B.Tech Third Semester (Chem. / Poly / Food / Pulp / Oil / Petro) (Old)

# Electrical Technology : 3 SCT 1

P. Pages : 2 | **AW - 3549Add**

Time : Three Hours | Max. Marks : 80

Notes :
1. Answer **three** question from section a and **three** question from section B.
2. Due credit will be given to neatness and adequate Dimensions.
3. Assume suitable data wherever necessary.
4. Diagrams and chemicals equations should be given wherever necessary.
5. Illustrate your answer necessary with the help of neat sketches.
6. Use of pen Blue/Black ink/refill only for writing book.

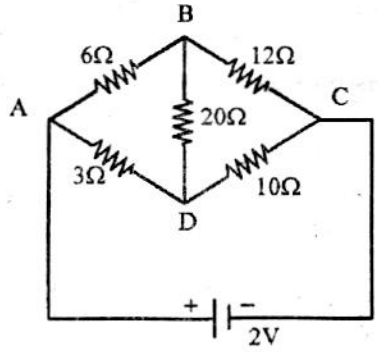
## SECTION - A

**1.** a) State and Explain superposition theorem with its examples. **7**

b) Find the current flowing at the instant of switching 60 W lamp on 240 V d. c supply. Given that filament temperature is 2000 °C and resistance temperature coefficient at 0°C is 0.005 per 0°C. Assume temperature of switching is 0°C. **6**

**OR**

**2.** a) Determine the current in 20Ω resistor of the network shown by Thevenin's theorem. **7**




b) Define current, voltage and EMF. & Derive the relationship between work, power and energy. **6**

**3.** a) Prove that the current flowing through the Purely resistive circuit is in phase with the applied voltage. Also calculate the average power. **7**

b) Explain the generation of a. c. quantity in single phase a. c. circuit. **6**

**OR**

**4.** a) What is electromagnetic Induction. Explain self induced emf and mutually induced emf. **7**

b) Two coils having 100 and 1000 turns having common magnetic circuits of 25 cm and cross section area 6.25 $cm^2$, permeability of 2000. Calculate **6**
i) Self inductance of two coils
ii) Mutual inductance between them if coefficient of coupling is 0.5

5. a) Compare the electric circuit and magnetic circuit with its similarities and dissimilarities. 7

b) Derive the emf equation of single phase transformer. 6

**OR**

6. a) Explain principle, construction and working of single phase transformer. 7

b) Define the following terms related to magnetic circuit. 6

i) Permeability ii) Absolute permeability
iii) Relative permeability iv) Reluctance
v) Permeance vi) MMF.

**SECTION - B**

7. a) Derive the relationship between line voltage, phase voltage, line current and phase current for 3 phase, 4 wire system. 8

b) Explain in detail the classification of measuring Instruments. 6

**OR**

8. a) Define the following terms related to three phase a. c. circuit. 6

i) Phase ii) Phase sequence
iii) Symmetrical system iv) Balanced load
v) Unbalanced load vi) Balanced system.

b) Explain principle, construction and working of repulsion type moving Iron Instrument. State its advantages. 8

9. a) Explain the principle, construction and working of single phase induction motor. State the types of single phase induction motor. 7

b) Explain the three point starter of dc motor with neat sketch. 7

**OR**

10. a) State the classification of d. c. motor. Also state the application of d. c. motor for each type. 7

b) What are the types of single phase induction motor. Explain anyone. 7

11. a) Explain types of wires & cables in detail. 7

b) What are the safety precautions taken. While working with electricity. 6

**OR**

12. a) Explain principal, construction and working of fluorescent lamp. 6

b) Compare the various systems of wiring in detail. 7

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