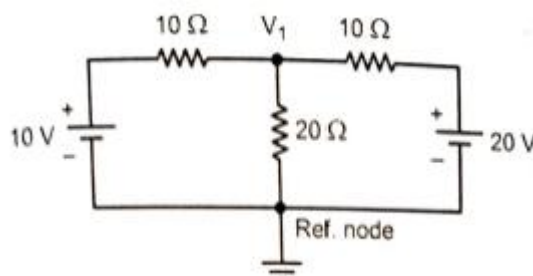


THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025***Third Semester**Biomedical Engineering**BM3352 - Electric Circuit Analysis**Regulations - 2021**Duration : 3 Hrs**Maximum : 100 Marks***PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

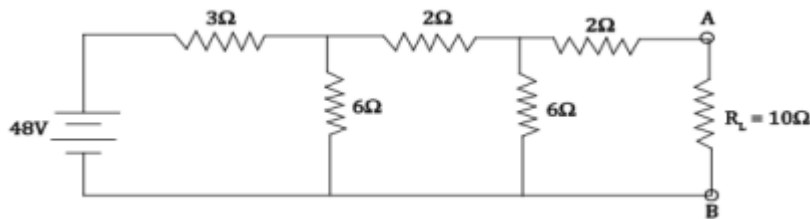
<i>Q.No</i>	<i>Questions</i>	<i>BTL</i>	<i>CO</i>	<i>Marks</i>
1.	What are the basic components of electric circuits?	L1	1	2
2.	Express the formulae for 3 - Resistors in series and parallel.	L2	1	2
3.	Demonstrate the steps to solve the super position theorem.	L2	2	2
4.	How does a star-delta transformation help in simplifying electrical networks?	L1	2	2
5.	Outline the three main characteristics of a sinusoidal signal?	L2	3	2
6.	Give the relationship between apparent power, average power and power factor.	L1	3	2
7.	Summarize the frequency response of series RLC circuit.	L2	4	2
8.	Illustrate about the quality factor of a series resonant circuit.	L2	4	2
9.	What do you mean by magnetically coupled circuits?	L1	5	2
10.	State the principle of operation of a linear transformer.	L1	5	2

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

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a i State and explain Ohm's Law. Mention the limitations of Ohm's Law?	L2	1	6
	ii Explain the Kirchhoff's current law (KCL), Kirchhoff's Voltage Law (KVL) and prove it by using the definition of Current.	L2	1	10
	Or			
	b Using Nodal analysis, find the current in the 20 Ω resistor.	L2	L2	16

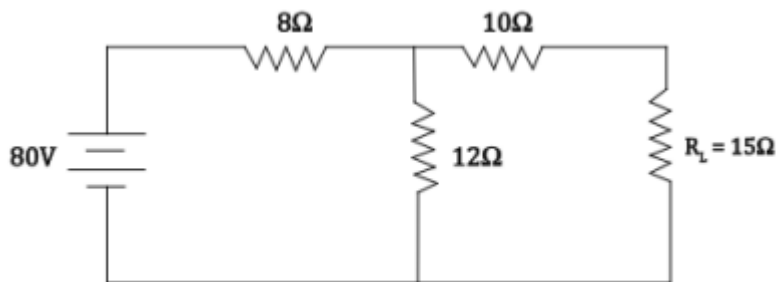


12. a Using Thevenin's theorem, Evaluate the current through $R_L = 10 \text{ Ohm}$ as shown in Fig. and Find power developed by Load. L2 2 16



Or

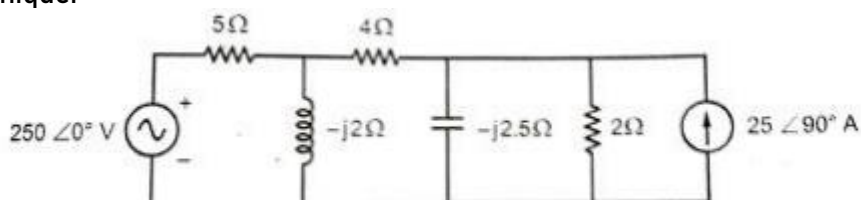
- b State Maximum power transfer theorem and derive the conditions for maximum power transfer in a single source circuit. L2 2 16



13. a Discuss in detail about the impedance and admittance. Derive the impedance for R, L, and C elements and explain how they behave in the phasor domain. L4 3 16

Or

- b Calculate the current through the $4 \text{ } \Omega$ resistor using nodal analysis technique. L4 3 16



14. a Obtain the expressions for the step responses of RL and RC circuits and analyze their respective performances under a step input. L3 4 16

Or

- b Draw the circuit diagram for Parallel Resonance Circuit. Describe how to derive Q factor and Bandwidth is obtained for parallel resonance circuit. L3 4 16

15. a Derive the mutual inductance and the coupling coefficient of transformer with necessary illustration. L3 5 16

Or

- b Write short notes on:
 i) Link analysis
 ii) Loop analysis
 iii) Tree and nodal analysis. L3 5 16