R16

Reg. No:

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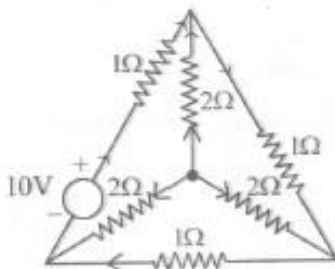(Electronics & Communication Engineering)

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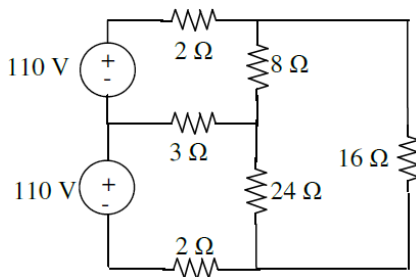
(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1 a Define and state the properties of incidence matrix.   **4M**
   b For the network shown below draw the graph and find incidence and tie – set **8M**
      matrices.

OR

2 a State and explain Kirchhoff's laws?   **4M**
   b Using nodal analysis find all branch currents for the following circuit.   **8M**


UNIT-II

3 a Define power factor, apparent power, active power and reactive power.   **4M**
   b A resistor of 50Ω, inductance of 100mH and a capacitance of 100μF are   **8M**
      connected in series across 200V, 50Hz supply. Determine the following
      (i) Impedance (ii) current flowing through the circuit (iii) power factor (iv) voltage
      across R,L &C (v) power in watts.

OR

4 a Mention the properties of Exponential Response of RLC circuits.   **4M**
   b The impedances of parallel circuit are Z1= (6+j8) ohms and Z2 = (8-j6) ohms. If **8M**
      the applied voltage is 120V, find (i) current and power factor of each branch (ii)
      overall current (iii) power consumed by each impedance. Draw the phasor
   diagram.

UNIT-III

5 **a** Write the comparison between series resonance and parallel resonance? **4M**

b In a parallel Resonant circuit shown in figure. (1), find the Resonant frequency, Dynamic Impedance, Bandwidth, Q-factor and Current at resonance? **8M**
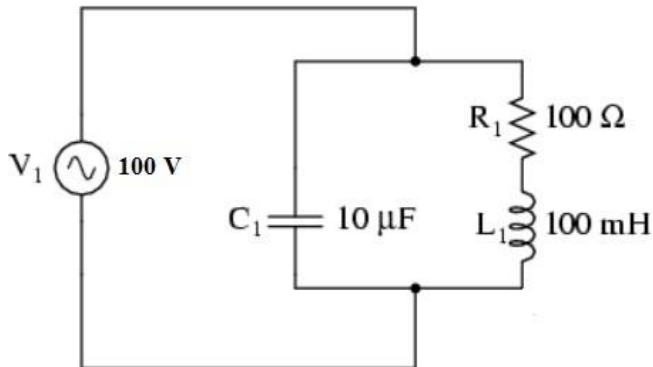
OR

6 **a** Define coupling co-efficient and derive the relation between self-inductance, mutual inductance and coupling co-efficient. **5M**

b **7M**

A series RLC circuit has R=10Ω, L=0.5H and C=40μF. The applied voltage is 00V. Find (i) Resonant frequency & Quality factor of a coil (ii) Bandwidth (iii) Upper and lower Half power frequencies (iv) Current at resonance & current at half power points (v) Voltage across inductance & voltage across capacitance at resonance.

UNIT-IV

7 **a** Mention the condition for symmetry and reciprocity for h-parameters **4M**

b Find the Z- parameters for the following circuit. **8M**
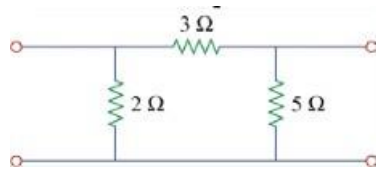
OR

8 **a** What are the advantages of state variable analysis? **5M**

b The transfer function of a system is $G(s)=2/(s+1)(s+2)$. Obtain a state variable representation for the system. **7M**

UNIT-V

9 **a** What is a constant K low pass filter, derive its characteristics impedance. **4M**

b Design a band elimination filter and explain its design procedure in detail. **8M**

OR

10 **a** Explain Neper and Decibel. **4M**

b Design a constant K high pass filter and explain its design procedure in detail. **8M**

*** END ***