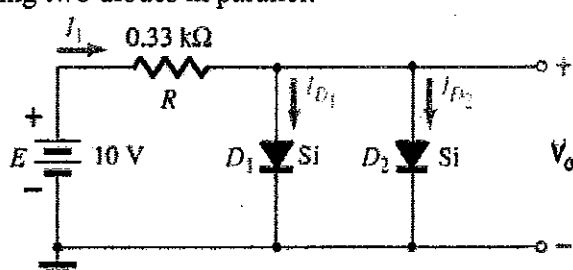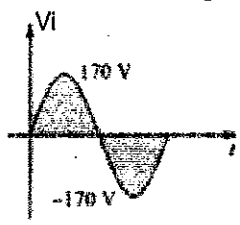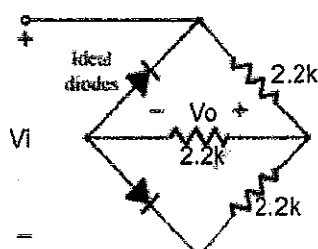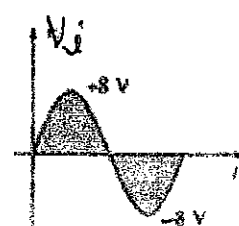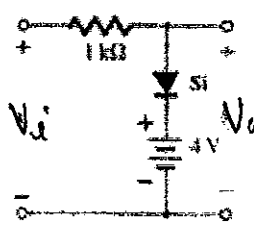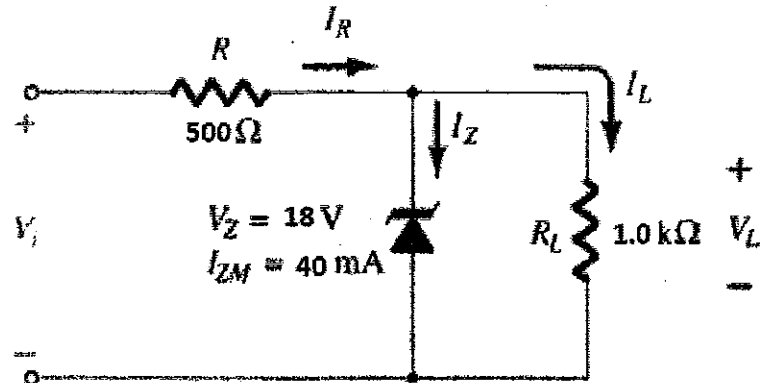COURSE NAME: BASIC ELECTRONICS   MAX. TIME: 1 Hour 30 Min

COURSE INSTRUCTORS:RKU, SHR, HSL, SWT, SRU, ALK, NTJ, PRG

Note: *(a) All questions are compulsory.*
       (b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems
       (c) Use of a scientific calculator is allowed.

Q.No	Question	CO	Marks
Q1	a. Employ superposition to determine the individual contribution from each independent source to the voltage v as labeled in the circuit below.	3	[4]
	b. Demonstrate that Superposition is not applicable for power dissipation across any element.		[1]
Q2	a. With the help of the circuit diagram and the diode's characteristic curve, explain the concepts of forward and reverse biasing of diodes.	2	[3]
	b. For the silicon diode, draw the circuit and its characteristic curve for the following equivalent circuits: i. Piecewise linear equivalent circuit. ii. Simplified equivalent circuit. iii. Ideal equivalent circuit.		[2]
Q3	a. Explain the concept of a diode load line and its significance in analyzing diode circuits. Analyze the relationship between the load line and VI- characteristics of diode to identify the operating point (Q-point).	2	[2]
	b. Determine V_0 for the circuit given on right side:		[1]

	c. Determine V_0, I_1, I_{D1}, and I_{D2} for the following parallel diode configuration. Analyze the circuit to provide the advantage of placing two diodes in parallel: 		[2]
Q4	a. Sketch the V_0 for the given circuit with a suitable explanation for the given sinusoidal input. b. Sketch the V_0 for the given circuit with a suitable explanation for the given sinusoidal input. 	2	[2.5] [2.5]
Q5	a. Determine the range of values of Vi that will maintain the Zener diode of Fig. shown below in the "on" state. b. Determine the maximum wattage rating of the zener diode. 	2	[2+2] [1]