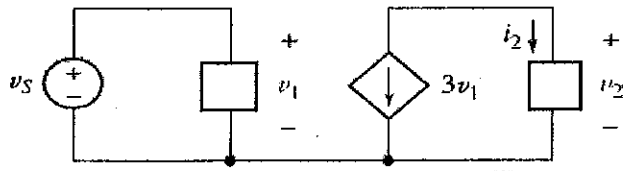
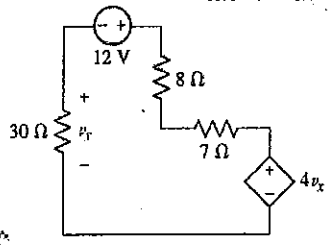
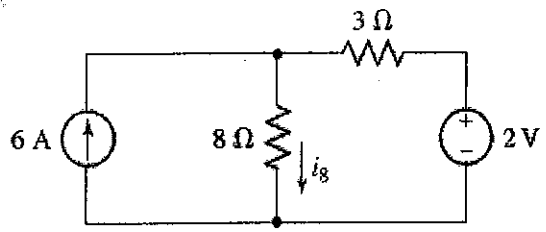
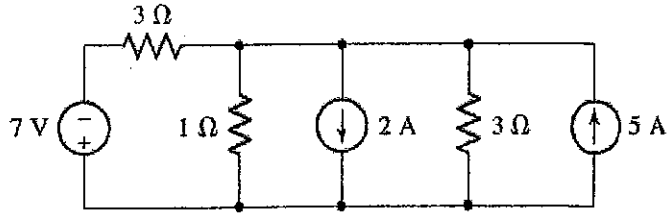
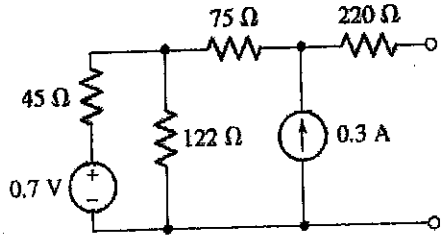
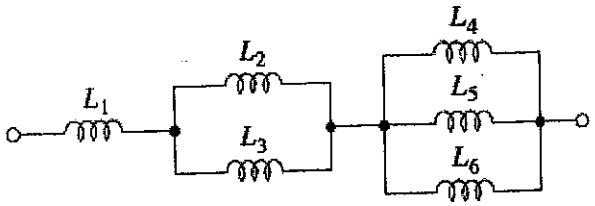
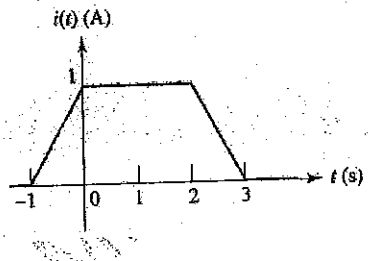
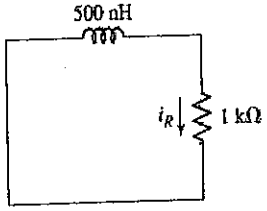
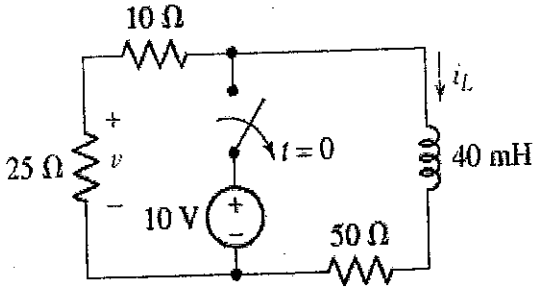
(30)

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATION- 2026
B.Tech-II Semester (Backlog)

COURSE CODE (CREDITS): 24B11EC211 /~~18B11EC211~~ MAX. MARKS: 25
COURSE NAME: BASIC ELECTRICAL ENGINEERING / ~~ELECTRICAL SCIENCES~~
COURSE INSTRUCTORS: Dr Rajiv Kumar MAX. TIME: 1 Hour 30 Min

Note: (a) All questions are compulsory. Students are allowed to use non-programmable calculators to solve the questions.
(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.No	Question	CO	Marks
Q1	a) The circuit depicted in Fig. below contains a dependent current source; the magnitude and direction of the current it supplies are directly determined by the voltage labeled v_1. Note that therefore $i_2 = -3v_1$. Determine the voltage v_1 if $v_2 = 33i_2$ and $i_2 = 100$ mA.  b) In the circuit of Fig. below find the power absorbed by each of the five elements in the circuit. 	CO-1	2.5 + 2.5 = 05
Q2	(a) Considering the circuit below, employ superposition to determine i_8.  (b) Using as many source transformations and element combination techniques as required, simplify the circuit of Fig. below so that it contains only the 7 V source, a single resistor, and one other voltage source. 	CO-2	2.5 + 2.5 = 05

Q3	Employ Thévenin's theorem to obtain Thevenin's equivalents R_{TH} and V_{TH} of the circuit shown in Fig. below  	CO-3	2.5 + 2.5 = 05
Q4	a) For the equivalent inductance of network shown below. Given L_1 = 1H, $L_2 = L_3 = 2$H, $L_4 = L_5 = L_6 = 3$H.  		
	b) Given the waveform of the current in a 3 H inductor as shown in Fig. below, determine the inductor voltage and sketch it.  	CO-3	2.5 + 2.5 = 05
Q5	a) Determine the current i_R through the resistor of Fig. below at t = 1 ns if $i_R(0)$ = 6 A.  		
	b) Determine the inductor voltage v in the circuit of Fig. below for $t > 0$.  	CO-3	2.5 + 2.5 = 05