JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2025

B.Tech-II Semester (CSE/IT/ECE/CE/BT/BI)

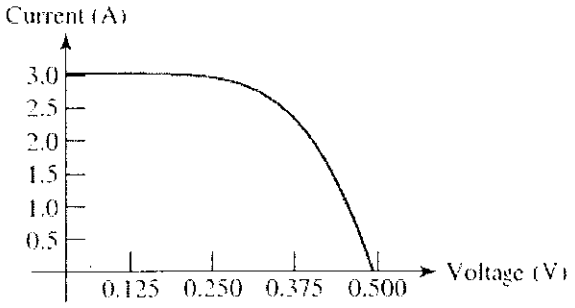
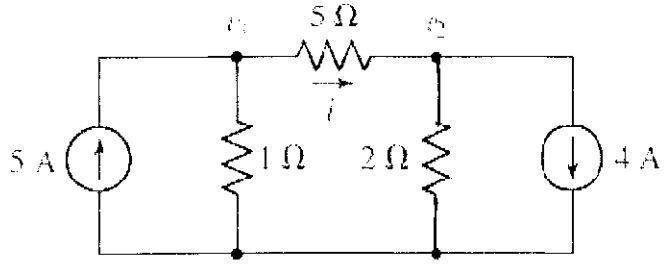
COURSE CODE (CREDITS): 18B11EC211(4) MAX. MARKS: 25

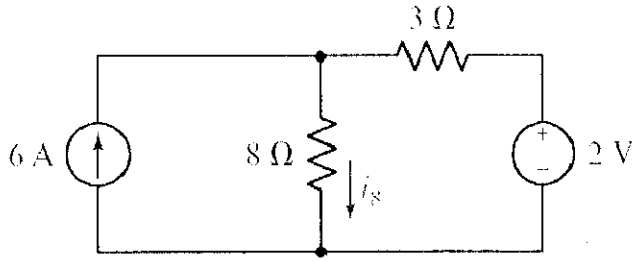
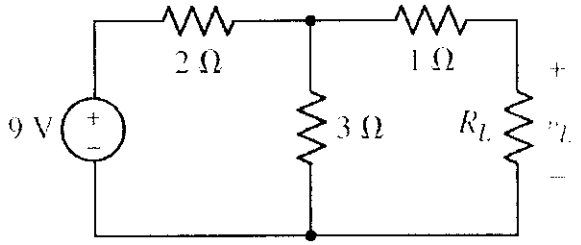
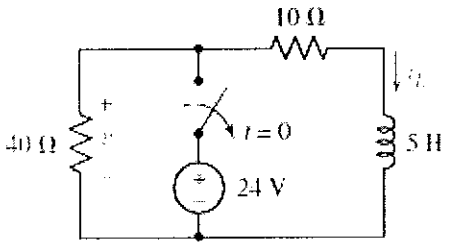
COURSE NAME: Electrical Sciences

COURSE INSTRUCTORS: Prof. Rajiv Kumar, Dr. Harsh Sohal, Dr. Shweta Pandit, Dr. Salman Raju, Dr. Nishant Jain and Lt. Pragya Gupta MAX. TIME: 1 Hour 30 Min

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	The current-voltage characteristic of a silicon solar cell exposed to direct sunlight at noon in Florida during midsummer is given in Fig. 1. It is obtained by placing different-sized resistors across the two terminals of the device and measuring the resulting currents and voltages. (a) What is the value of the short-circuit current? (b) What is the value of the voltage at open circuit? (c) Estimate the maximum power that can be obtained from the device.  Fig.1	CO2	5
Q2	(a) Write nodal equations for the circuit below. (b) Write mesh equations for the same circuit.  Fig. 2	CO3	2.5+2.5

Q3	(a) Explain superposition theorem with respect to circuit analysis with the help of an example. (b) Considering the circuit of Fig. 3, employ superposition to determine the two components of i8 arising from the action of the two independent sources, respectively.  Fig. 3.	CO3	2+3
Q4	Referring to Fig. 4, (a) determine the Thevenin equivalent of the network connected to RL . (b) Determine vL for RL = 1 Ω, 3.5 Ω, 6.257 Ω, and 9.8 Ω.  Fig. 4.	CO4	2+3
Q5	For the circuit of Fig. 5 below find the voltage labeled v at t 200 ms. The switch is opened at t=0.  Fig.5.	CO4	5