SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year II Semester Supplementary Examinations Dec 2019
ELECTRICAL CIRCUITS
(Electrical & Electronics Engineering)

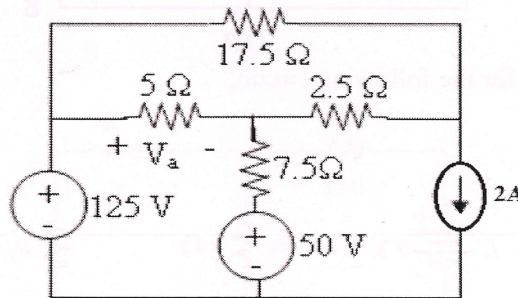Time: 3 hours

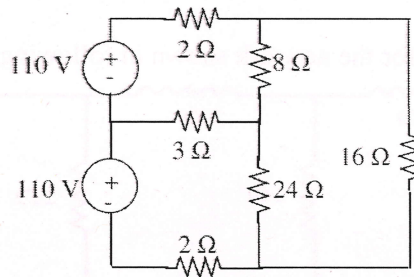Max. Marks:60

(Answer all Five Units 5 X 12 = 60 Marks)

UNIT-I

1   Derive the expression for Delta connected resistances in terms of Star connected resistances?   12M

OR

2   **a**   Find the value of V_a for the following circuit using KVL.

6M

   b   Using nodal analysis find all branch currents for the following circuit.

6M

UNIT-II

3   Determine the average value, RMS value, Form factor and peak factor of a pure sinusoidal Waveform?   12M

OR

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

UNIT-III

5   Obtain the expression for resonant frequency, bandwidth and Q-factor for Series R-L-C circuit.   12M

OR

6   A series RLC circuit has R=10Ω, L=0.5H and C=40μF. The applied voltage is 100V.
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.   12M

UNIT-IV

7   A coil of 100 turns is wound uniformly over a insulator ring with a mean circumference of 2m and a uniform sectional area of 0.025cm². If the coil is carrying a current of 2A. Calculate
(i) The mmf of the circuit (ii) magnetic field intensity (iii) flux density (d) total flux.   12M

OR

8 Explain Self Inductance, Mutual Inductance and Co-efficient of coupling in detail? Give the Relation between L1, L2, K & M? 12M
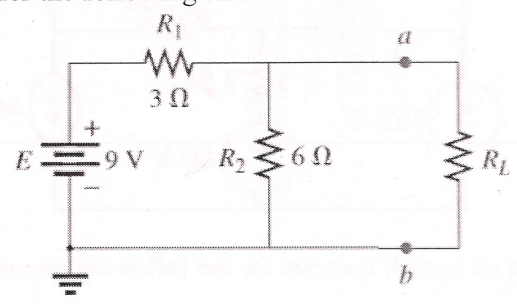
UNIT-V

9 a State and explain super position theorem. 6M
   b Find the maximum power delivered to the load by using maximum power transfer theorem for the following circuit.
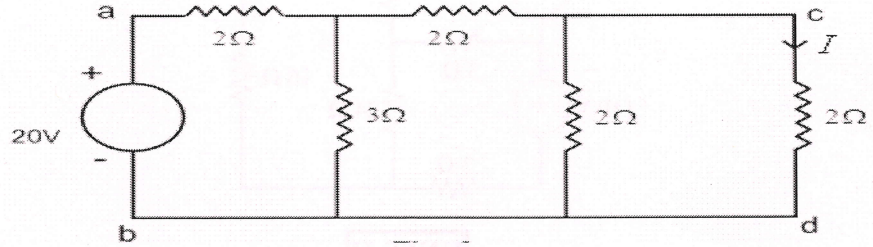
6M
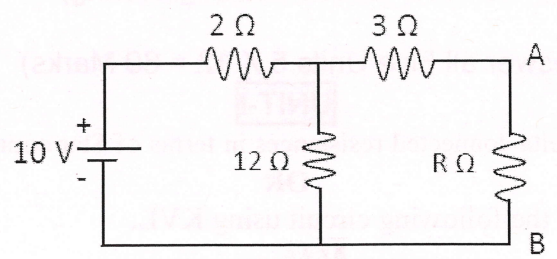
OR

10 a Find Norton's equivalent for the following circuit.

6M

b Verify the reciprocity theorem for the network shown in following circuit.

6M

*** END ***