



Daffodil International University
Faculty of Science & Information Technology
Department of Computer Science & Engineering

Final Examination, Summer 2026

Course Code: CSE121

Course Title: Electrical Circuits

Level: 1

Term: 3

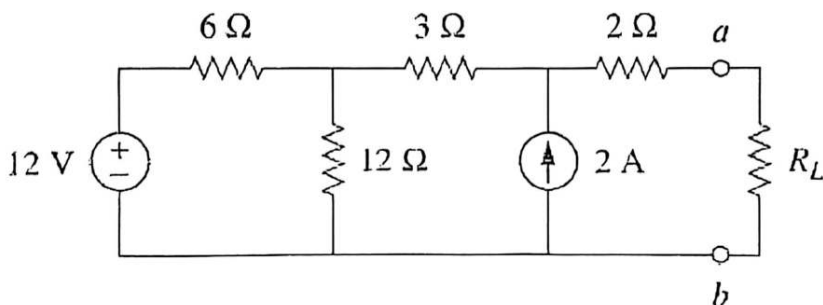
Batch: 70

Time: 2:00 Hrs

Full Marks: 40

Answer all the following *Three* questions

[All portions of each question must be answered sequentially]

Q1.	a.	Draw the commonly used waveforms in the Electrical and Electronic Lab.	5x1 =5	CO1
	b.	Define periodic waveforms in AC circuits.		
	c.	Write a short note on the RMS value of AC current.		
	d.	Write a short note on the effects of zero (DC) and infinity frequencies on a pure inductive circuit.		
	e.	Define Phasor in an RLC circuit.		
Q2	a.	Show that for maximum power transfer, the load resistance must be equal to the Thevenin resistance ($R_L = R_{TH}$) as seen from the load.	2x5 =10	
	b.	Show that the real power in an AC network is, $P = VI \cos \theta$.		
Q3.	a.	The current through a 100 mH coil is, $i = 10 \sin(300t - 30^\circ)$; Solve for (i) the sinusoidal expression of voltage across the inductor. (ii) Sketch the waveforms of $v(t)$ and $i(t)$.	2x5 =10	CO2
	b.	The voltage across a 10 μ -F capacitor is, $v = 200 \sin(400t - 60^\circ)$; Using Complex algebra solve for (i) the sinusoidal expression of current through the capacitor. (ii) Sketch the waveforms of $v(t)$ and $i(t)$ and also draw the phasor diagram.		
Q4.	a.	Analyze the following circuit using the Maximum Power Transfer Theorem to determine the value of R_L for maximum power transfer and the corresponding maximum power delivered to the load. 	5	CO3

b.

Analyze the following RLC circuit to determine the values of (i) Total Impedance, Z_T (ii) Total Current, I (iii) V_R , V_L and V_C (iv) Total Power factor, $\cos\theta$ also indicate whether it is leading or lagging (v) Total Average Power delivered by the source to the circuit (vi) Draw the impedance diagram (vii) Draw the Phasor diagram.

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