Code No: P18EET16

R18

HALL TICKET NUMBER

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

Time: 3 hours Max. Marks: 60

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

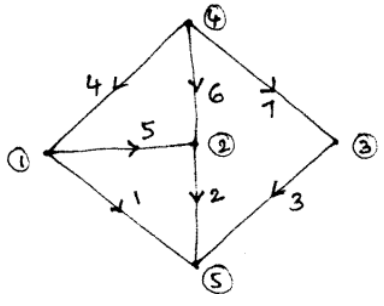
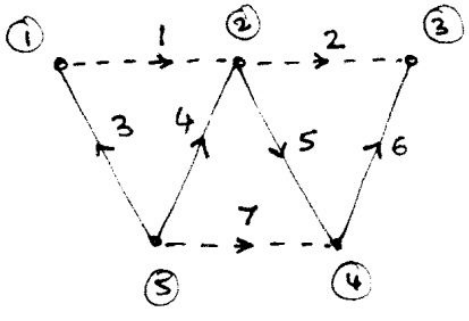
PART-A

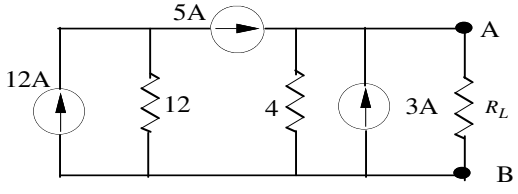
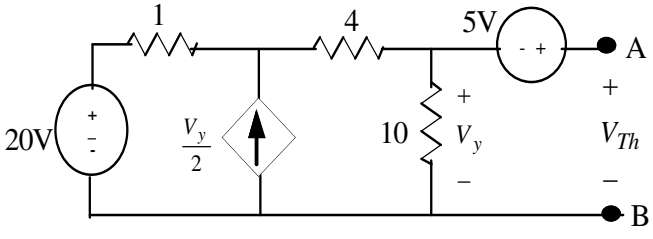
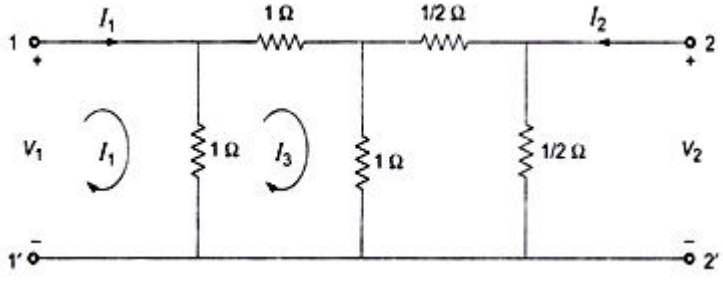
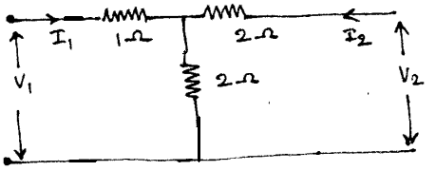
Answer all the questions in Part-A (5X2=10M)

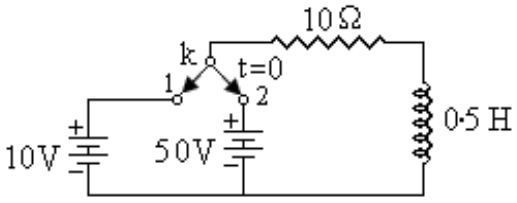
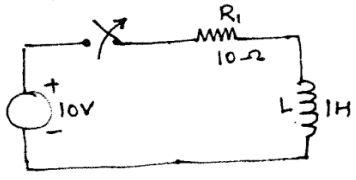
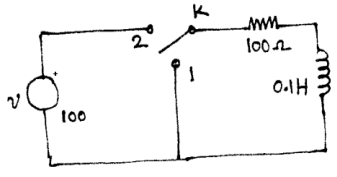
Q.No.		Questions	Marks	CO	KL
1	a)	Draw the dual network of RLC series network.	[2M]	1	
	b)	Derive a relation between bandwidth and quality factor for series resonance circuit.	[2M]	2	
	c)	What is the condition for maximum power transfer in a circuit?	[2M]	3	
	d)	Write the open circuit parameters.	[2M]	4	
	e)	State and explain the initial value theorem of Laplace transform.	[2M]	5	

PART-B

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

Q.No.		Questions	Marks	CO	KL
		UNIT-I			
2.		Obtain the fundamental loop and fundamental cut-set matrices for the graph shown in fig. 	[10M]	2	
		OR			
3.		A graph is shown in fig. Find the tie-set and cut-set matrices using network topology. 	[10M]	1	
		UNIT-II			
4.	a)	Derive the expression for coefficient of coupling in magnetic circuits.	[5M]	2	

	b)	Derive the expression for equivalent inductance when inductors are connected in parallel	[5M]	2	
		OR			
5.		A series circuit comprises of R, L and C is supplied at 220v 50Hz. At resonance the voltage across the capacitor is 50v. The current at resonance is 1A. Determine the circuit parameters R, L and C.	[10M]	3	
		UNIT-III			
6.		For the network shown in Fig., determine the current through load R_L using Norton's Theorem. 	[10M]	3	
		OR			
7.		Refer to network shown in Fig. , determine the value of resistance (R) that may be connected across terminals 'A' & 'B' so that maximum power is transformed from the circuit to the resistance. 	[10M]	3	
		UNIT-IV			
8.		In the figure below, two identical transformer are shown. Determine the Z-parameters of the network. 	[10M]	4	
		OR			
9.		Obtain Z and Y parameters for the given circuit shown in fig.. 	[10M]	4	
		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	
		OR			
11.	a)	For the circuit shown in fig. find the expression for current and voltage through the inductor and resistors after the switch is closed. Assume initial condition with the switch opened at t = 0 is 0 (L=1H,R1=10ohm) 	[5M]	5	
	b)	For the given circuit in fig. Obtain the current at t>0, if dc voltage v is applied when the switch K is moved to 2 from 1at t=0. Assume a steady state current of 1A in the R-L circuit when switch was at position-1. 	[5M]	5	

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