R16

Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year II Semester Supplementary Examinations October-2020
ELECTRICAL CIRCUITS
(Electrical & Electronics Engineering)

Time: 3 hours   Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1 a State Kirchhoff's Laws and explain in detail.   **4M**
   b Find the current through each branch by network reduction technique from the   **8M**
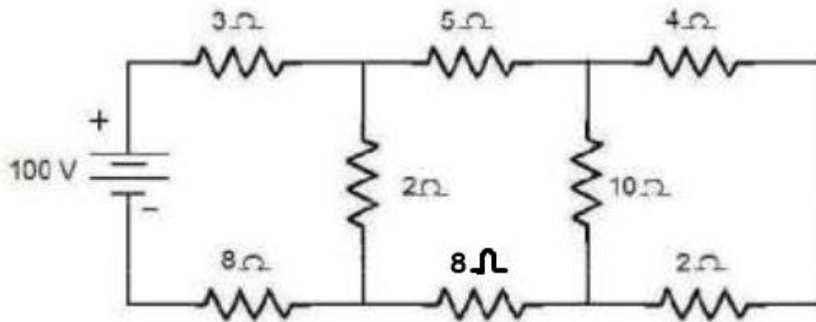   network shown in Fig. (1)

Fig.(1)

OR

2 a What are the types of sources? Explain them with suitable diagrams and   **6M**
      Characteristics?
   b Derive an expression for total resistance when three resistances R1, R2 & R3 are   **6M**
      connected in Parallel.

UNIT-II

3 Define Average value and RMS value? Find the average value and RMS value of a   **12M**
   full wave rectified sine wave.

OR

4 A 1KΩ resistor is connected in series with an inductance of 50mH across a 230V,   **12M**
   50HZ AC Supply. Find (i) Inductive reactance (ii) Impedance (iii) Current (iv) Phase
   angle (v) Voltage drop across resistance (vi) Voltage drop across Inductance.

UNIT-III

5 A series RLC circuit has R=10Ω, L=0.5H and C=40μF. The applied voltage is 100V.   **12M**
   Find (a) Resonant frequency & Quality factor of a coil (b) Bandwidth (c) Upper and
   lower Half power frequencies (d) Current at resonance & current at half power points
   (e) Voltage across inductance & voltage across capacitance at resonance.

OR

6 a Define the following terms: (i) impedance (ii) admittance   **4M**
   b Draw the Locus diagram of a Series RL Circuit?   **8M**

UNIT-IV

7 **a** Derive the expression for equivalent inductance when the coupled inductors are connected in Series aiding and series opposition?   **8M**

b Two coupled coils have a self inductances 37.5 mH and 193 mH, with the mutual inductance of 63.75 mH. Find the co efficient of coupling.   **4M**

OR

8 Explain in detail about Statically Induced EMF and Dynamically Induced EMF?   **12M**

UNIT-V

9 **a** Write the Statement of Superposition Theorem?   **2M**

b Find the current passing through Each Resistor for the circuit shown below in Fig.(a) by using Superposition Theorem?   **10M**
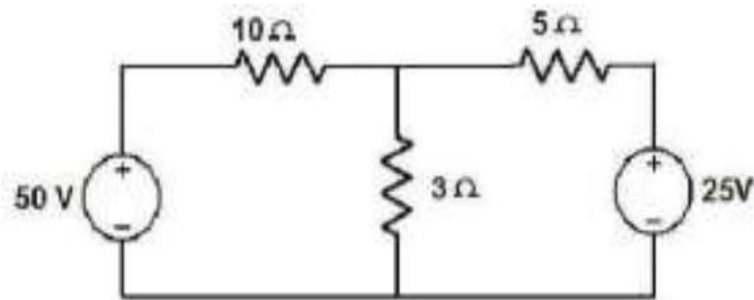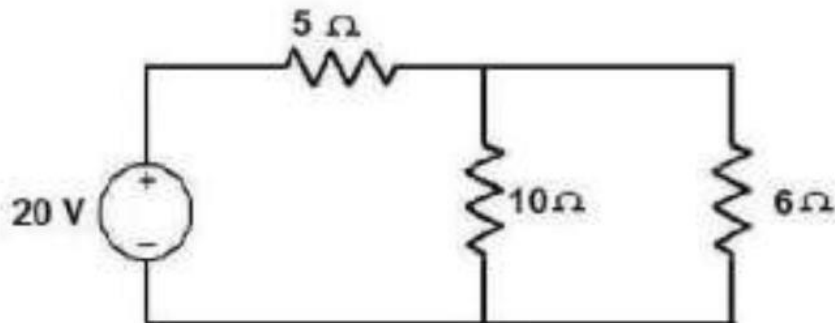

Fig.(a)

OR

10 **a** State and prove Norton's Theorem?   **6M**

b Using Norton's Theorem, Find current through 6Ω resistance shown in below Fig.   **6M**

*** END ***