Code No: P18EET16

R18

HALL TICKET NUMBER

PACE INSTITUTE OF TECHNOLOGY & SCIENCES::ONGOLE
(AUTONOMOUS)
II B.TECH I SEMESTER END SUPPLEMENTARY EXAMINATIONS, JAN - 2023
NETWORK THEORY
(ECE Branch)

Time: 3 hours Max. Marks: 60

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

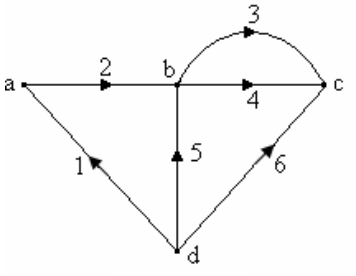
PART-A

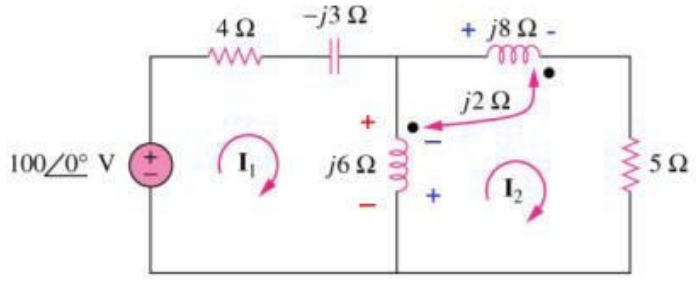
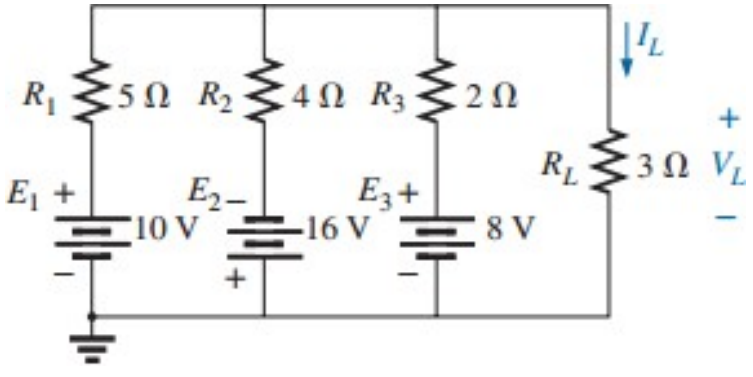
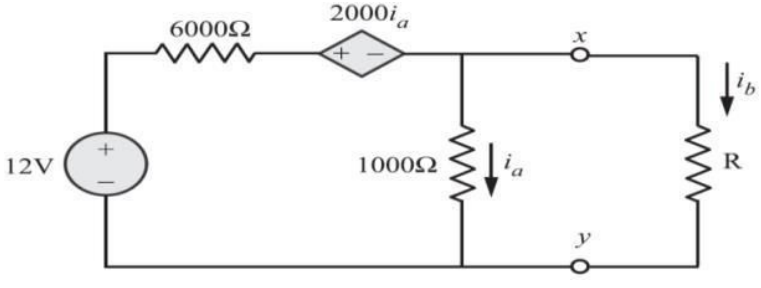
Answer all the questions in Part-A (5X2=10M)

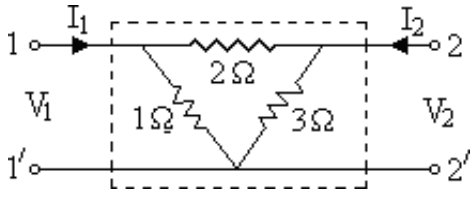
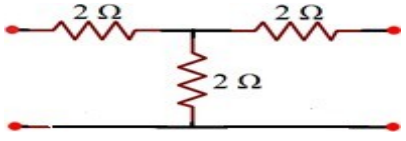
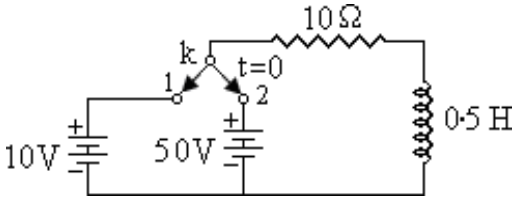
Q.No.		Questions	Marks	CO	KL
1	a)	Draw the dual network of RLC series network.	[2M]	1	1
	b)	What is co-efficient of coupling? Two inductively coupled coils have self inductances L1 = 50 mH and L2 = 200 mH. If the co-efficient of coupling is 0.8, find the value of the maximum possible mutual inductance.	[2M]	2	1
	c)	State maximum power transfer theorem	[2M]	3	2
	d)	Derive h-parameters interms of y-parameters	[2M]	4	3
	e)	Discuss linearity and superposition principle of laplace transforms	[2M]	5	3

PART-B

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

Q.No.		Questions	Marks	CO	KL
		UNIT-I			
2.		**Figure** shown an oriented connected graph having 4 nodes and 6 branches. Determine the incidence matrix A. 	[10M]	2	2
		OR			
3.	a)	Write the procedure for tie-set schedule matrix?	[5M]	1	1
	b)	Prove the duality condition with an example.	[5M]	4	4
		UNIT-II			
4.	a)	Explain the concept of self-inductance with a neat diagram	[5M]	2	2

	b)	Calculate the phasor currents $\mathbf{I}_1$ and $\mathbf{I}_2$ in the circuit of Fig. 	[5M]	2	3
		OR			
5.		A series RLC circuit has R=10Ω, L=0.5H and C=40μF. The applied voltage is 100V. Find. a) Resonant frequency b) Quality factor of coil c) Band width d) Upper and lower power frequencies e) Current at half power frequencies	[10M]	3	3
		UNIT-III			
6.	a)	Find the current I_L. Use millmans theorem. 	[5M]	3	2
	b)	Explain maximum power transfer theorem with an example	[5M]	3	2
		OR			
7.		In the circuit shown in *Figure.* Find the value of i_b using *Norton* equivalent circuit. Take R= 667 Ω 	[10M]	3	2
		UNIT-IV			
8.	a)	Derive the relationship between Z and Y parameters.	[5M]	4	3

	b)	Find the hybrid parameters of the circuit given in **Figure**. 	[5M]	4	3
		OR			
9.	a)	Find the z-parameters of the two port network shown in figure below. 	[5M]	4	2
	b)	Explain transmission line parameters for two-port networks.	[5M]	4	2
		UNIT-V			
10.		In the circuit in **Fig.** , determine the current *i(t)* when the switch is changed from position 1 to position 2 at t = 0 section. 	[10M]	5	3
		OR			
11.	a)	Derive the current expression in a R – C series circuit by DC excitation.	[5M]	5	3
	b)	Derive the current expression in a R – L series circuit by DC excitation.	[5M]	5	3

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