U.S.N.										

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

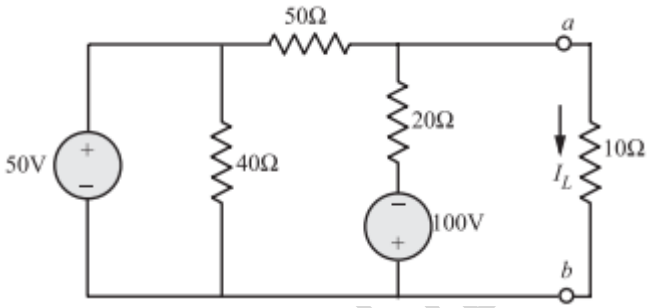
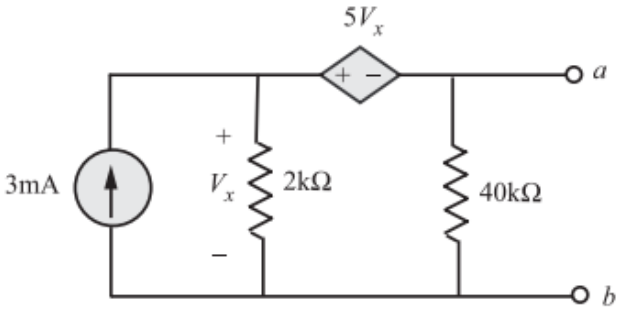
Autonomous Institute Affiliated to VTU

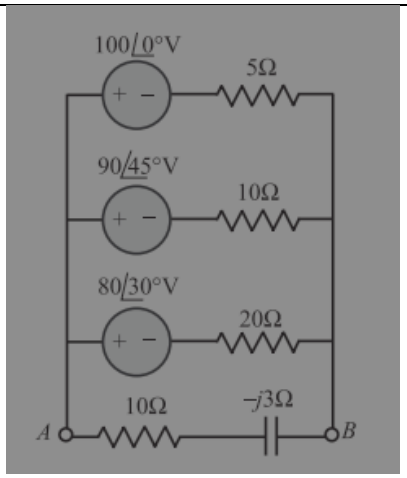
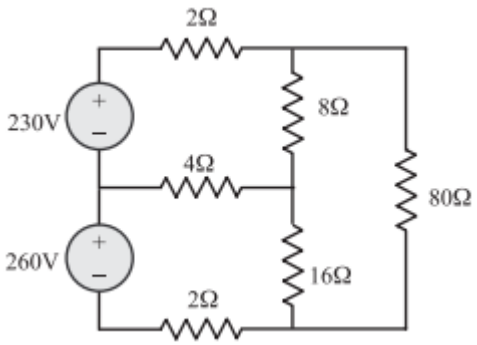
April 2024 Semester End Main Examinations

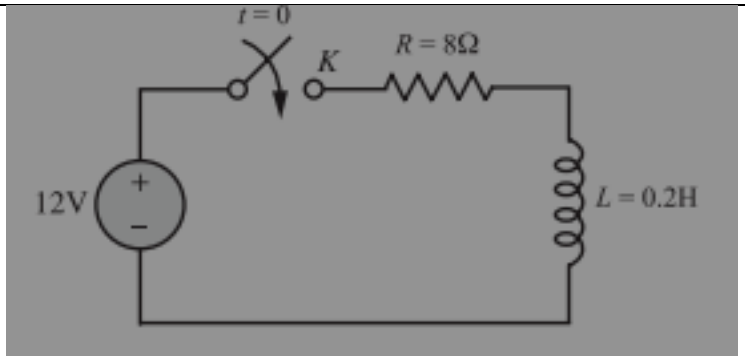
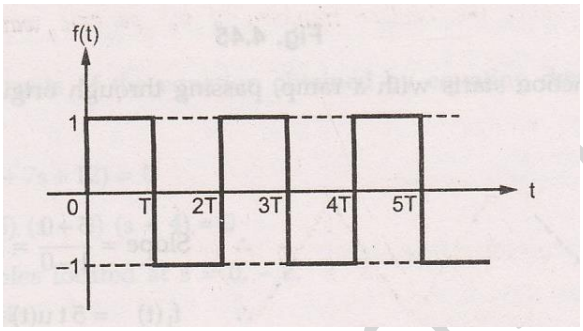
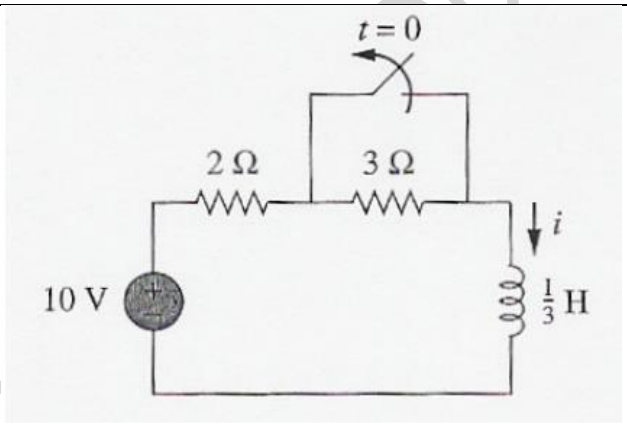
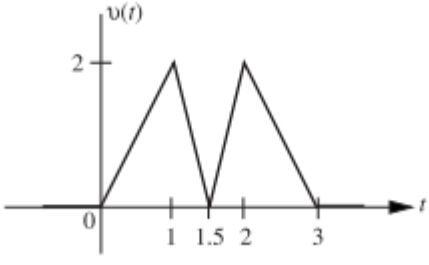
Programme: B.E. **Semester: III**
Branch: ES Cluster (EEE/ET/ECE/EIE/MD) **Duration: 3 hrs.**
Course Code: 22ES3PCECA **Max Marks: 100**
Course: Electrical Circuit Analysis

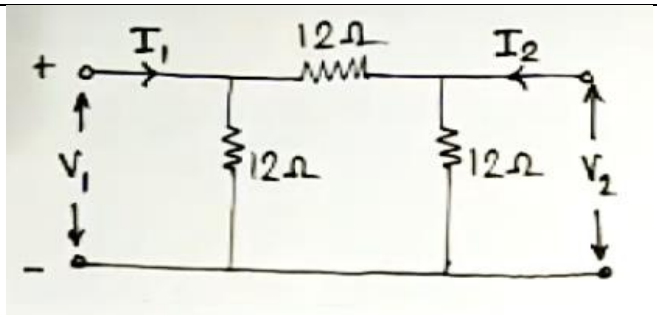
Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

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)	 Fig 1.1 For the circuit shown in Fig 1.1 find I_L using nodal analysis		*CO1*	*PO1*	**07**
	b)	 Fig 1.2 Determine the voltage across a and b using mesh analysis for the circuit shown in Fig 1.2		*CO1*	*PO1*	**07**
	c)	Explain the concept of source shifting using an example		*CO1*	*PO1*	**06**
		OR				
2	a)	Derive the expression for star resistances in terms of delta resistances		*CO1*	*PO1*	**07**

		b)	 Fig 2.2 Using source transformation find current through AB.	*CO1*	*PO1*	**07**
		c)	Explain the concept of super mesh with an example	*CO1*	*PO1*	**06**
			UNIT - II			
	3	a)	Derive the expression for bandwidth for both series and parallel resonant circuit.	*CO1*	*PO1*	**10**
		b)	In a series circuit R =6Ω, $\omega_0 = 4.1 \times 10^6$ rad/sec, band width = 10^5 rad/sec. Compute L, C, half power frequencies and Q.	*CO1*	*PO1*	**10**
			UNIT - III			
	4	a)	 fig 3.1 For the circuit shown in fig 3.1 find the current flowing through 80Ω resistor using thevenin's theorem and verify the same using norton's theorem	*CO2*	*PO2*	**10**
		b)	State and prove maximum power transfer theorem for AC circuits	*CO2*	*PO2*	**10**
			UNIT - IV			
	5	a)	In the given network, K is closed at t=0, with zero current in the inductor. Find the values of i, di/dt,d2i/dt2 at t=0+	*CO2*	*PO2*	**07**

						
		b)	State and prove initial value theorem	-	-	**06**
		c)	Find the Laplace transform of a periodic square wave shown in fig 5.2  Fig 5.2	*CO2*	*PO2*	**07**
			OR			
	6	a)	 Assume the circuit shown in fig 6.1 has been closed for a long time. Find i at $t=0^+$ and i at $t=\infty$	*CO2*	*PO2*	**06**
		b)	Discuss the initial and final conditions in passive network elements	-	-	**06**
		c)	 Fig 6.2 Find the laplace transform of v(t) as shown in Fig 6.2	*CO2*	*PO2*	**08**

			UNIT - V			
	7	a)	Define T parameter	-	-	**04**
		b)	Derive Z parameters in terms of H parameters.	*CO1*	*PO1*	**08**
		c)	 Fig 7.1 Find h parameters for the circuit shown in fig 7.1	*CO2*	*PO2*	**08**

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