U.S.N.										

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

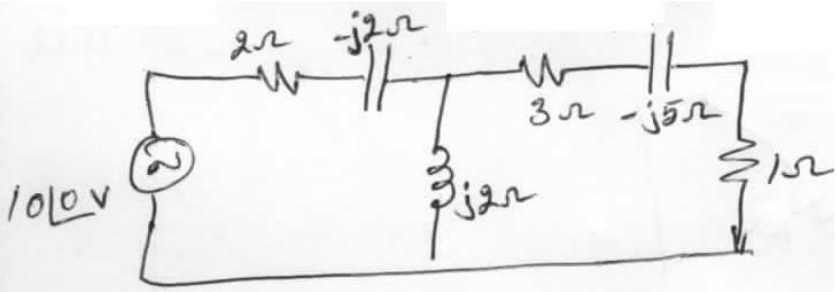
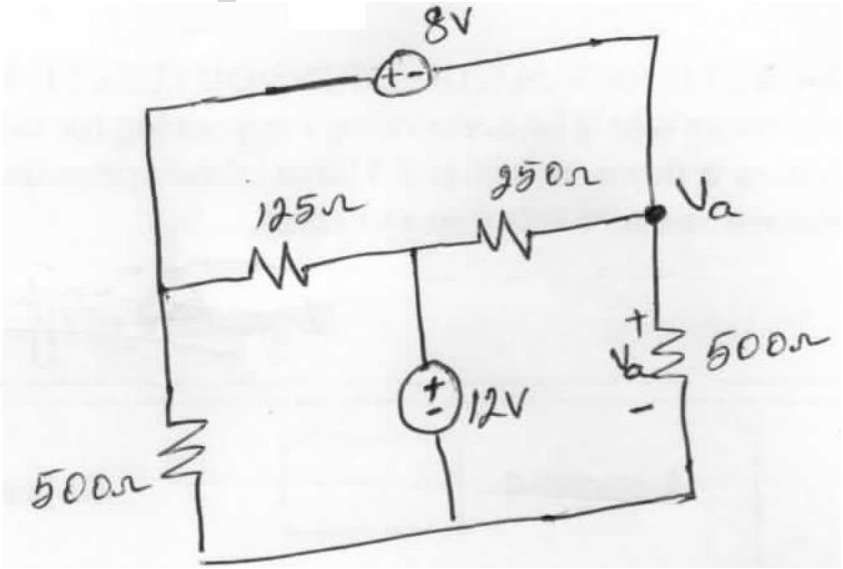
Autonomous Institute Affiliated to VTU

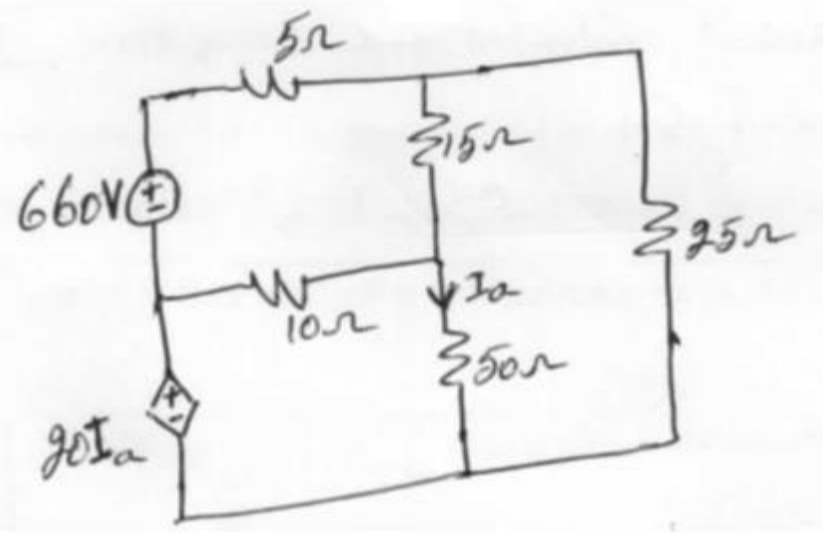
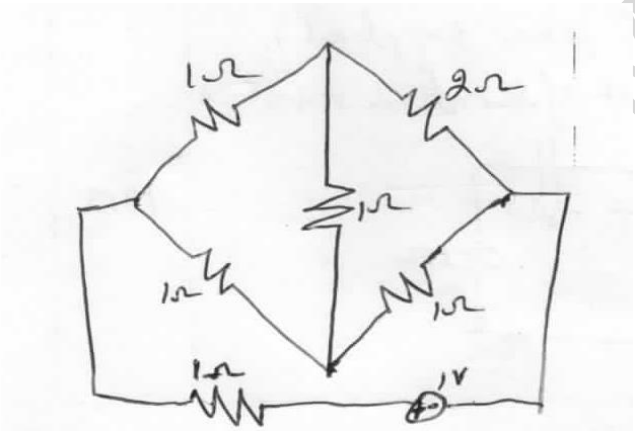
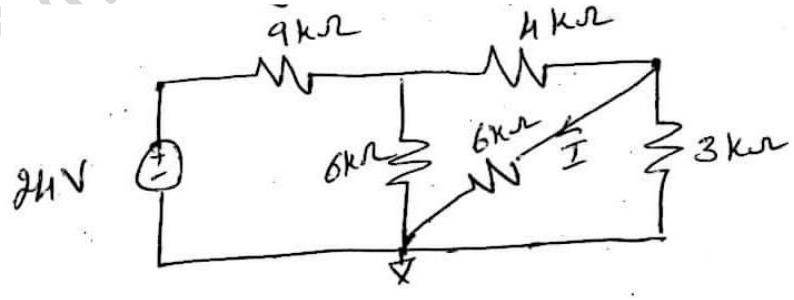
January / February 2025 Semester End Main Examinations

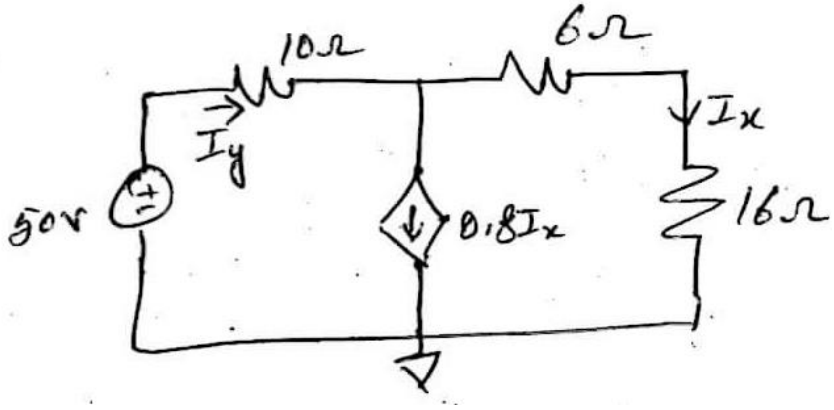
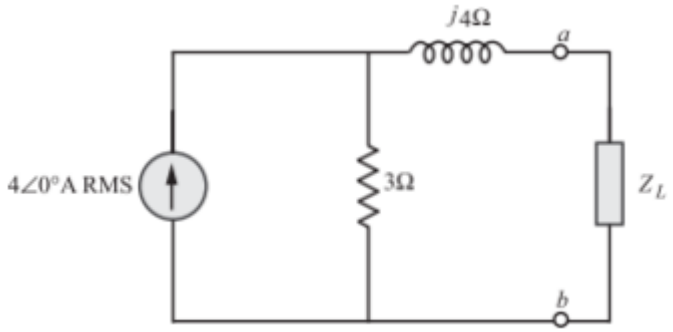
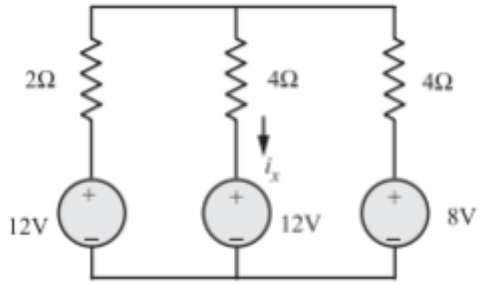
Programme: B.E. **Semester: III**
Branch: ES CLUSTER(MD & EC) **Duration: 3 hrs.**
Course Code: 22ES3PCNAL **Max Marks: 100**
Course: Network Analysis

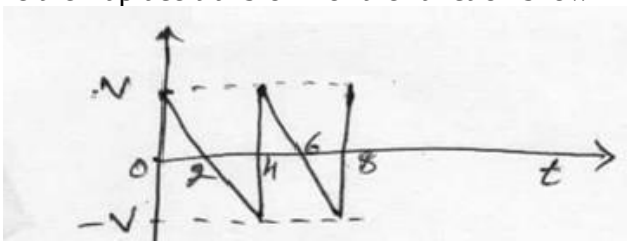
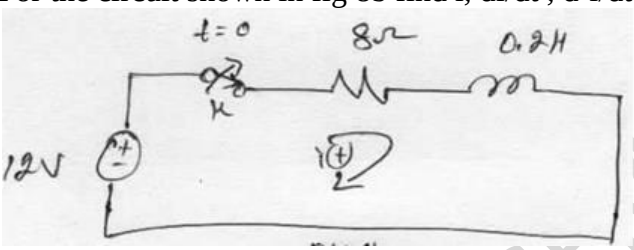
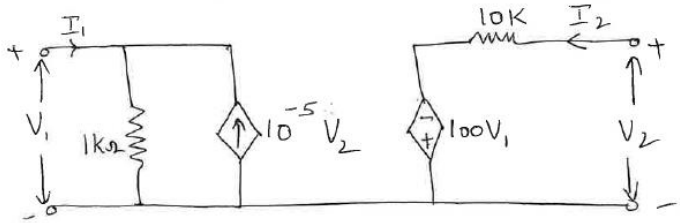
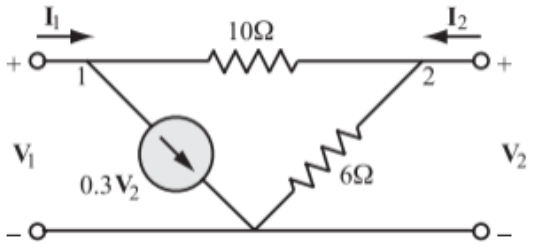
Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

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)		Find the power supplied by the source and power absorbed by each of the network resistors for the fig.1a  Fig 1a.	CO1	PO 1	10
	b)		Find Va for the circuit shown in fig 1b using nodal analysis method.  Fig 1b.	CO1	PO1	10
			OR			
2	a)		Use mesh current method to find the power delivered by the dependent voltage source for the fig 2a.	CO1	PO1	10

			 Fig 2a			
		b)	With the help of star-delta transformation find the total current in the network for the fig 2b.  Fig2b	***CO1***	***PO1***	**10**
			UNIT - II			
	3	a)	State the reciprocity theorem. Prove that the circuit shown in fig 3a satisfies the reciprocity theorem by calculating current I  Fig 3a	***CO1***	***PO1***	**10**
		b)	State Norton theorem. Find the current through 16Ω load resistor for the circuit shown in fig 3b.	***CO1***	***PO1***	**10**

			 Fig 3b			
4	a)	Fig 4.1 For the circuit shown in Fig 4a calculate RL for maximum power transfer and also find maximum power  Fig 4a.	***CO1***	***PO1***	**10**
	b)	For the circuit shown in Fig 4b calculate ix using Norton's theorem  Fig 4b.	***CO1***	***PO1***	**10**
		UNIT - III			
5	a)	What is the resonant frequency for the series connected RLC circuit? Derive an expression for the resonant frequency for the same.	***CO1***	***PO1***	**10**
	b)	In a parallel RLC circuit, C=50μF.Determine BW,Q,R and L for the following cases (i)W_0=100, W_2=120 (ii)W_0=100,W_1=80	***CO1***	***PO1***	**10**
		OR			
6	a)	Derive an expression for resonant frequency and Bandwidth in parallel resonance circuit.	***CO1***	***PO1***	**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) f1 v) f2 vi) I_0	***CO1***	***PO1***	**10**

			UNIT - IV			
	7	a)	Discuss the Initial and Final switching conditions of circuit elements.	-	-	**10**
		b)	Determine the Laplace transform of the function shown in fig 7b  Fig 7b.	***CO2***	***PO2***	**10**
			OR			
	8	a)	State and Prove Initial and Final value theorem	-	-	**10**
		b)	For the circuit shown in fig 8b find i, di/dt , d^2i/dt^2 at $t=0^+$  Fig 8b.	***CO2***	***PO2***	**10**
			UNIT - V			
	9	a)	Define Z and Y Parameters. Also obtain the relationship between T and H parameters .	-	-	**12**
		b)	Obtain z parameters for the circuit shown in fig 9b  Fig 9b	***CO2***	***PO2***	**8**
			OR			
	10	a)	Define T and H parameters. Also obtain the relationship between Z and Y parameters .	-	-	**12**
		b)	Using two port network concept Solve the circuit shown in Fig 10a and find T parameters  Fig 10b	***CO2***	***PO2***	**8**

****