R20 Regulation *Subject code: 3P3DE*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Regular/Supplementary Examinations, March/April 2023

Network Analysis

(ECE)

Maximum Marks: 70 Date:10.04.2023 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)

1 Define Twig and Link
2 List out any two properties of incidence matrix
3 What is natural response
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 KΩ
5 What is a transformed network
6 What is resonance. Write the condition for series resonance
7 Write the condition for reciprocity in Z and Y parameters
8 Define transfer impedance
9 What is single tuned filter
10 Define Propagation constant.

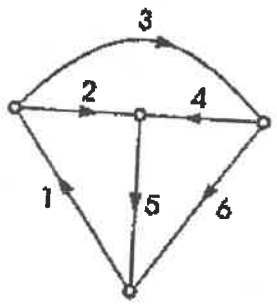
Part-B

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

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

OR

12 Determine the tie-set matrix and tie-set schedule of the oriented graph shown below. 10M
Consider the branches of the tree as 2,4 and 5.

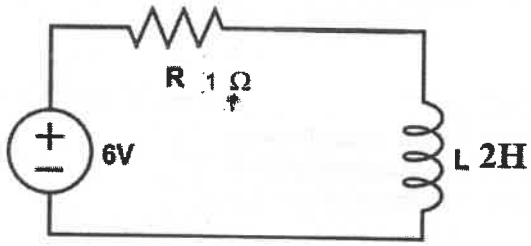


13 Derive an expression for complete response of series R-L-C circuit excited by constant DC voltage source 10M

OR

14 Explain the transient response of series RL circuit excited by constant DC source. 10M

15 Determine the transient response of a series RL circuit shown in using laplace transformation when 6V source is applied at t=0sec 10M



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

17 (a) Explain the necessary conditions for driving point functions with suitable examples. 5M
(b) Define the following: 5M
(i) Reverse transfer impedance (ii) Forward Transfer admittance

OR

18 Express Z parameters in terms of Y parameters. 10M

19 (a) Explain the design analysis of double tuned filter. 5M
(b) Give the classification of filters. 5M

OR

20 (a) Explain the analysis of low pass (LC) filter 5M
(b) Design a high pass filter having characteristic impedance of 500Ω and cutoff frequency of 2000 Hz. 5M