07 AUG 2023

Reg. No.												

Question Paper Code	12119

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2023

Second Semester

Electronics and Communication Engineering

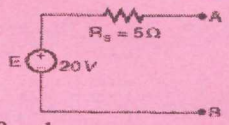
20ECPC201 - CIRCUIT ANALYSIS

(Regulations 2020)

Duration: 3 Hours | Max. Marks: 100

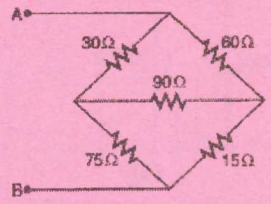
PART - A (10 × 2 = 20 Marks)

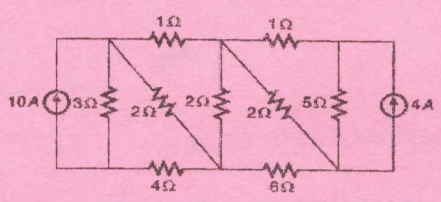
Answer ALL Questions

		Marks, K-Level, CO
1.	Define tree and co-tree.	2,K1,CO1
2.	Convert the voltage source given into a current source.	2,K2,CO1
		
3.	State maximum power transfer theorem.	2,K1,CO3
4.	Relate the expression for Millman's equivalent source of n number of parallel connected voltage sources.	2,K2,CO3
5.	Define coupled coils.	2,K1,CO4
6.	Define dot convention. Why is it required?	2,K1,CO4
7.	Distinguish between steady state and transient state.	2,K2,CO5
8.	State if the statement is true or false. Justify your answer: Natural frequency depends on damping ratio.	2,K2,CO5
9.	Draw the general equivalent model of Y parameters.	2,K1,CO6
10.	Give the condition for reciprocity and symmetrical condition for ABCD parameter.	2,K1,CO6

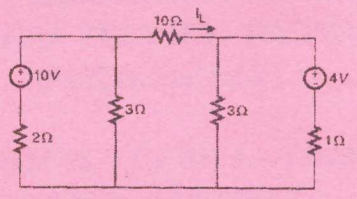
PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	Find the equivalent resistance of the network shown in Fig.	13,K2,CO1
			
		OR	
	b)	Determine the incidence matrix of the circuit shown in Fig.	13,K2,CO1

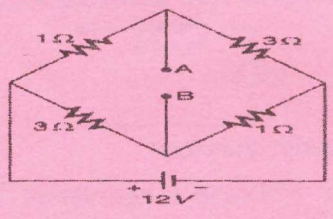


12. a) Using Thevenin's theorem, determine the current I_L in the circuit shown in Fig. *13,K3,CO3*



OR

b) Using Norton's theorem, determine the current through an ammeter connected across A and B of the circuit shown in Fig. Take the resistance of the ammeter as 0.5Ω. *13,K3,CO3*

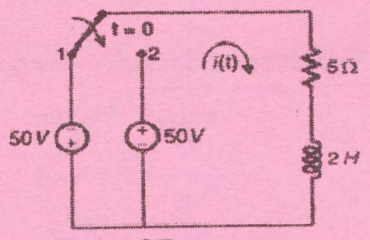


13. a) Trace the circuit of Series RLC circuit and derive the formula for resonant frequency, half power frequencies, band width and quality factor. *13,K2,CO4*

OR

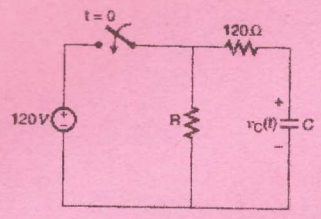
b) Consider two coils A and B consisting of 500 turns and 1500 turns, respectively. A current of 5 A in coil-A produces a flux of 0.6×10^{-3} Wb and the flux linking coil-B is 0.3×10^{-3} Wb. Determine the inductance, coefficient of coupling and mutual inductance of the coils. *13,K3,CO4*

14. a) In the RL circuit shown in the fig., the switch is closed at position-1 for a long time and then thrown to position-2 at time t = 0. Determine the response i (t). *13,K2,CO5*

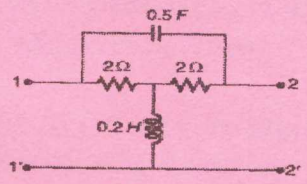


OR

b) In the circuit of fig, the switch is open for a long time. On closing the switch at t = 0, the capacitor voltage rises to 70V in 10 ms. After the steady state is reached, the switch is opened again and found that the capacitor voltage is 90V in 0.5second. Find the value of R and C. *13,K2,CO5*

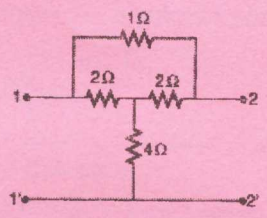


15. a) Determine the Z-parameters of the network shown in Fig. *13,K3,CO6*



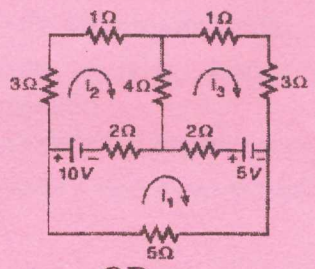
OR

b) Evaluate h-parameters of the bridged-T network shown in Fig. *13,K3,CO6*



PART - C (1 × 15 = 15 Marks)

16. a) Determine the mesh currents shown in the circuit. *15,K3,CO2*



OR

b) Use nodal analysis to determine the values of voltages at various nodes in the circuit shown in Fig. *15,K3,CO2*