B.Tech. Third Semester (Chem. / Poly / Food / Pulp / Oil / Petrochem) (Old)
Electrical Technology : 3 SCT 1

P. Pages : 2

Time : Three Hours

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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 chemical 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) Explain Kirchoffs current law and Kirchoffs voltage law with its example. 6

   b) For the network shown. Find the resistance between points A & B using suitable transformation. 7
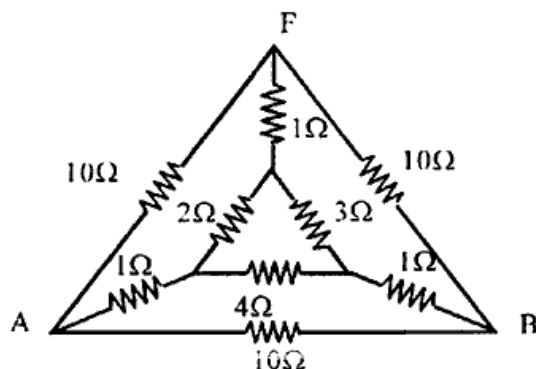
OR

2. a) State and explain thevenins theorem with its examples. 7

   b) A coil has a resistance of 18Ω at 20°C and 20Ω at 50°C. Estimate the temperature of the coil when its resistance becomes 21Ω. 6

3. a) Prove that the current flowing through purely capacitive circuit is leading the applied voltage by 90°. Also calculate the average power. 6

   b) Derive the expression for rms value and average value of an alternating quantity. 7

OR

4. a) State and explain the faradays laws of electromagnetic Induction. 5

   b) Two coils A of 12,000 and B of 15,000 turns lie in a parallel plane so that 60% of the flux produced in A links coil B. Current of 5A in A produces a flux of 0.05mWb while same current in B produces 0.075mWb. Find
   i) Self inductance of each coil.
   ii) Mutual inductance 8

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5. a) Define the following terms related to magnetic circuit   6
    i) Flux   ii) Flux density
    iii) Field intensity   iv) MMF
    v) Reluctance   vi) Magnetic line of flux

    b) What do you mean by efficiency of single phase transformer. Derive the condition for   7
    maximum efficiency.

OR

6. a) Define transformer. Explain the types of single phase transformer.   7

    b) Derive the expression for total MMF for series magnetic circuit.   6

SECTION – B

7. a) Explain the principal, construction and working of dynamometer type wattmeter.   7

    b) Derive the relationship between line current & phase current, line voltage and phase   7
    voltage for 3phase 3 wire system.

OR

8. a) Differentiate the star connection and delta connection for 3 phase a. c. system.   7

    b) Write the equation of deflecting torque for attraction type and repulsion type moving iron   7
    instrument.

9. a) What are speed control methods of d. c. Motor. Explain anyone method.   7

    b) compare the slip ring and squarrel cage induction motor with neat sketch.   7

OR

10. a) State the classification of single phase induction motor and three phase induction motor.   7
    And also state the applications of single phase induction motor.

    b) Explain principal, construction and working of dc motor with its neat sketch.   7

11. a) What are the safety precautions taken while working with electricity.   6

    b) Explain the testing of domestic wiring installation.   7

OR

12. a) Explain the principal, construction and working of sodium vapour lamp. State its   7
    applications.

    b) Compare the pipe earthing and plate earthing.   6

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