

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

COURSE CODE (CREDITS): 24B11EC211 / 18B11EC211

MAX. MARKS: 25

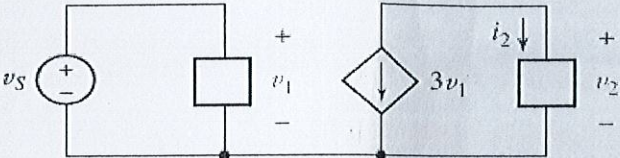
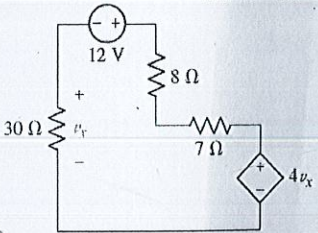
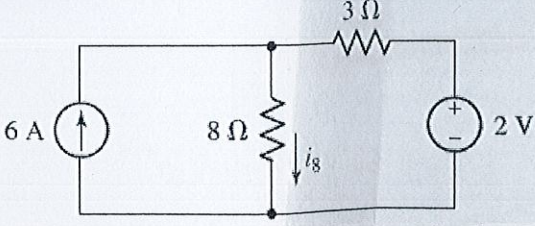
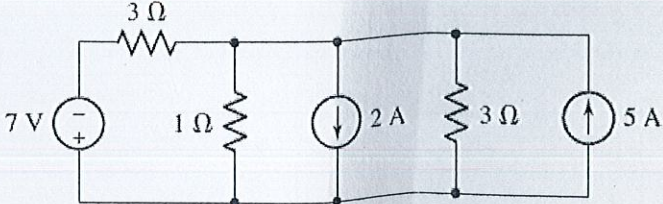
COURSE NAME: BASIC ELECTRICAL ENGINEERING / ELECTRICAL SCIENCES

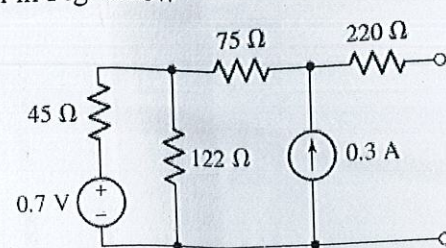
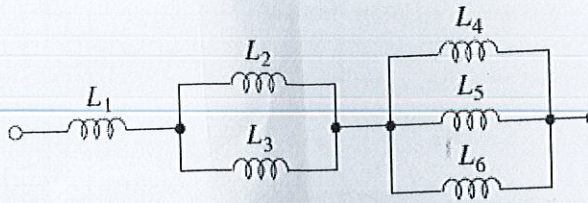
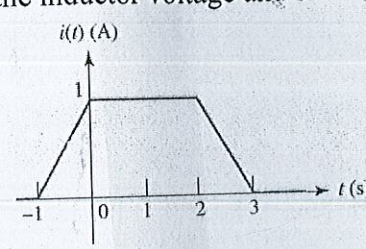
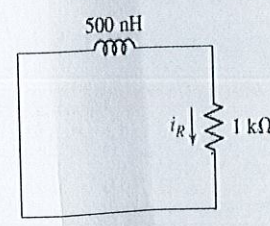
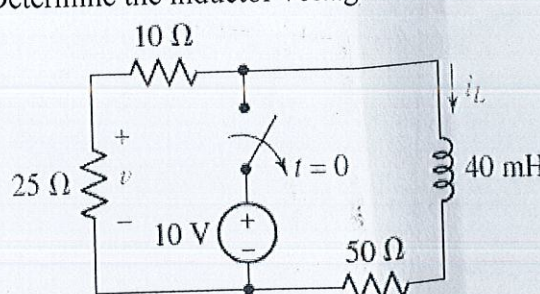
COURSE INSTRUCTORS: Dr Rajiv Kumar

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	<p>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 <math>v_1</math>. Note that therefore <math>i_2 = -3v_1</math>. Determine the voltage <math>v_1</math> if <math>v_2 = 33i_2</math> and <math>i_2 = 100</math> mA.</p>  <p>b) In the circuit of Fig. below find the power absorbed by each of the five elements in the circuit.</p> 	CO-1	2.5 + 2.5 = 05
Q2	<p>(a) Considering the circuit below, employ superposition to determine <math>i_8</math>.</p>  <p>(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.</p> 	CO-2	2.5 + 2.5 = 05

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