

Code: 9A02305

R09

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

ELECTRICAL CIRCUITS

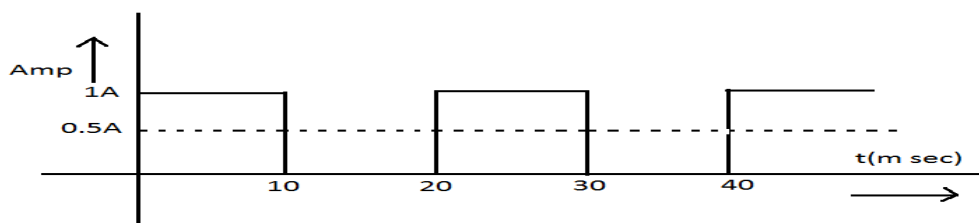
(Common to EEE, EIE, E.Con.E, ECE and ECC)

Time: 3 hours

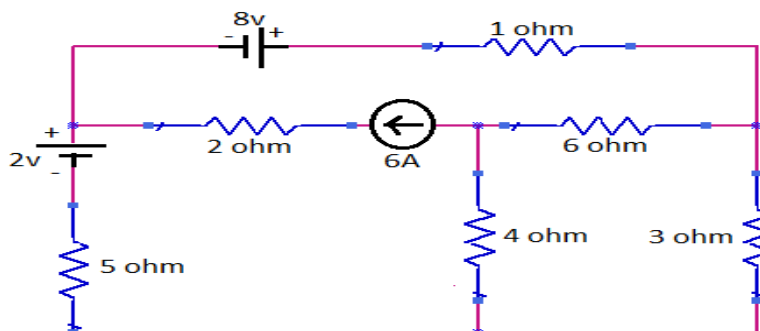
Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

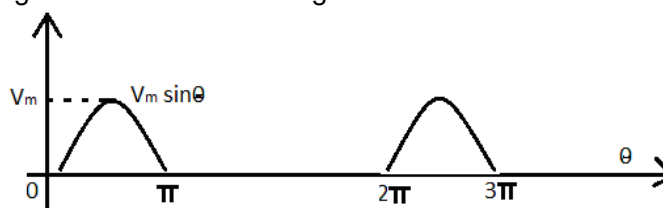
- 1 (a) Write a note on capacitor and V-I relationship associated with it.
(b) A non alternating periodic waveform has been shown in figure. Find its form factor.



- 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.

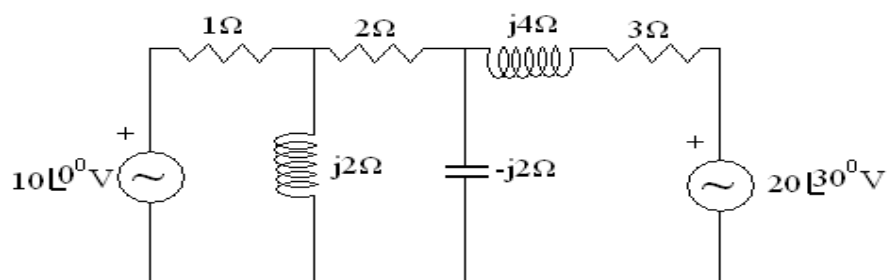


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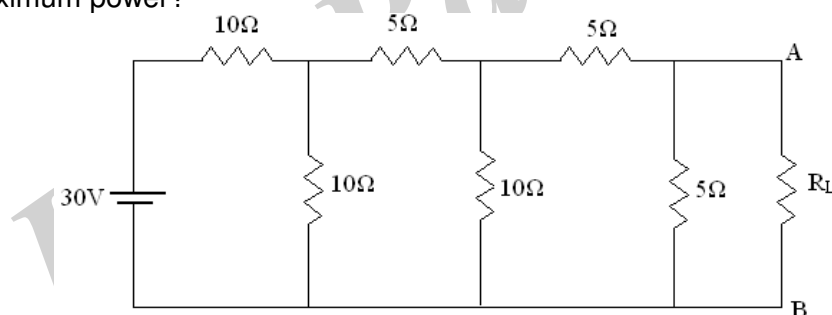
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- 4 (a) Give the expression for frequency and current at resonance in parallel resonance circuit.
 (b) A RLC series circuit consists of $R = 50$ ohms $L = 0.16$ H and $C = 4$ micro farads. Calculate resonant frequency, quality factor, band width and 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 20 Ω resistor using superposition theorem and verify it using nodal analysis.

