

Code: 9A02305

R09

B. Tech II Year I Semester (R09) Supplementary Examinations, May 2013

ELECTRICAL CIRCUITS

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

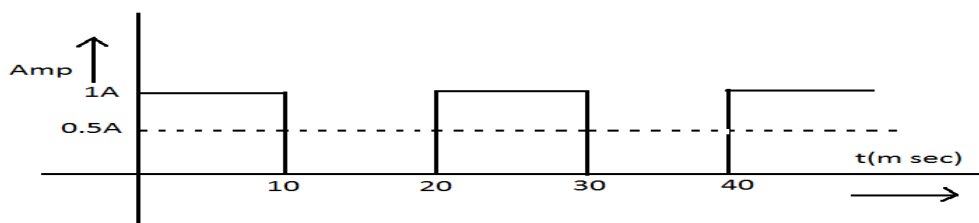
Time: 3 hours

Max. Marks: 70

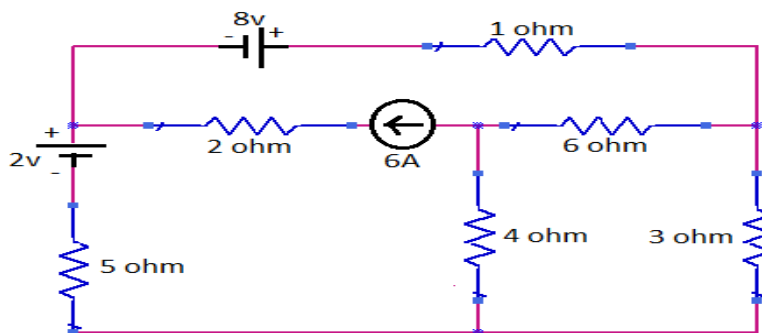
Answer any FIVE questions

All questions carry equal marks

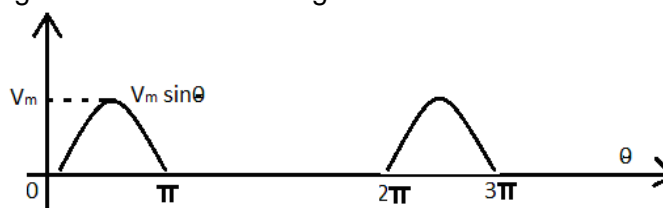
- 1 (a) Write a note on capacitor and V-I relationship associated with it.
 (b) A non alternating periodic waveform has been shown in figure. Find its form factor.



- 2 (a) A resistance R is connected in series with a parallel circuit comprising two resistances of 12 and 8 ohms. The total power dissipated in the circuit is 700 Watts when the applied voltage is 200 V. Calculate the value of R .
 (b) Using nodal analysis, determine the power supplied by 8 V voltage source.



- 3 (a) Explain significance of average value.
 (b) Find RMS and average value of the following wave form.

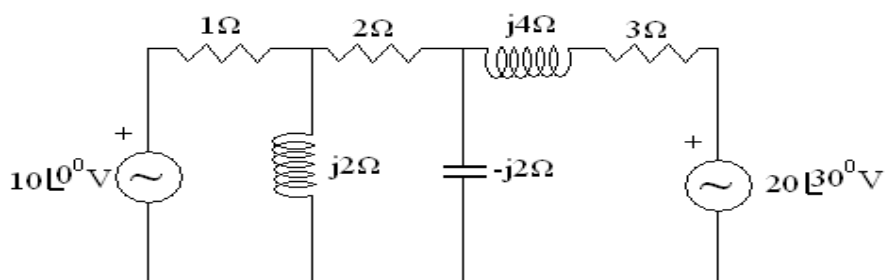


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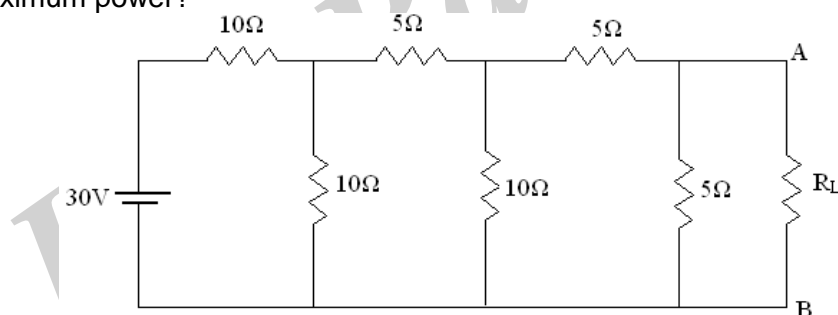
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- 4 (a) Give the expression for frequency and current at resonance in parallel resonance circuit.
 (b) A RLC series circuit consists of $R = 50 \text{ ohms}$, $L = 0.16 \text{ H}$ and $C = 4 \text{ micro farads}$. Calculate resonant frequency, quality factor, band width and half power frequencies.
- 5 (a) Explain dynamically induced emf and statically induced emf.
 (b) Find the AT required to produce of 0.6 mwb in the air gap of a magnetic circuit which has an air gap of 0.4 mm . The iron ring has 5 cm^2 cross section and 50 cm mean length, take $\mu_r = 2000$ and leakage coefficient is 1.2 and exciting current is 2.5 A , find out number of turns.
- 6 (a) Write the properties of tie-set matrix and cut-set matrix.
 (b) Using mesh analysis, calculate current through all the elements using mesh analysis.



- 7 (a) Write limitations of Norton's theorem.
 (b) In the network shown, find the value of R_L for maximum power transfer. What is the value of maximum power?



- 8 Find the voltage across 20Ω resistor using superposition theorem and verify it using nodal analysis.

