1E2005

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B.Tech. I Sem. (Main/Back) Examination - 2014
105 Basic Electrical & Electronics Engineering
Common to all Branches

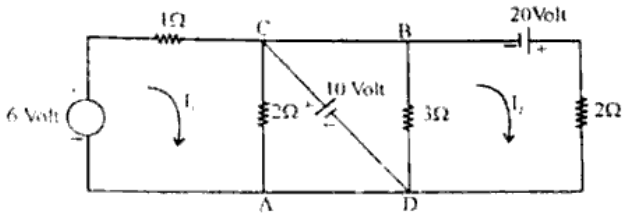
Time : 3 Hours] [Total Marks : 80
[Min. Passing Marks : 24

Instructions to Candidates :
Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

UNIT - I

1. (a) State and explain Thevenin's theorem. Illustrate the application of this theorem with reference to an appropriate electric circuit **(8)**

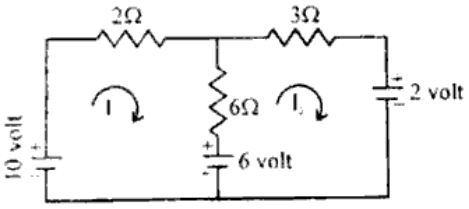
(b) Find the voltage drop between terminal AB, CB and AD in Fig. **(8)**



OR

1. (a) State and explain superposition theorem. Illustrate the application of this theorem with reference to an appropriate electric circuit. **(8)**

(b) Using loop current method find the current I_1 and I_2 in Fig. **(8)**



UNIT - II

2. (a) A series RL circuit has resistance and reactance of 15 ohm and 10 ohm respectively. Calculate the value of capacitor which when connected across the series combination in parallel, the system attain unity power factor. **(8)**

(b) For a single phase sinusoidal waveform find the Average and RMS values in terms of maximum value. Determine the form factor of sine wave. **(8)**

OR

2. Two coils A and B are connected in series across a 240 V, 50Hz supply. The resistance of A is 5 Ω and the inductance of B is 0.015 H. If the input from the supply is 3kW and 2kVAR, find the inductance of A and the resistance of B. Calculate the voltage across such coil. **(16)**

UNIT - III

3. (a) Explain the principle of DC machines and construction of DC machine? **(12)**

(b) 8 pole lap wound armature has 40 slots with 12 conductor per slots, generate a voltage of 500 V. Determine the speed at which it is running if flux per pole is 50 wb

OR

3. (a) Explain the principle and working of 3-phase induction motor and explain type of 3-phase induction motor.

(b) Describe the principle of operation of 3-phase synchronous generator

UNIT - IV

4. (a) Define [illegible] and explain the relationship between them

(b) Write short note on P-N junction diode and Zener diode

OR

4. (a) Describe the action of the following filter circuit

(i) Shunt capacitor filter

(ii) Series inductor filter

(iii) Choke input LC filter

(b) Explain different type of logic gates and design their truth tables

UNIT - V

5. (a) What do you mean by modulation? Discuss the amplitude modulation in details

(b) Discuss the configuration and properties of satellite communication

OR

5. (a) What is transducers? Discuss the classification of transducers with example

(b) Discuss the various types of IC's