

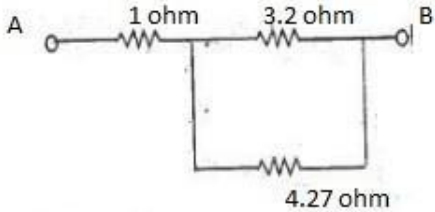
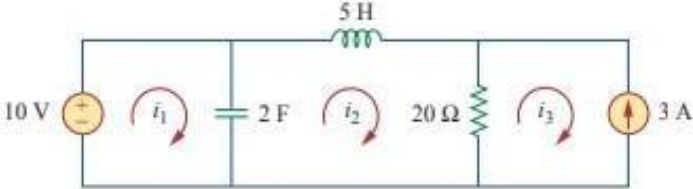
THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)*

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

*Second Semester**Electronics and Communication Engineering*

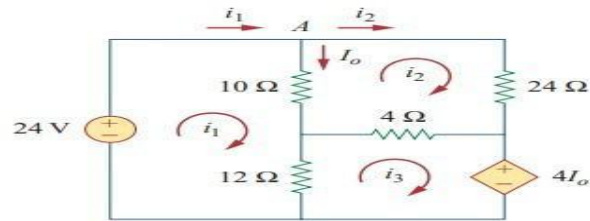
UECT24201 - CIRCUIT ANALYSIS

*Regulations - 2024**Duration : 3 Hrs**Maximum : 100 Marks**PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

Q.No	Questions	BLT	CO	Marks
1.	State KVL and KCL.	L1	1	2
2.	Find the equivalent resistance across AB.	L2	1	2
				
3.	Draw the dual of the circuit.	L1	2	2
				
4.	State the Maximum Power Transfer Theorem.	L1	2	2
5.	Find the net impedance of a series RLC circuit if the inductive reactance, capacitive reactance and resistance are $j184\Omega$, $-j144\Omega$ and 30Ω respectively. Also calculate phase angle between voltage and current.	L3	3	2
6.	Calculate the true power absorbed by an impedance $Z = 30 - j70\Omega$ when a voltage $V = 120 \angle 0^\circ$ is applied across it.	L3	3	2
7.	What is meant by bandwidth and Quality factor in RLC circuit?	L1	4	2
8.	What is meant by steady state and transient response of the network?	L2	4	2
9.	Define mutual inductance.	L1	5	2
10.	State the formula for energy in magnetically coupled coil.	L1	5	2

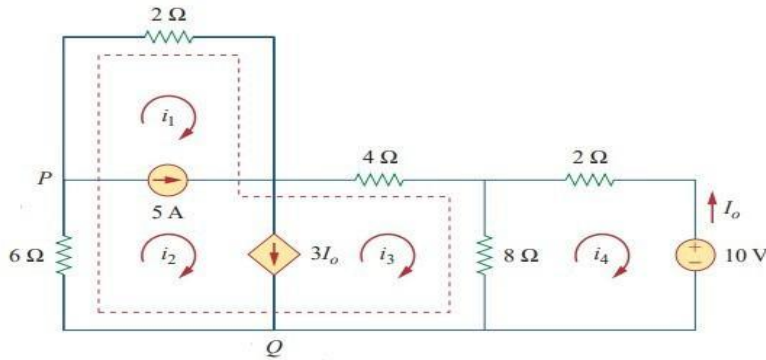
PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11.	a Using Mesh Analysis Find current I_o .	L3	1	16

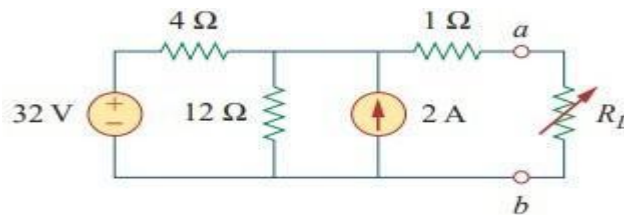


Or

b	Find i_1 to i_4 using Mesh analysis.	L3	1	16
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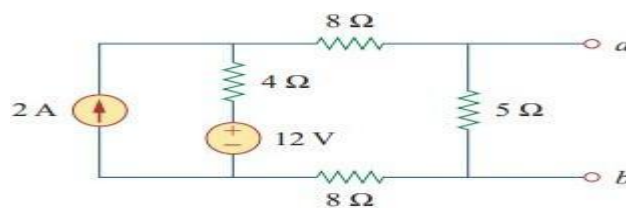


12.	a Find the current through R_L using Thevenin's theorem. case 1 if $R_L = 6$ ohm, case 2 if $R_L = 16$ ohm and case 3 if $R_L = 36$ ohm.	L3	2	16
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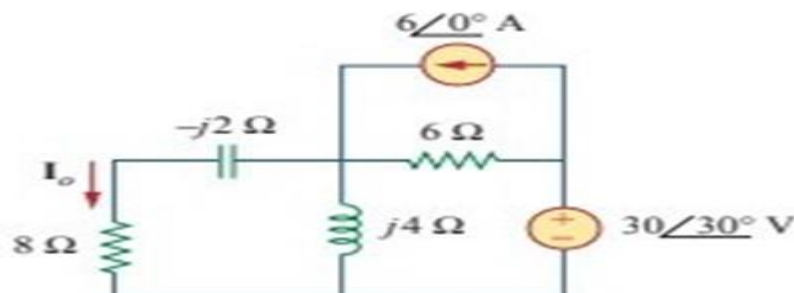


Or

b	Find Norton's equivalent circuit across ab terminal and find the power case 1 if, $R_L = 6$ ohm ,case 2 if $R_L = 16$ ohm and case 3 if $R_L = 36$ ohm.	L3	2	16
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13.	a i Find I_o using mesh analysis.	L3	3	10
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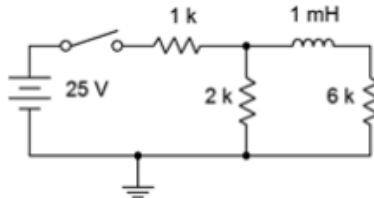
ii	Find the amplitude, phase, period, and frequency of $v(t) = 20 \cos(100t - 10^\circ)$	L3	3	6
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Or

b i For a load, $V_{rms} = 110 \angle 85^\circ$ V, $I_{rms} = 0.4 \angle 15^\circ$ A. Determine a) complex and apparent power, b) Reactive and real powers, c) Power factor and impedance. L3 3 10

ii Calculate the true power absorbed by an impedance $Z = 30 - j70 \Omega$ when a voltage $V = 120 \angle 0^\circ$ is applied across it and state the formula to calculate reactive power. L3 3 6

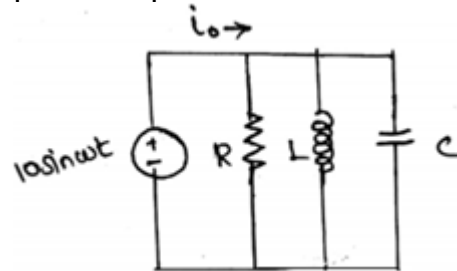
14. a i Find the equation for the total current flowing in the circuit, if switch closed at $t=0$. L3 4 10



ii Calculate the value of inductance for RLC series circuit with resistor $R = 2k\Omega$, $C = 2\mu F$ to resonate at 5 kHz. L3 4 6

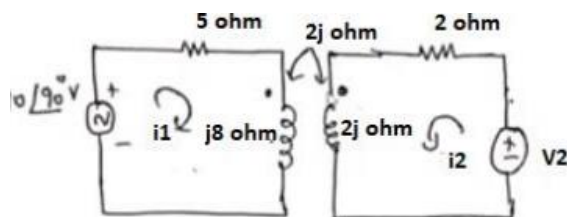
Or

b i In the parallel RLC circuit of Fig, let $R = 8k\Omega$, $L = 0.2$ mH and $C = 8\mu F$. Calculate ω_0 , Q , half power frequencies and BW. L3 4 8



ii Obtain the expression for resonant frequency and bandwidth for a series RLC resonant circuit. L3 4 8

15. a Find V_2 for which i_1 value will be zero? L4 5 16



Or

b Find the complete incident matrix and reduced matrix for the given oriented graph. Determine possible number of trees. Draw any 5 possible trees for given graph. L4 5 16

