PVP 23

Code: 23EC3201

I B.Tech - II Semester – Regular / Supplementary Examinations
MAY 2025

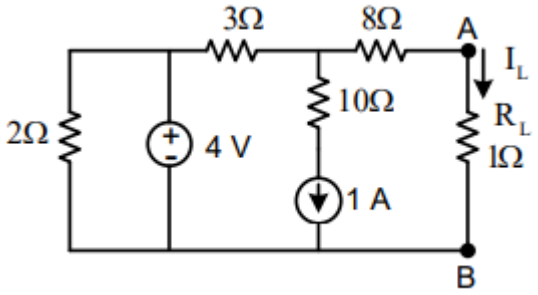
NETWORK ANALYSIS
(ELECTRONICS & COMMUNICATION ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each Question carries 10 marks.
4. All parts of Question paper must be answered in one place.

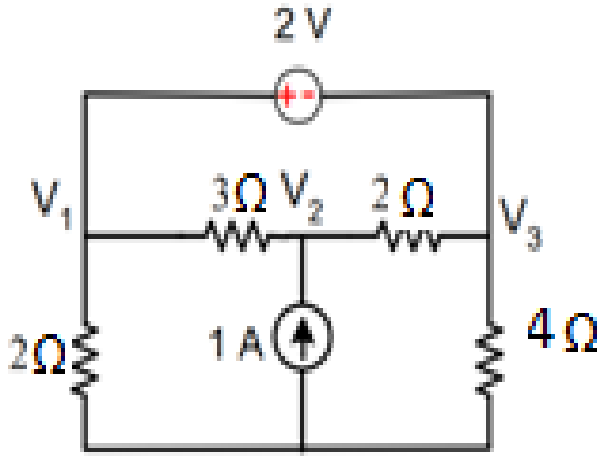
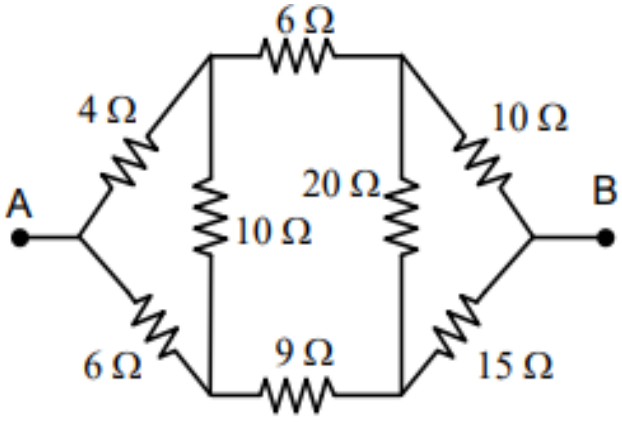
BL – Blooms Level CO – Course Outcome

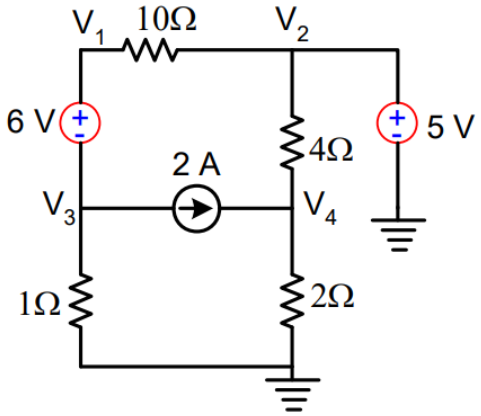
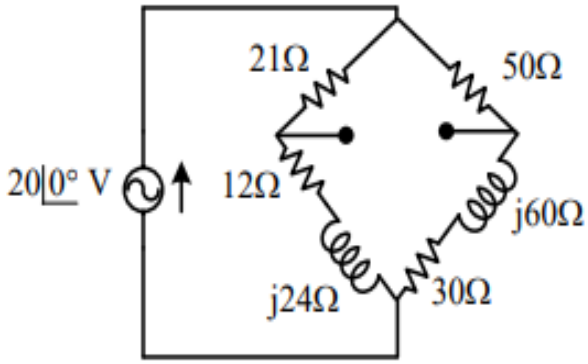
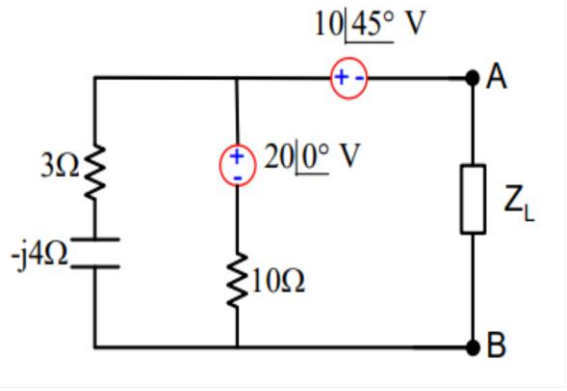
PART – A

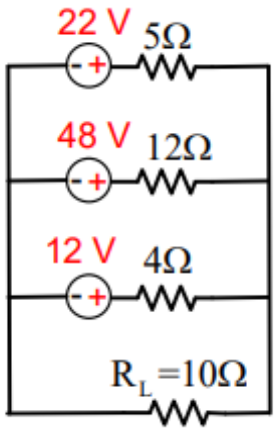
		BL	CO
1.a)	Explain dependent sources with an example.	L2	CO1
b)	Explain Independent sources with an example.	L2	CO1
c)	Draw the phasor diagram of a series RC circuit.	L2	CO3
d)	State Thevenin's theorem.	L2	CO2
e)	Find I_L using source Transformation. 	L2	CO2
f)	In a series RLC circuit, R=60kΩ, L = 20mH, C=245μ F. Find the resonant frequency.	L2	CO4
g)	What are the conditions to be fulfilled for Symmetry of a two-port network?	L2	CO5
h)	Give the comparison between Series and Parallel resonance.	L2	CO4

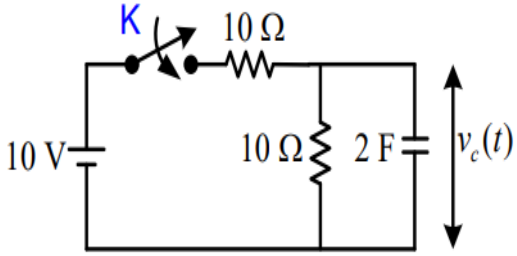
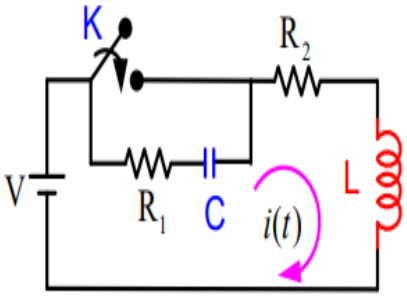
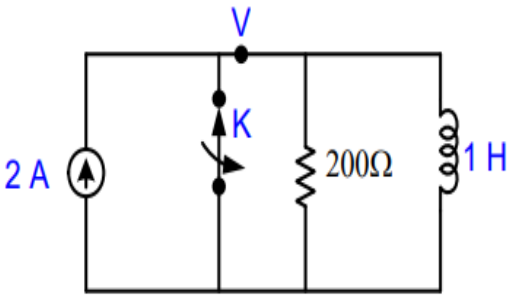
i)	State any two properties of Laplace transform.	L1	CO3
j)	Define Y-parameters and g-parameters.	L1	CO5

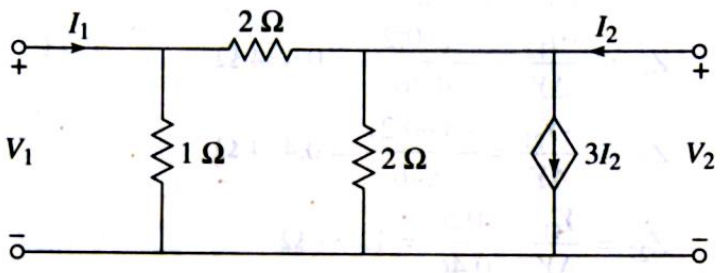
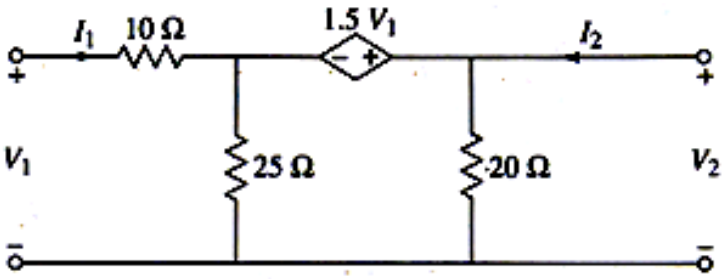
PART – B

			BL	CO	Max. Marks
		UNIT-I			
2	a)	Determine all the node voltages using nodal analysis for the network shown in the fig. 	L3	CO2	5 M
	b)	Determine the equivalent resistance between terminals A and B for the circuit shown in fig. 	L3	CO1	5 M
		OR			

3	a)	Determine all the node voltages using nodal analysis.  	L3	CO2	5 M
	b)	Explain Super node concept with an example.	L2	CO2	5 M
		UNIT-II			
4		Obtain the Thevenin's equivalent network for the circuit shown in Figure.  	L3	CO2	10 M
		OR			
5	a)	Find the value of Z_L for which maximum power is transfer occurs in the circuit shown in Figure.  	L3	CO2	5 M

	b)	For the circuit shown in Figure, using superposition theorem find the current flowing through a load resistance R_L = 10Ω. 	L3	CO2	5 M
		UNIT-III			
6	a)	Derive the expression for resonant frequency of a series RLC Circuit.	L3	CO4	5 M
	b)	Two coils with a coefficient of coupling of 0.4 between them are connected in series so as to magnetize in (a) same direction and b) opposite direction. The total inductance in the same direction is 1.8 H and in the opposite direction is 0.8H. Find the self-inductance of the coils.	L3	CO4	5 M
		OR			
7		An RLC series circuit with a resistance of 100, inductance of 0.2H and a capacitance of 40μF is supplied with a 100V supply at Variable frequency. Find the following parameters for the series resonant circuit. (i) Frequency of which resonance takes place (ii) current (iii) power (iv) power factor (v) Quality factor (g) half-power frequencies.	L3	CO4	10 M

		UNIT-IV			
8	a)	Explain the procedure for obtaining the transient response using Laplace transform.	L2	CO3	5 M
	b)	The switch in the network shown in Figure is closed at t = 0. Determine the voltage across the capacitor. 	L4	CO3	5 M
		OR			
9	a)	Consider an RLC series circuit as shown figure. Let us assume that the capacitor and inductor are initially uncharged, that is, at t=0, there is no charge on L or C. Develop an expression for current in the circuit when switch K is closed at t = 0. 	L3	CO3	5 M
	b)	For the circuit shown in figure, Analyse the circuit after switch is closed at t=0 and find the transient current for t>0. 	L4	CO3	5 M

		UNIT-V			
10	a)	For the network shown in Figure, Find Y parameters. 	L3	CO5	5 M
	b)	Express h parameters in terms of ABCD parameters.	L3	CO5	5 M
		OR			
11		For the network shown in figure Find Z and T parameters. 	L3	CO5	10 M