



B.Tech III Semester Supplementary Examinations, February 2024

ELECTRICAL CIRCUIT ANALYSIS (EEE)

Maximum Marks: 70

Date:19.02.2024 Duration: 3 hours

Note:

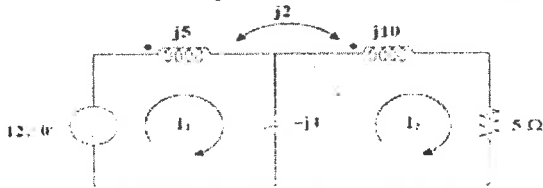
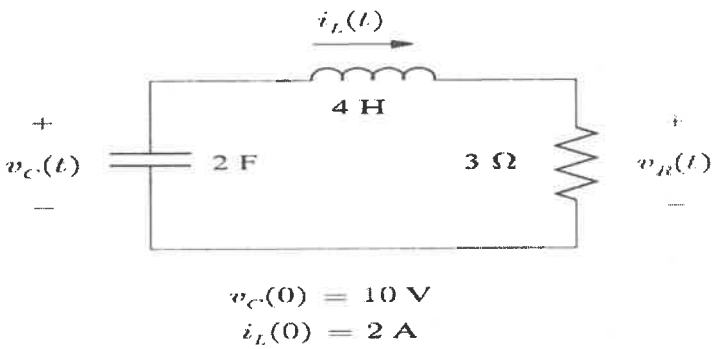
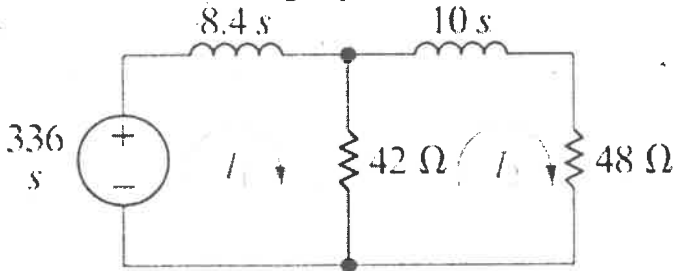
1. This question paper contains two parts A and B.
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

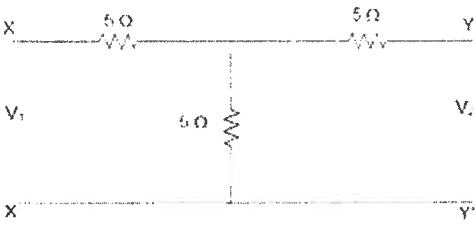
Part-A

All the following questions carry equal marks (10X2M=20 Marks)		CO	BTL
1	Define the terms i) oriented graph and ii) planar network	CO1	L2
2	Write a short note on "Dot convention"	CO1	L2
3	Differentiate between steady state response and transient response.	CO2	L2
4	Define the time constant for series RL circuit?	CO2	L2
5	Define Convolution integral?	CO3	L2
6	Define a Transfer function and express it in the pole, zero form?	CO3	L2
7	What is driving point input admittance?	CO4	L2
8	Write the advantages of T-network?	CO4	L2
9	Write the significance of Characteristic impedance?	CO5	L2
10	Mention few applications of Filters?	CO5	L2

Part-B

Answer All the following questions.		(5X10M=50Marks)	M	CO	BTL
11	A. For the graph given below, chose a tree with branches 1,2,3,4 and construct a basic cutset matrix.	6M	CO1	L3	
	B. Derive the expression for the coefficient of coupling.	4M			
OR					

12	A. Determine the phasor currents I_1 and I_2 from the figure.  B. Explain about dual and duality in electrical networks.	6M	CO1	L3
13	Determine the initial value of $v_R(t)$ and $dv_R(t)/dt$, and the final value of $v_R(t)$.  $v_C(0) = 10 \text{ V}$ $i_L(0) = 2 \text{ A}$	10M	CO2	L3
OR				
14	A. Derive the expression for current in a series RLC circuit with sinusoidal excitation? B. Detail about the initial and final conditions for various network elements?	6M	CO2	L3
15	A. Explain about initial and final value theorems? B. Discuss briefly about the Frequency response and with the help of magnitude & phase plots how do u define stability?	5M	CO3	L2
OR				
16	A. Solve for I_1 and I_2 using Laplace transforms.  B. Briefly explain about parallel resonance.	6M	CO3	L3
17	A. Derive the conversion formulae to convert Z-parameters into	5M	CO4	L3

	h-parameters. B. List out the conditions for symmetry and reciprocity in terms of Z, Y, h and ABCD parameters.	5M		
OR				
18	Determine ABCD & Y parameters for the network given below. 	10M	CO4	L3
19	A. Explain in detail about the design of m-derived High pass filter. B. Discuss the difference between single tuned and double tuned filters. [7M+3M]	5M 5M	CO5	L3
OR				
20	A. Explain in detail about the design of constant -k type Low pass filter. B. Detail about the classification of filters with neat response diagrams.	5M 5M	CO5	L3

