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

Autonomous Institute Affiliated to VTU

October 2024 Supplementary Examinations

Programme: B.E.   **Semester: III**
Branch: ES CLUSTER(EC, EE, EI, ET &MD)   **Duration: 3 hrs.**
Course Code: 23ES3PCNAL   **Max Marks: 100**
Course: Network Analysis
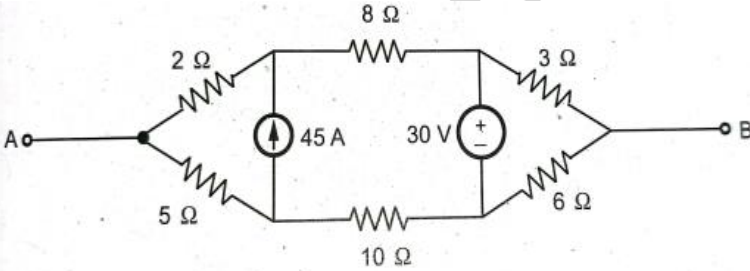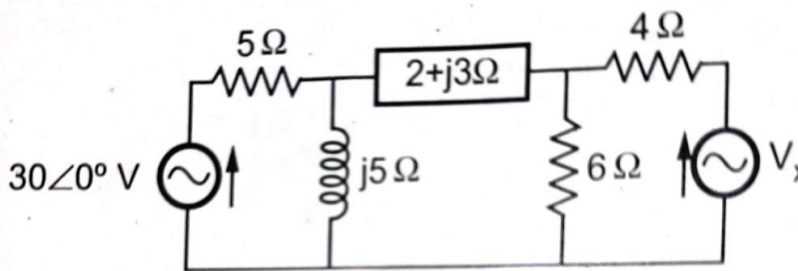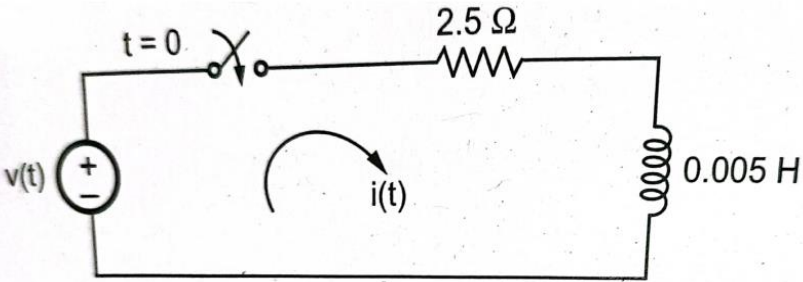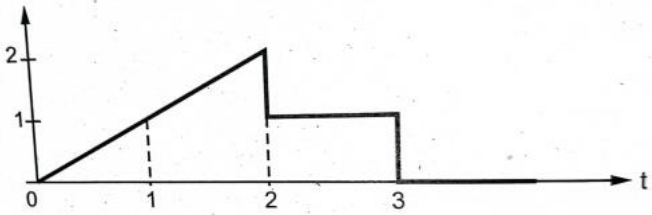
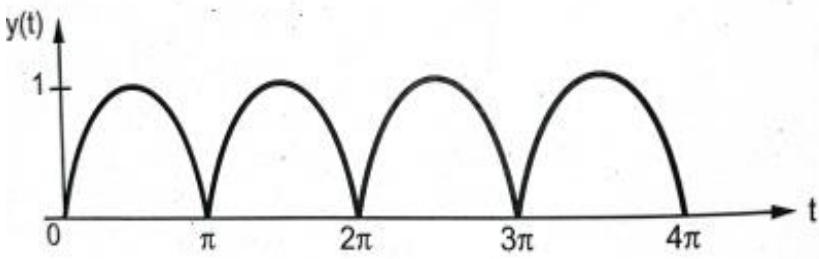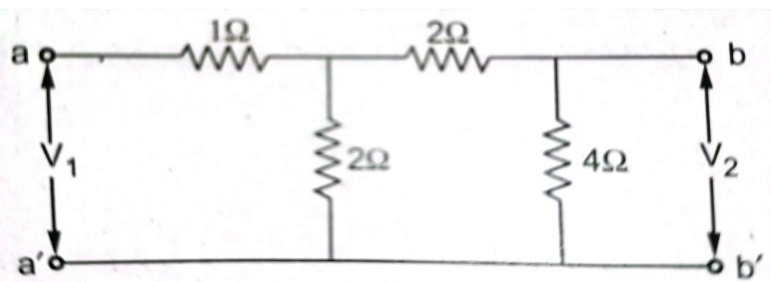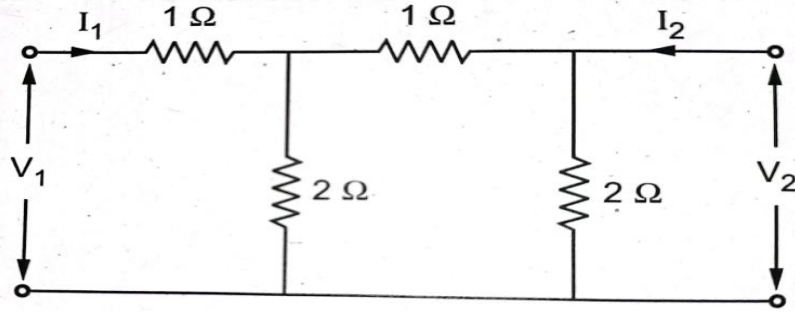**Instructions**: 1. Answer any FIVE full questions, choosing one full question from each unit.
                    2. Missing data, if any, may be suitably assumed.

			UNIT - I	CO	PO	Marks
1	a)		Explain the concept of Supermesh analysis with an example.	CO1	PO1	05
	b)		Reduce the network shown in the Fig. to a single voltage source in series with a resistance using source shifting and source transformations.	CO1	PO1	07
	c)		Use the nodal analysis to calculate the value of V_x in the circuit shown in the Fig. such that the current through $(2 + j3)\ \Omega$ impedance is zero.	CO1	PO1	08
			OR			
2	a)		Explain the concept of Supernode analysis with an example.	CO1	PO1	05

		b)	Write the mesh equation for the circuit shown in Fig. and determine mesh currents using mesh analysis.	CO1	PO1	**07**
		c)	For the network shown in the Fig. Consists of two star connected circuits in parallel. Obtain the single delta connected equivalent.	CO1	PO1	**08**
			UNIT - II			
3	a)		State and prove Reciprocity Theorem.	CO1	PO1	**10**
	b)		Using Superposition Theorem, obtain the response 'I' for the network shown in Fig.	CO1	PO1	**10**
			UNIT - III			
4	a)		Explain parallel resonance. Derive the expression for parallel resonance in resonant circuit with resistances in series with L and C.	CO2	PO2	**10**
	b)		A series RLC circuit consists of R =10 Ω, L=0.01 H, and C =0.01μF, is connected across a supply of 10 mV. Determine, i)f_0 ii) Q-factor iii) BW iv) f_1 and f_2 v) I_0	CO2	PO2	**10**
			UNIT - IV			
5	a)		State and explain Final value theorem.	CO2	PO2	**05**

	b)	In the series RL circuit shown in the Fig. The source voltage v(t)= 50 sin 250t V. Determine the resulting current if the switch is closed at t =0. 	CO2	PO2	08
	c)	Determine the Laplace transform of, 	CO2	PO2	07
		OR			
6	a)	Define Laplace transform and explain the property Linearity.	-	-	05
	b)	Determine the Laplace transform of the periodic function shown in the Fig. 	CO2	PO2	08
	c)	Obtain the expression for transient current in RC series circuit when excited by D.C input at t=0. Also sketch the response.	CO2	PO2	07
		UNIT - V			
7.	a)	Determine the y-parameters of the circuit shown in the Fig. 	CO3	PO5	10

		b)	Determine the 'Z' parameters of the circuit shown in the Fig.	CO3	PO5	10

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