R18 Regulation

Subject code: 2P3DF

# TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

## B.Tech III Semester Regular/Supplementary Examinations, February 2021

## Network Analysis

**(Electronics and Communication Engineering)**

*Maximum Marks: 70* Date: 01.03.2021 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 tree, co-tree.
2 Explain incident matrix with an example
3 Define damping ratio.
4 Define time constant .
5 Define average and rms values.
6 Define Q-factor.
7 What is characteristics impedance
8 Explain the symmetry condition for Z and Y parameters.
9 Define propagation constant.
10 What are the different types of filters.

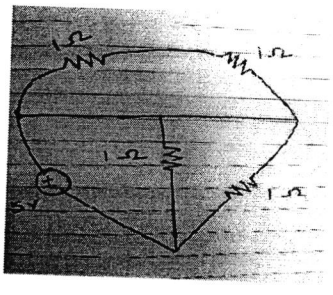
## Part-B

Answer All the following questions. **(10M X 5=50Marks)**

11 a) Explain about equivalent T for Magnetically coupled circuits, 10M
b)Explain about dot convention.

OR

12 Define tie set matrix, cut set matrix and find the tie set matrix and cutest matrix for the circuit shown 10M




13 a)Explain about damping factor with over damped, under damped, critically damped cases. 10M

OR

14 a) Derive the expression for voltage v(t) in source free RL circuit 10M
b)Derive the expression for current i(t) in source free RC circuit

15 In figure the switch is closed. Find the time when the current in the circuitry reaches to 500 mA 10M

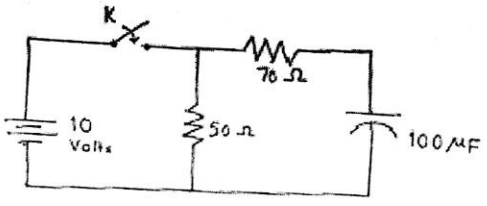



Fig. RC circuit

OR

16 Find the expression for the current (it), voltage across resistor ($V_R$) and voltage across inductor ($V_L$) using Laplace transform. 10M

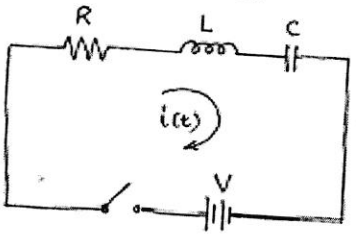



Fig. RLC circuit

17 Determine Y parameters in terms of Z parameters and Z parameters in terms of Y parameters 10M

OR

18 a)Derive the condition for Reciprocity and symmetry in a two port ABCD - parameter representation. 10M

b)The Z-parameters of a circuit are given by

$$Z_{11} = 3;\ Z_{12} = 3;\ Z_{21} = 4;\ Z_{22} = 4$$

Obtain the transmission parameters.

19 Explain about m-derived filters.

20 Design a Constant K-type low pass filter 10M

OR

10M