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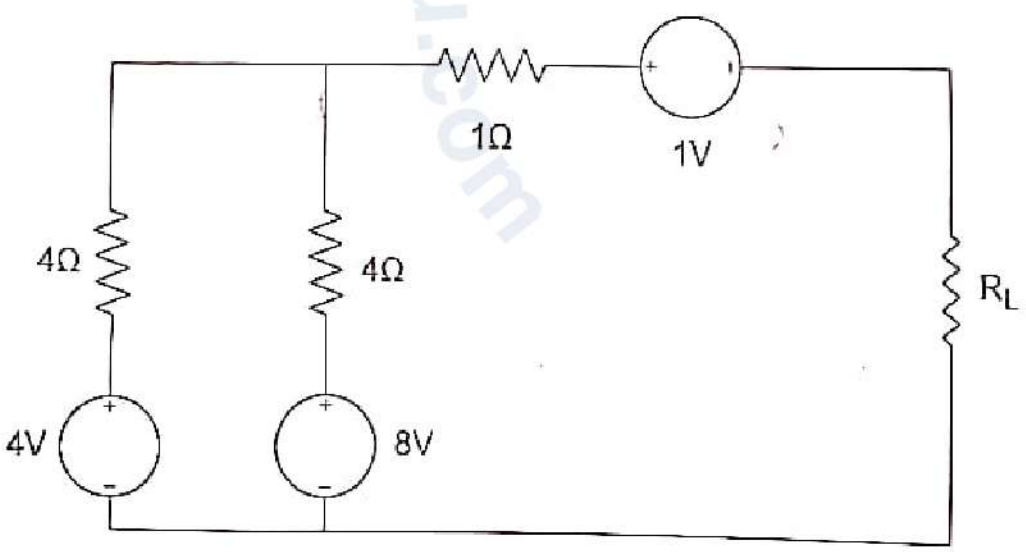
Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science & Engineering
Final Semester Examination, Fall 2024
Course Code: CSE121, Course Title: Electrical Circuits
Level:1 Term: 2 Batch:66

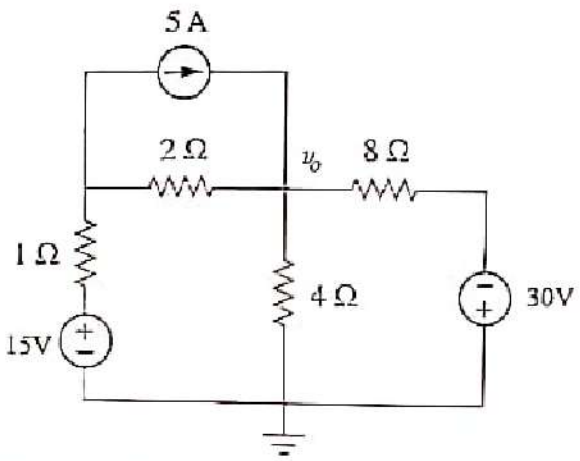
Time: 2:00 Hrs **Marks: 40**

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	a)	Explain the steps of super mesh analysis.	5×2=10	CO1
	b)	Show the maximum power transfer of a system for the situation where R_L=R_{Th} on an efficiency basis.		
	c)	Illustrate the phasor diagram and impedance diagram for the series circuit.		
	d)	Interpret that the RMS value is always greater than the average value.		
	e)	Compare the power factor of the inductive and capacitive network.		
2.	a)	Solve the following circuit to determine the maximum power through R_L 	6×2=12	CO2
	b)	Show that the average power or power dissipated by the ideal inductor is zero watts.		

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3.	a)	Analyze the following circuit using the mesh analysis to determine V_0 in the following circuit. 	6×3=18	CO3
	b)	The voltage across a 2μF capacitor is provided. $$V = 50\ sin\ (377t - 35^{\circ})$$ Now Simplify the following equation to find: i. The sinusoidal expression for the current. ii. Sketch the v and i curves. iii. Power factor of the v and i and indicate they are leading or lagging.		
	c)	Examine the following R-L-C circuit to determine the Z_T, I, V_c, V_L, P_T followed by phasor diagram: 