R16

Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B Tech I Year II Semester Supplementary Examinations October-2020
NETWORK ANALYSIS
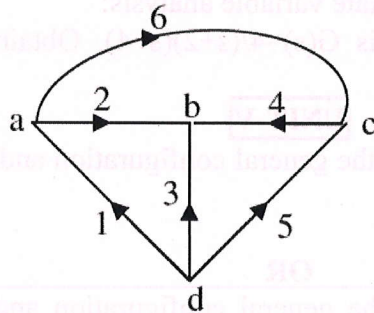### (Electronics and communication Engineering)

Time: 3 hours   Max. Marks: 60
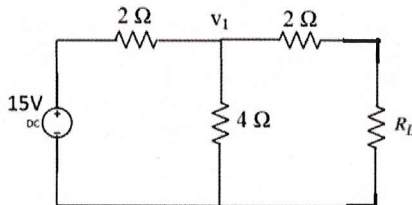
(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1 **a** 1. Define the following terms   **4M**
     (i) Branch   (ii) Sub graph (iii) Node   (iii) Tree & co-tree

   b For the graph shown below find incidence and cut set matrices.   **8M**

OR

2 **a** What is the condition for maximum power transfer to the load?   **4M**
   b Find Thevenin's equivalent for the following circuit.   **8M**

UNIT-II

3 **a** Define i) admittance, ii) impedance, iii) phase difference, iv) power factor   **4M**
   b A parallel RLC circuit is supplied with a voltage source of 230 V, 50Hz. Determine   **8M**
     circuit current and power factor if R=40Ω, L=0.2H and C=50μF.

OR

4 **a** What is time constant? What are the time constants of series RL and RC circuits?   **4M**
   **b** Deduce the transient response source free series RC circuit.   **8M**

UNIT-III

5 **a** Obtain the expression for resonant frequency, bandwidth and Q-factor for parallel   **5M**
     R-L-C circuit.

   b In a parallel resonance circuit (Tank circuit) R=2Ω, L=1mH and C=10μF, Find the   **7M**
     Resonant frequency, Dynamic impedance and Bandwidth.

OR

6 a Explain about dot convention in mutually coupled circuits: 5M
   b Show that the resonant frequency circuit $f_r^2 = f_1 f_2$ where f_1 and f_2 are the half power   7M
      frequencies and f_r is the resonant frequency.

UNIT-IV

7 a Mention the condition for symmetry and reciprocity for z-parameters: 6M
   b Find the h- parameters for the following circuit.   6M
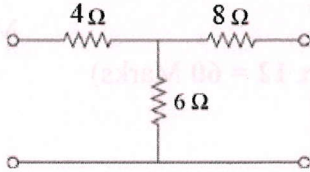
OR

8 a What are the merits and demerits of state variable analysis: 4M
   b The transfer function of a system is $G(s)=4/(s+2)(s+4)$. Obtain a state variable   8M
      representation for the system.

UNIT-V

9 a What is an m-derived filter? Explain the general configuration and parameters of m-   10M
      derived low pass filter.
   b Define filter: 2M

OR

10 a What is high pass filter? Explain the general configuration and parameters of a   10M
       contant-K-high pass filter.
    b Mention the properties of band pass filters: 2M

*** END ***