

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025
Second Semester

Electronics and Communication Engineering

EC3251 / UECT24201 – Circuit Analysis

Regulations – 2021 & 2024

Duration : 3 Hrs

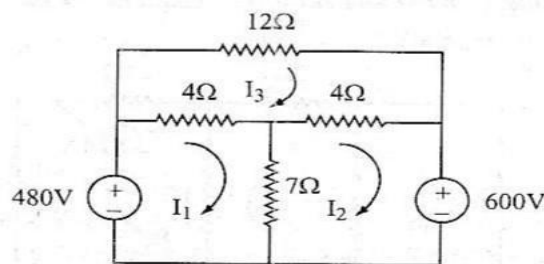
Maximum : 100 Marks

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

Q.No	Questions	BLT	CO	Marks
1.	State Kirchhoff's Law.	L1	1	2
2.	Find the equivalent resistance of two resistors, $R_1 = 10\ \Omega$ and $R_2 = 15\ \Omega$ are connected in a Series and Parallel connection.	L2	1	2
3.	State Norton's theorem.	L1	2	2
4.	List the applications of Thevenin's theorem.	L1	2	2
5.	Define Power Factor and write its formula.	L1	3	2
6.	Define apparent power.	L1	3	2
7.	Define transient response.	L1	4	2
8.	Define Quality Factor.	L1	4	2
9.	Define the coefficient of coupling.	L1	5	2
10.	Define Mutual Inductance.	L1	5	2

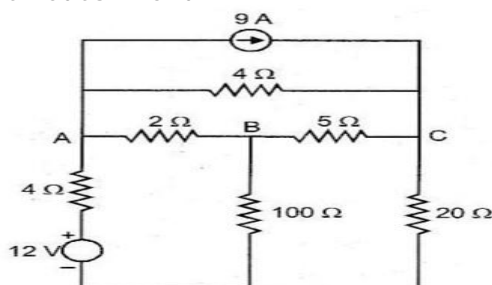
PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11. a	Apply the mesh analysis method to the following circuit and find the currents through $12\ \Omega$ resistor in the circuit.	L3	1	16

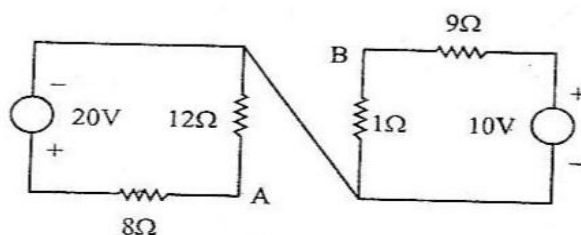


Or

b	Apply the nodal analysis method for the following circuit and find the voltage across the nodes V1 and V2.	L3	1	16
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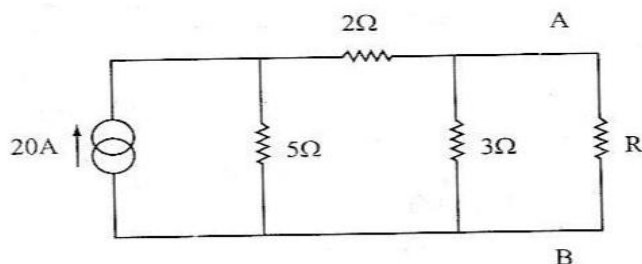


12. a Calculate the Thevenin's V_{th} and R_{th} across the terminal AB for the following circuit. L3 2 16



Or

- b For the given circuit, R absorbs the maximum power. Compute the value of R and maximum Power. L3 2 16



13. a Consider a series RLC circuit is energized by a sinusoidal signal source. Assume amplitude of A_m and frequency of ω ,
i) What would be the instantaneous and average power delivered by source?
ii) What would be the instantaneous and average power dissipated by elements R, L, C? L4 3 16

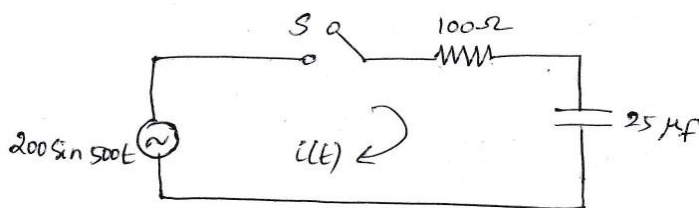
Or

- b Draw and explain the phasor diagrams for a simple RLC series circuit. How does the phase relationship change between voltage and current for different components (R, L, C)? L2 3 16

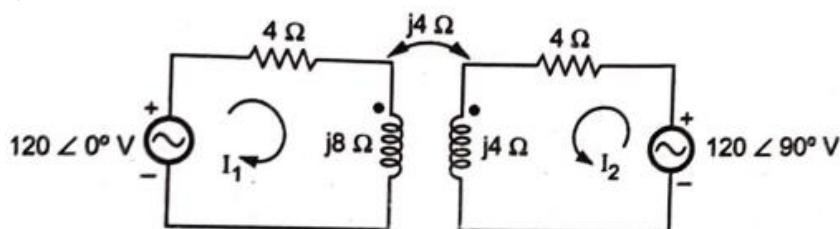
14. a Derive an expression and plot the curves for the series RC circuit excited by DC source. L2 4 16

Or

- b Find the Expression for the transient current for the given RC circuit with sinusoidal source excitation. L2 4 16



15. a Find the value of Current I_1 and I_2 for the following magnetically coupled circuit. L3 5 16



Or

b Calculate the equivalent inductance for the following circuit.

L3

5

16

