

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL/MAY 2026

Third Semester

Electronics and Communication Engineering

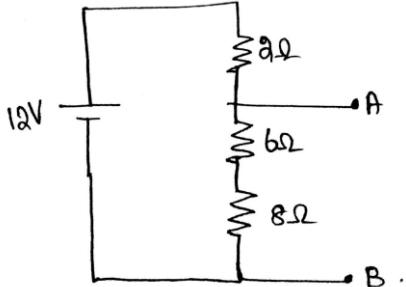
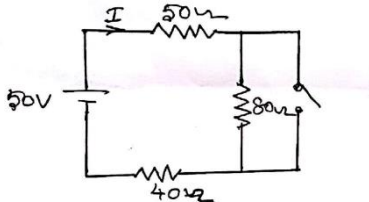
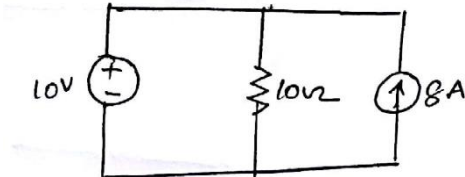
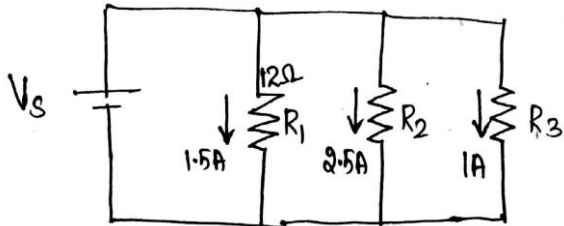
UBMT24302 - ELECTRIC CIRCUIT ANALYSIS

Regulations - 2024

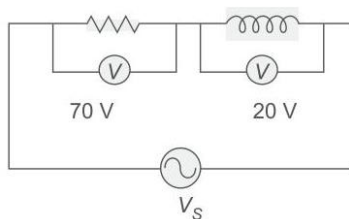
Duration : 3 Hrs

Maximum : 100 Marks

PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	Questions	BTL	CO	Marks
1.	Determine the voltage between the points A and B.	L2	1	2
				
2.	Find the current I through 80-ohm resistor when the switch is (a) opened (b) closed.	L2	1	2
				
3.	Find the current through 10-ohm resistor using superposition theorem.	L2	2	2
				
4.	Determine the resistance R_2 and R_3 in the circuit given below. Given the total current from the source is 5A.	L2	2	2
				
5.	A wire is carrying a direct current of 20 A and a sinusoidal alternating current of peak value 20 A. Find the rms value of the resultant current in the wire.	L1	3	2

6. Determine the source voltage and the phase angle, if voltage across the resistance is 70 V and voltage across the inductive reactance is 20 V as shown in Fig.



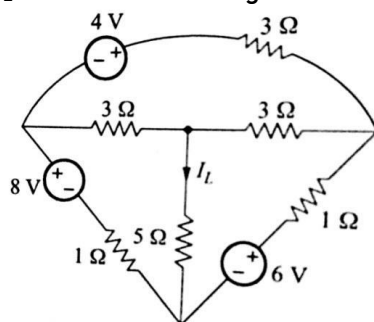
7. What is the time constant of RL circuit with $R = 10 \text{ ohms}$ and $L = 20\text{mH}$? L1 4 2
8. Draw the step response of a series RC circuit? L1 4 2
9. What is Co-tree? L1 5 2
10. Examine the maximum possible mutual inductance of two inductively coupled circuits with self-inductance $L_1 = 25\text{mH}$ and $L_2 = 100\text{mH}$. L1 5 2

PART - B (ANSWER ALL QUESTIONS) (Marks $5 \times 16 = 80$)

Q.No	Questions	BLT	CO	Marks
------	-----------	-----	----	-------

11. a Determine the current I_L in the circuit using mesh analysis.

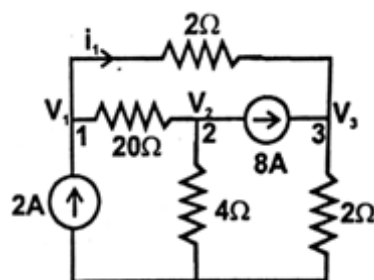
L2 1 16



Or

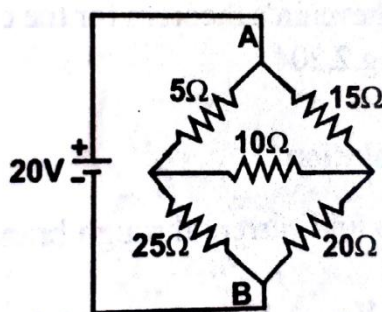
- b Find V_1 , V_2 , V_3 using nodal analysis. Also, find the current through 4Ω resistor

L2 1 16



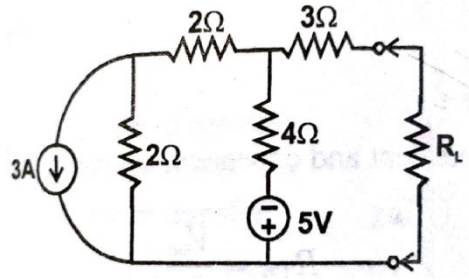
12. a Obtain current through 10Ω resistance using Thevenin's theorem for the circuit.

L2 2 16

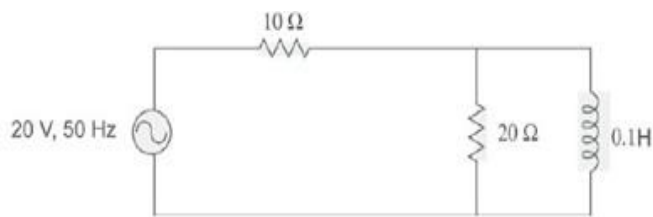


Or

- b Find the value of R_L to be connected between the terminals for maximum power transfer and calculate the maximum power delivered to the load. L2 2 16

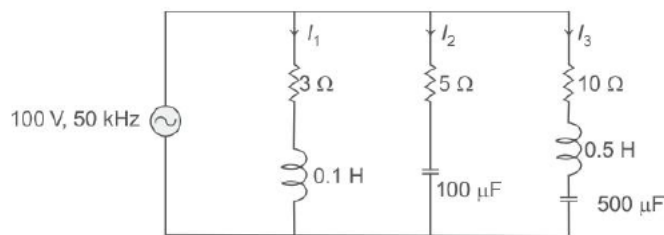


13. a Determine the values for the circuit as shown (i) Total impedance (Z_T) L4 3 16
(ii) Total current (I_T) . (iii) Phase angle (θ)

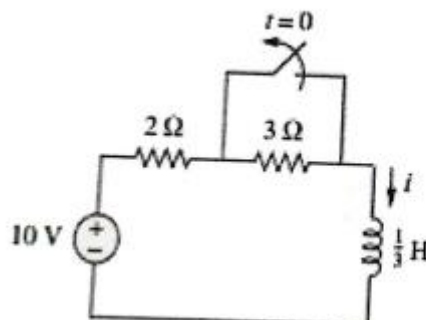


Or

- b A sine-wave generator supplies a signal of 100 V, 50 Hz to the circuit shown in Fig. Find the current in each branch, and total current. Determine the voltage across each element. L4 3 16

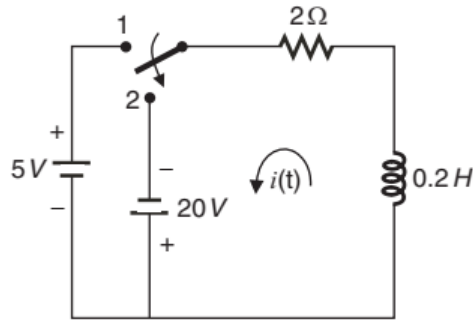


14. a Find $i(t)$ for the circuit, when the switch is opened at $t=0$. Assume that the switch is closed for a long time. L3 4 16

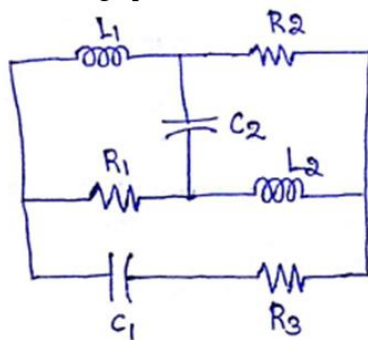


Or

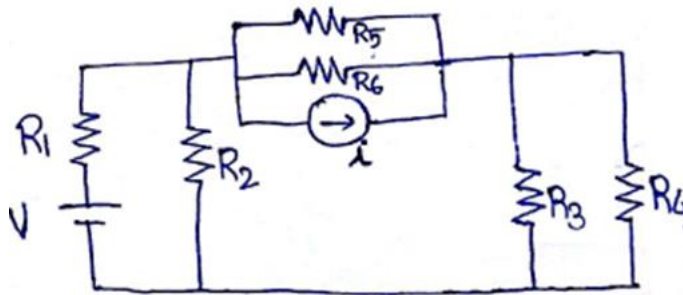
- b In the circuit shown in the figure, determine the current when the switch S is changed from position 1 to position 2 at $t = 0$. L3 4 16



15. a i Draw the graph of the network shown in Figure below and construct four possible trees for the graph. L5 5 8



- ii Draw the graph of the network shown in Figure. Select a possible tree of the network tree and draw the cutset schedule. L5 5 8



Or

- b Write the mesh equations and obtain the conductively coupled equivalent circuit for the magnetically coupled circuit shown in Fig. L5 5 16

