



R20 Regulation

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

Subject code: 3P3DE

B.Tech III Semester Supplementary Examinations, February 2024

Network Analysis

(ECE)

Maximum Marks: 70

Date: 26.02.2024 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.
 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	Bloom Tx
1	Define Twig and Link	1	L1
2	List out any two properties of incidence matrix.	1	L2
3	What is natural response.	2	L1
4	Time constant of series RL circuit excited by constant DC source is 8 sec. Determine the inductance of the coil if the resistance of the circuits $2\text{ K}\Omega$	2	L1
5	What is a transformed network?	3	L1
6	What is resonance. Write the condition for series resonance	3	L1
7	Write the condition for reciprocity in Z and Y parameters	4	L1
8	Define transfer impedance.	4	L1
9	What is single tuned filter?	5	L1
10	What is low pass filter?	5	L1

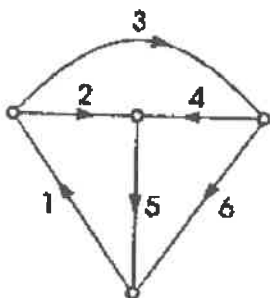
Part-B

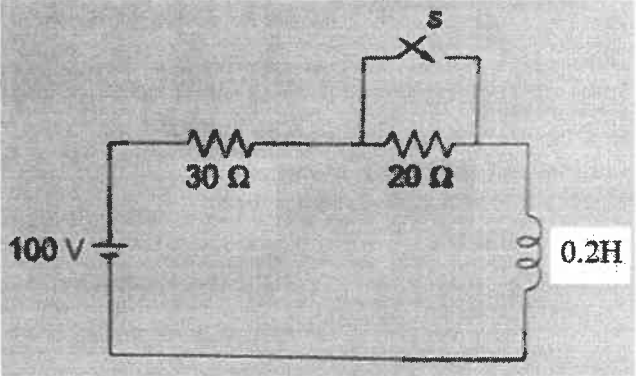
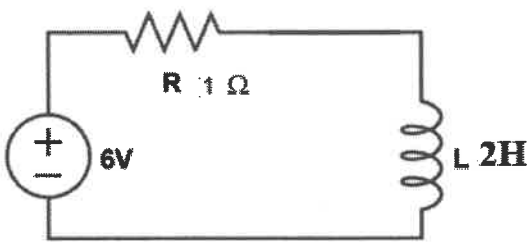
Answer All the following questions. (5X10M=50Marks)

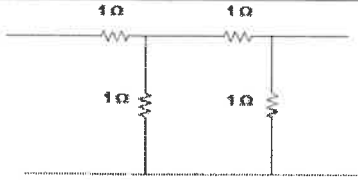
11	(a) What are dual networks. Explain the construction of dual networks with an example (b) Explain dot convention	5M 5M	1	L2
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OR

12	Determine the tie-set matrix and tie-set schedule of the oriented graph shown below. Consider the branches of the tree as 2,4 and 5	10M	1	L3
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13	Derive an expression for complete response of series R-L-C circuit excited by constant DC voltage source	10M	2	L2
OR				
14	(a) Explain the transient response of series RL circuit excited by constant DC source (b) In the circuit shown below, determine the complete expression for current when the switch is closed at $t=0$ sec 	5M 5M	2	L2
15	(a) Discuss convolution integral in detail (b) Determine the transient response of a series RL circuit shown in using laplace transformation when 6V source is applied at $t=0$sec 	5M 5M	3	L3
OR				
16	What are poles and zeros. Explain the construction of pole zero plot with an example. Explain the significance of poles and zeros	10M	3	L2
17	(a) Explain the necessary conditions for driving point functions with suitable examples (b) Define the following (i) Reverse transfer impedance (ii) Forward Transfer admittance (iii) Driving point impedance at input port (iv) Driving point admittance at output port	5M 5M	4	L2
OR				
18	(a) Express Z parameters in terms of Y parameters (b) Determine the ABCD parameters of the network given below	5M 5M	4	L3

				
19	Explain the classification of filters	10M	5	L2
OR				
20	(a) Explain the analysis of low pass (LC) filter (b) Design a high pass filter having characteristic impedance of 500Ω and cutoff frequency of 2000 Hz	5M 5M	5	L3

