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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech I Year II Semester Supplementary Examinations March-2021

ELECTRICAL CIRCUITS - I

(Electrical and Electronics Engineering)

Time: 3 hours

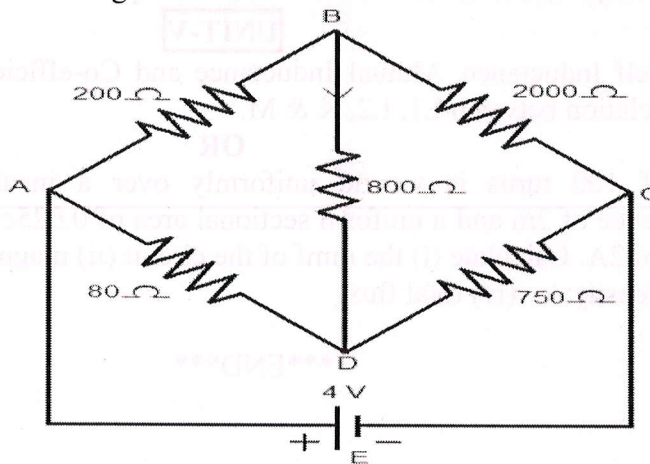
Max. Marks: 60

PART-A(Answer all the Questions $5 \times 2 = 10$ Marks)

- 1 a State Kirchoff's Laws. 2M
- b Determine the total Impedance of a RLC circuit with $R=5\Omega$, $X_L=8\Omega$ and $X_C=12\Omega$. 2M
- c What is the Limitations of Superposition Theorem? 2M
- d What are the Resonant Conditions? 2M
- e What is mean by Ideal Transformer? 2M

PART-B(Answer all Five Units $5 \times 10 = 50$ Marks)**UNIT-I**

- 2 Determine the current through 800-ohm resistor in the network shown in figure. 10M



OR

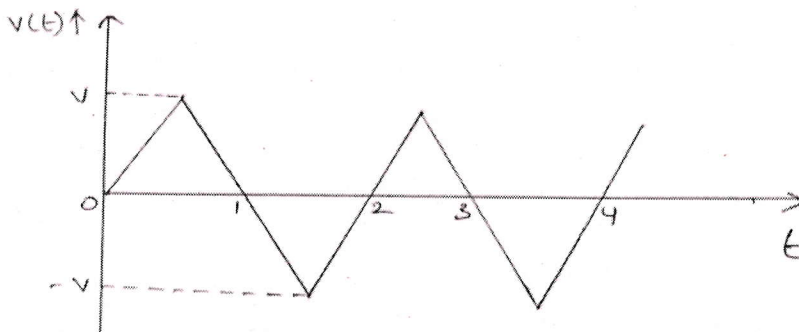
- 3 Derive an expression for total resistance when three resistances R_1 , R_2 & R_3 are connected in (i) Series and (ii) Parallel. 10M

UNIT-II

- 4 Define the following terms: (i) Average Value (ii) RMS Value (iii) Form Factor (iv) Peak Factor (v) Phase and Phase Difference. 10M

OR

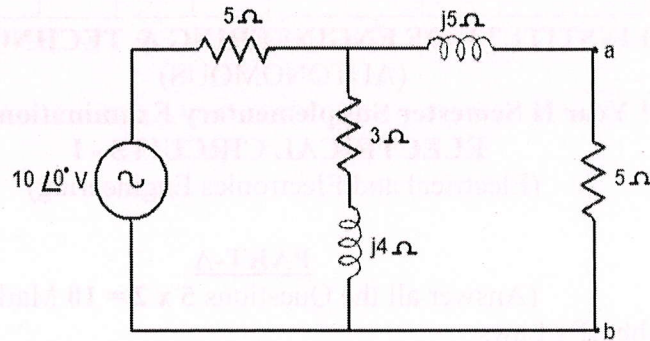
- 5 Find the form factor for the following waveform shown in figure: 10M



UNIT-III

- 6 Find the current through branch a-b network using Thevenin's theorem.

10M



OR

- 7 Write the Statement of Maximum Power Transfer Theorem. And also Derive the condition for the maximum power to be transferred from the source to the load. 10M

UNIT-IV

- 8 Obtain the expression for resonant frequency, bandwidth and Q-factor for Series R-L-C circuit. 10M

OR

- 9 Write the comparison between series resonance and parallel resonance. 10M

UNIT-V

- 10 Explain Self Inductance, Mutual Inductance and Co-efficient of coupling in detail. Give the relation between L_1 , L_2 , K & M . 10M

OR

- 11 A coil of 100 turns is wound uniformly over a insulator ring with a mean circumference of 2m and a uniform sectional area of 0.025cm^2 . If the coil is carrying a current of 2A. Calculate (i) the mmf of the circuit (ii) magnetic field intensity (iii) flux density (iv) total flux. 10M

END