

BT-I/D-20

41044

BASIC ELECTRICAL ENGINEERING

Paper-ES-101A

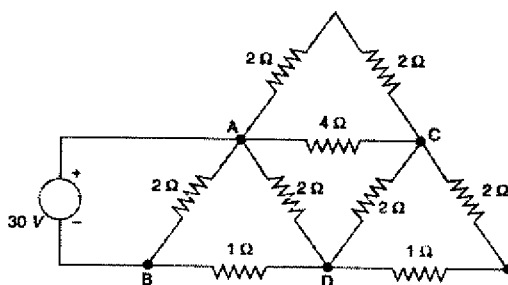
Time : Three Hours]

[Maximum Marks : 75

Note : Attempt any *five* questions, selecting at least *one* question from each unit.

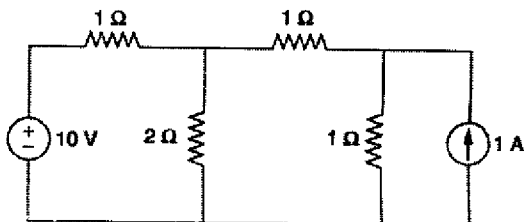
UNIT-I

1. (a) Explain the following terms : Active element, passive element, Bilateral Unilateral, Linear, Non-linear and Lumped elements. 5
- (b) Find out the current delivered by the source in the given circuit. 5



- (c) Define maximum power transfer theorem. Describe the condition for maximum power transfer with the help of circuit diagram. 5

2. (a) Find out the current through $2\ \Omega$ resistance using superposition theorem for the given circuit. 5



- (b) Explain Norton theorem in brief. 10

UNIT-II

3. (a) Define RMS and average value. Explain the terms with analytical analysis. 7
- (b) Find out the impedance, current and power factor for circuit having $R = 12\ \Omega$, $L = 20\ \text{mH}$, and $C = 100\ \mu\text{F}$ voltage source of having also $230\ \text{V}$, $50\ \text{Hz}$ frequency for the following combination : (i) RL series circuit (ii) RC series circuit and (iii) RLC series circuit. 8
4. (a) Derive the expression for resonance frequency in series RLC circuit. 7
- (b) Explain power factor. What is its importance in power system? 8

UNIT-III

5. (a) Analysis the voltage and current relationship in terms of line and phase quantity for star connection. 7

- (b) With the aid of phasor diagram show that three phase power and power factor can be measured by using two watt meters. 8
6. (a) What do you mean by single phase transformer? Explain its principal of operation with various diagrams. 7
- (b) Explain open circuit and short circuit test of single phase transformer with various equations and circuit diagrams related to them. 8

UNIT-IV

7. (a) What do you mean by DC machine? Explain its construction with neat and clean diagrams. 7
- (b) What are the different methods for speed control of DC motor? Write short note. 8
8. (a) Draw and explain torque slip curve of induction machine with its significance. 7
- (b) Write short note on MCB, Earthing and cables. 8
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