Code No: P18EET01 R18

HALL TICKET NUMBER

PACE INSTITUTE OF TECHNOLOGY & SCIENCES::ONGOLE
(AUTONOMOUS)
II B.TECH I SEMESTER END SUPPLEMENTARY EXAMINATIONS, MARCH/APRIL - 2023
ELECTRICAL CIRCUIT ANALYSIS
(EEE Branch)

Time: 3 hours Max. Marks: 60

Note: Question Paper consists of Two parts (Part-A and Part-B)

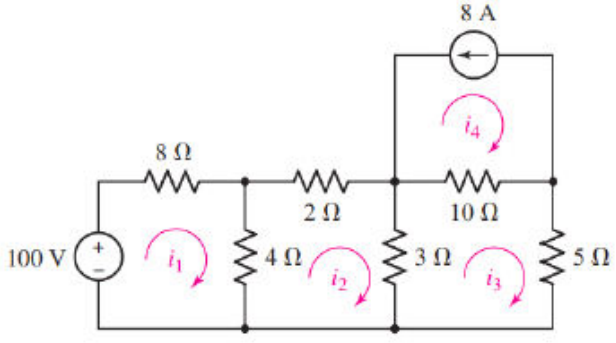
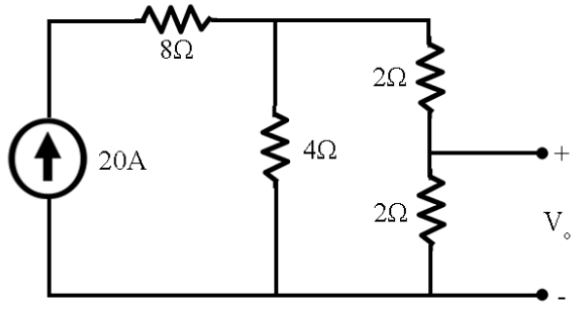
PART-A

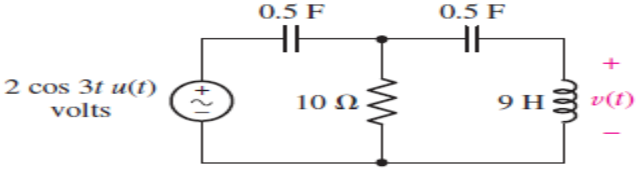
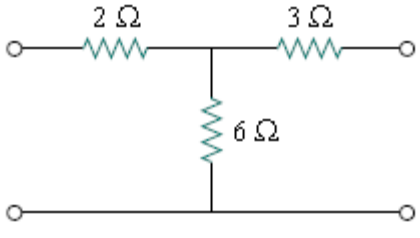
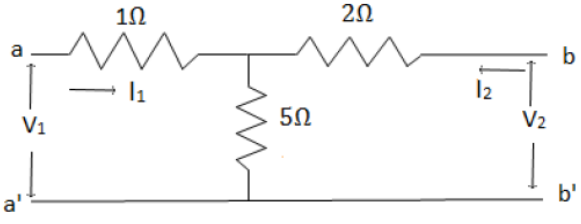
Answer all the questions in Part-A (5X2=10M)

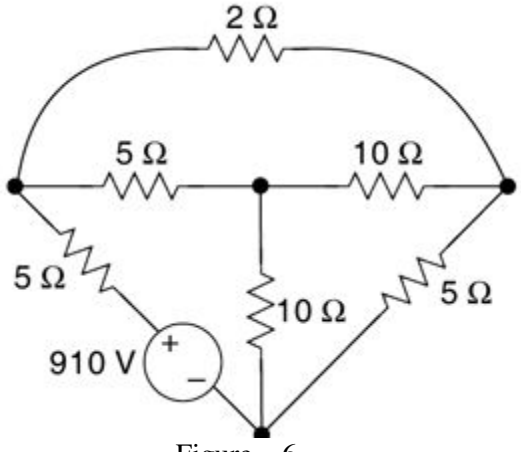
Q.No.		Questions	Marks	CO	KL
1	a)	State the maximum power transfer theorem for AC circuits.	[2M]	1	1
	b)	Explain the advantages of poly phase system over single phase system	[2M]	2	1
	c)	What is the significance of Dot Convention?	[2M]	3	1
	d)	Describe the equations of Admittance parameters	[2M]	4	1
	e)	What is the principle of duality of an electrical network	[2M]	5	1

PART-B

Answer One Question from each UNIT (5X10=50M)

Q.No.		Questions	Marks	CO	KL
		UNIT-I			
2.		By using the mesh analysis determine the loop currents in the following circuit shown in Figure – 1  Figure – 1	[10M]	1	4
		OR			
3.	a)	State and explain Norton's Theorem.	[5M]	1	1
	b)	Verify the reciprocity theorem for the circuit shown in figure – 2  Figure – 2	[5M]	1	1

		UNIT-II			
4.	a)	Show that $V_L = V_{ph}$, $I_L = 1.732\ I_{ph}$ for a 3 phase delta connected balanced load. .	[5M]	2	2
	b)	Each phase of a balanced star-connected load consists of R = 10 ohm and C = 10 µF. Calculate the line currents and total real and reactive powers when a symmetrical 415 V , 50 Hz, three-phase supply is applied to it.	[5M]	2	2
		OR			
5.	a)	Show that 2 wattmeter are sufficient to measure 3 phase total power even when the load was unbalanced	[5M]	2	2
	b)	A balanced delta-connected three-phase load absorbs a complex power of 100 kVA with a lagging power factor of 0.8 when the r.m.s line to line voltage is 2400 V. Calculate the impedance of each arm of the delta-connected load.	[5M]	2	3
		UNIT-III			
6.	a)	Two coils with inductances in the ratio of 5 : 1 have a coupling coefficient k = 0.5. When these coils are connected in Series aiding, the equivalent inductance is 44.4 mH. Find L_1, L_2 and M.	[6M]	3	3
	b)	Analyze the transient response for the series RLC circuit with DC excitation	[4M]	3	2
		OR			
7.	a)	determine an expression for the voltage $v(t)$ Using Lapalace Transform Method for the Figure – 3 shown below,  Figure – 3	[6M]	3	3
	b)	Derive an expression for the energy stored in a capacitor.	[4M]	3	3
		UNIT-IV			
8.	a)	Describe the concept of Z –Parameters	[5M]	4	1
	b)	Find Admittance parameters for the network shown in Figure – 4  Figure – 5	[5M]	4	3
		OR			
9.	a)	Find the transmission or general circuit parameters for the circuit shown below. 	[5M]	4	3

	b)	Represent hybrid parameters in terms of transmission parameters and open circuit parameters.	[5M]	4	3
		UNIT-V			
10.		For the Resistive Network shown in Figure – 6 , write a cutest schedule and equilibrium equations on voltage basis, hence obtain branch voltages and branch Currents.  Figure – 6	[5M]	5	4
		OR			
11.	a)	What is a Cut-Set? List the procedure involved in forming it with a suitable example.	[5M]	5	4
	b)	Draw the graph of a network whose reduced incidence matrix is as shown. $A = \begin{bmatrix} 1 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & -1 & 1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 & 1 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & -1 & 1 \end{bmatrix}$	[5M]	5	4

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