Code: 9A02305

**R09/SS**

B.Tech II Year I Semester (R09/R13) Supplementary Examinations June 2015

**ELECTRICAL CIRCUITS**

(Common to EEE, ECE, CSE, EIE, E.Con.E & ECC)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

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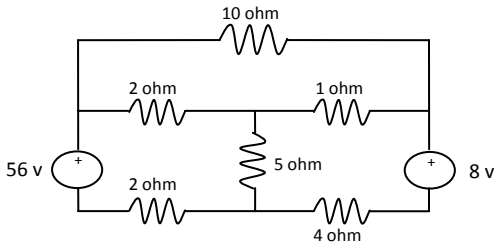
1 (a) Write short notes on:
(i) Charge. (ii) Current. (iii) Voltage. (iv) Power.
(b) Explain the difference between active elements and passive elements with suitable examples.

2 (a) Derive the expressions for n inductors connected in series.
(b) Calculate the current through 10 ohm resistance by loop analysis.

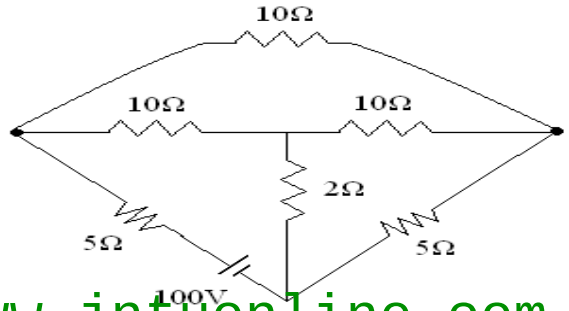



3 (a) Show that average power consumed by pure inductor and capacitor is zero.
(b) A resistance of 16 ohms is connected in parallel to an inductance of 20 mH and the parallel combination is connected to an ac supply of 230 V, 50 Hz. Determine the current through the elements and power delivered by the source. Draw the phasor diagram.

4 (a) Explain all the characteristics of series resonant circuit with necessary derivations.
(b) Find the magnitude of the frequency when the drop across the capacitor in series RLC circuit is maximum.

5 (a) Explain dot convention with examples.
(b) Write the comparison between magnetic and electric circuits.
(c) Derive expression for equivalent inductance of two coils connecting in parallel aiding.

6 For the network shown below, write a tie set schedule and equilibrium equation on current basis. Obtain the values of branch currents & branch voltages.



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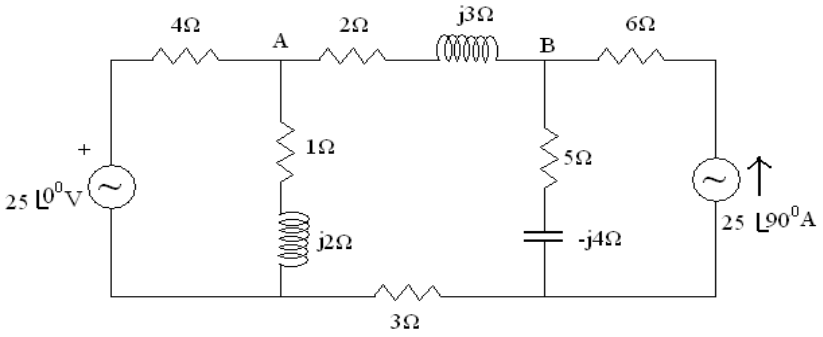
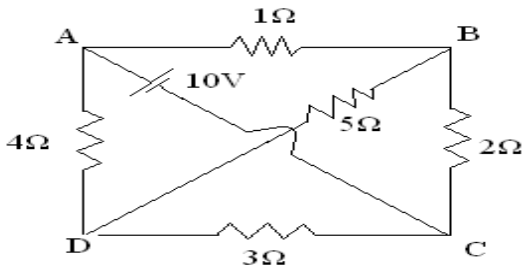
7 (a) Write limitations of Norton's theorem.

(b) Find current through (2+i3)Ω impedance using Thevenin's theorem.




8 (a) Write limitations of Reciprocity theorem.

(b) Verify Reciprocity theorem for the network given below by calculating current through 1 Ω resistor.

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