U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

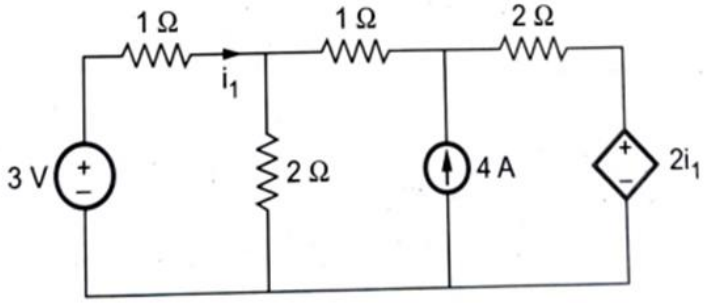
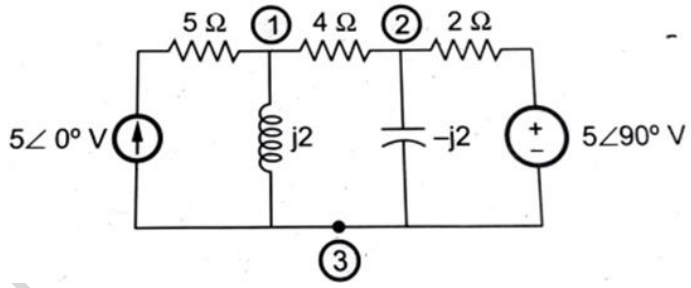
Autonomous Institute Affiliated to VTU

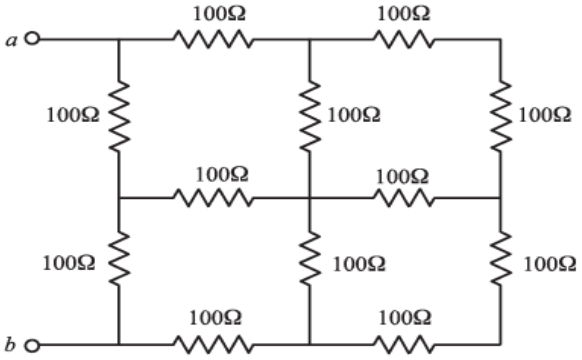
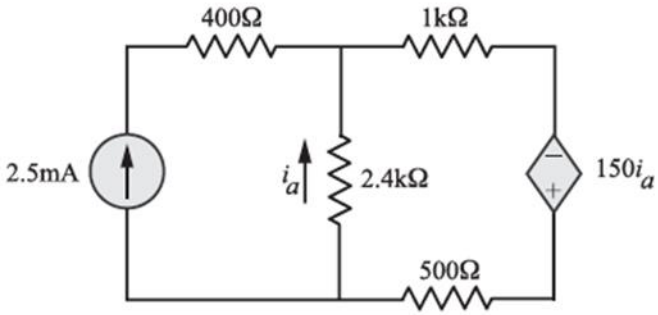
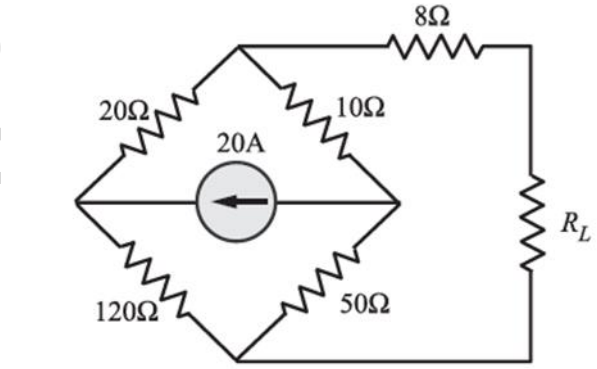
June 2025 Semester End Main Examinations

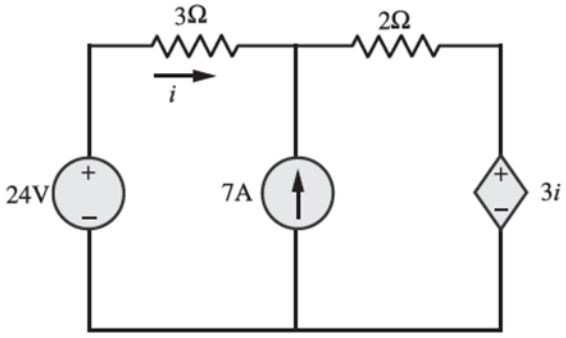
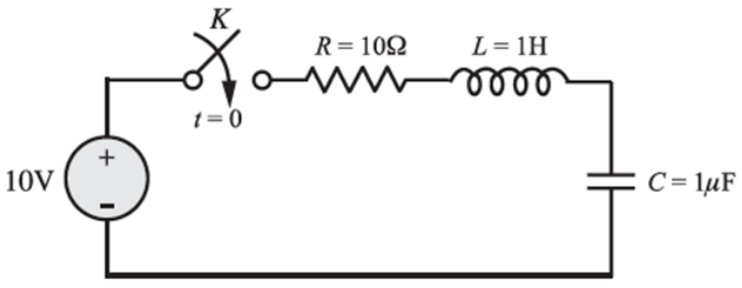
Programme: B.E. **Semester: III**
Branch: ES Cluster (EEE/ET/ECE/EIE/MD) **Duration: 3 hrs.**
Course Code: 22ES3PCNAL **Max Marks: 100**
Course: Network Analysis

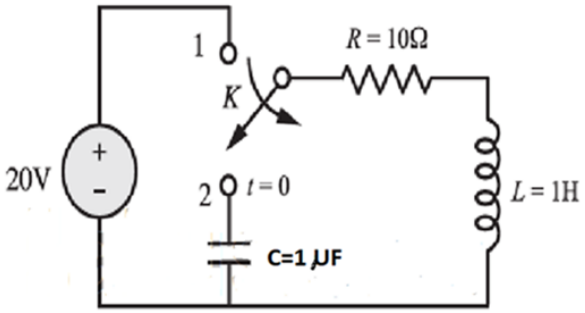
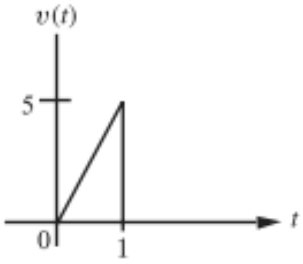
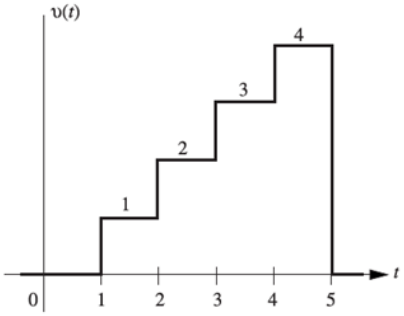
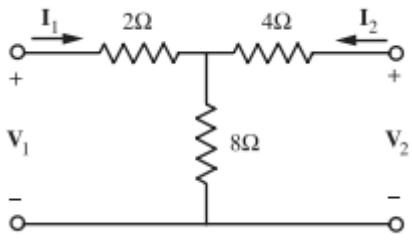
Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			UNIT – I	*CO*	*PO*	Marks
1	a)	For the circuit shown in fig1.1 determine the current through 2Ω resistor  fig1.1		*CO* 1	*PO1*	**10**
	b)	Determine the node voltage using node analysis for the circuit shown in fig1.2  fig1.2		*CO1*	*PO1*	**10**
		OR				

	2	a)	Explain star delta conversion as applied to electrical network. For the network shown in fig 2.1 find the equivalent resistance between terminals a and b  fig 2.1	***CO*** 1	***PO1***	**10**
		b)	For the circuit shown in fig 2.2 use mesh current method and solve for current $\mathbf{i_a}$. Also find the power delivered or absorbed by the dependent and independent sources  fig 2.2	***CO*** 1	***PO1***	**10**
			UNIT - II			
	3	a)	For the circuit shown in fig 3.1. find the Maximum Power dissipated across the load resistance R_L  fig 3.1	***CO*** 1	***PO1***	**10**

		b)	For the circuit shown in fig 3.2. find the current *i* using Superposition theorem.  fig 3.2	***CO*** 1	***PO1***	**10**
			OR			
	4	a)	State and prove Reciprocity theorem with an example.	***CO1***	***PO1***	**10**
		b)	For the circuit shown in fig 3.2 find the current i using norton's theorem	***CO*** 1	***PO1***	**10**
			UNIT - III			
	5	a)	A series RLC circuit consists of R=1k ohm, L=100m H in series with a capacitor of 10pF. If 100V is applied as input across the combination, find resonant frequency f_o, Q factor of the circuit, maximum current in the circuit, Half power frequencies f1 and f2.	***CO*** 2	***PO2***	**10**
		b)	Prove that Resonant frequency is the geometric mean of two half power frequencies and also derive the equation for Bandwidth for a parallel RLC circuit.	***CO*** 1	***PO1***	**10**
			OR			
	6	a)	Derive an expression for resonant frequency and bandwidth for a series resonance circuit	***CO*** 2	***PO2***	**10**
		b)	A Parallel RLC circuit consists of R=1k ohm, L=100m H in series with a capacitor of 10pF. If 100V is applied as input across the combination, find resonant frequency f_o, Q factor of the circuit, maximum current in the circuit, Half power frequencies f1 and f2.	***CO*** 1	***PO1***	**10**
			UNIT – IV			
	7	a)	State and prove Initial value theorem and Final value theorem	***CO*** 1	***PO1***	**8**
		b)	For the network shown in fig 7.2 the switch is closed at t=0, Find Find the values of i ,di/dt ,d^2i/dt^2 at t=0+  fig 7.2	***CO*** 2	***PO2***	**12**

			OR			
	8	a)	Analyze the given circuit shown in fig 8.1. The switch 'K' is moved from '1' to '2' at t=0. Find the values of i ,di/dt ,d2i/dt2 at t=0+. Assume steady state is achieved when K is at '1'  fig 8.1	***CO*** 2	***PO2***	**8**
		b)	Find the Laplace transform of the waveforms shown in Fig.8.2a & 8.2b  Fig.8.2a  Fig.8.2b	***CO*** 2	***PO2***	**12**
			UNIT – V			
	9	a)	Define 'h' parameters and 'T' parameters. Obtain 'Y' parameters in-terms of 'Z' parameters and 'Z' parameters in terms of 'Y' parameters.	***CO*** 1	***PO1***	**12**
		b)	Find the hybrid parameters for the two port network shown in fig 9.1.  Fig 9.1	***CO*** 1	***PO1***	**8**
			OR			
	10	a)	Define h parameters. Obtain 'Y' parameters in-terms of 'Z' parameters and 'Z' parameters in terms of 'Y' parameters.	***CO*** 1	***PO1***	**12**
		b)	For the circuit shown in fig 9.1 find the T parameters	***CO*** 1	***PO1***	**8**

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