Code: R7100206

R07

B.Tech I Year (R07) Supplementary Examinations, June 2013
ELECTRICAL CIRCUIT ANALYSIS
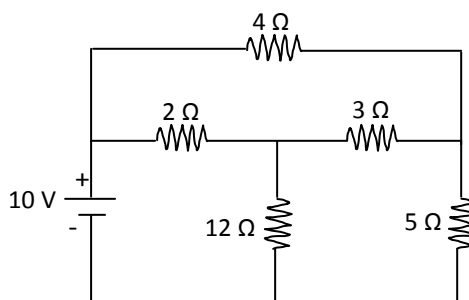(Electrical and Electronics Engineering)

Time: 3 hours   Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

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1. (a) Define and explain resistance, inductance and capacitance parameters.
    (b) Find the current in the 12 ohms resistor by using star-delta transformation.


2. (a) What is an electric circuit? What is a magnetic circuit? Make a comparison between electric circuit and magnetic circuit.
    (b) Coil 1 of a pair of coupled coils has a continuous current of 5 A and the corresponding fluxes φ_{11} and φ_{12} are 0.2 and 0.4 m Wb respectively, if the turns are $N_1 = 500$ and $N_2 = 1500$, find L_1, L_2, M and k.

3. (a) Obtain the current locus of a series circuit having a fixed resistance and a variable inductance.
    (b) Given a series RLC circuit with R = 100 ohms, L = 0.5 H and C = 40 μF, calculate the resonant, lower and upper half – power frequencies.

4. (a) Derive the relation between phase and line values in a three phase star connected balanced system.
    (b) Three impedances each of (5-j3) ohms are connected in delta to a 230 V, 3-phase, 50 Hz balanced supply. Calculate the line and phase currents and power delivered to the load.

5.   Obtain the node voltages for the following network shown in figure.

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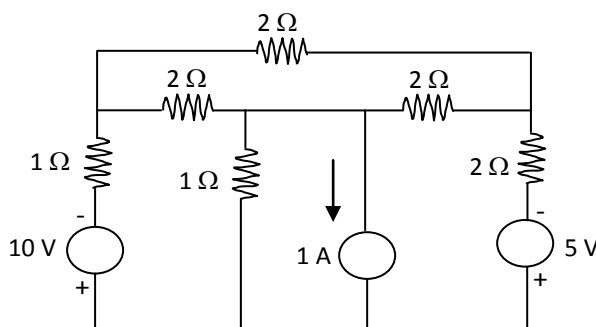
6. (a) State and explain Millmans theorem.
   (b) By using Thevenin's theorem determine the current through 5 Ω resistor (All resistances are in Ω) as shown in figure.
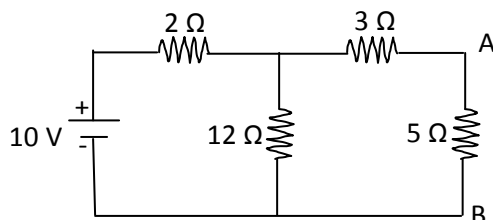
7. (a) Derive the expression for i(t), when series RL circuit excited by DC voltage 'V' when the switch is closed at t = 0.
   (b) In a series RLC circuit R = 5 ohms, L = 1 mH, C = 1 μF. A DC voltage of 20 V is applied at t = 0. Obtain i(t).

8. (a) Derive the relation between hybrid and transmission parameters in a two port network.
   (b) Define and explain open circuit parameters by taking any one example of a two port network.

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