BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
Computer Science & Engineering
B. Tech. Sem - II :SUMMER : 2023
SUBJECT : ELECTRICAL TECHNOLOGY

Day : Tuesday | Time : 10:00 AM-01:00 PM

Date : 30-05-2023 | S-24027-2023 | Max. Marks : 60

N.B.

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Draw neat and labelled diagram **WHEREVER** necessary.
4) Assume suitable data if necessary.
5) Use of non – programmable **CALCULATOR** is allowed.

Q.1 **a)** Compare magnetic and electric circuit. **(05)**

b) Explain the concept of hysteresis losses and eddy current losses related to magnetic circuit. **(05)**

OR

Q.1 **a)** Explain Kirchoff's laws for magnetic circuit. **(05)**

b) A coil is wound uniformly with 500 turns over a steel of relative permeability 900, having a mean circumference of 80 mm and cross-sectional area of 100 mm^2. If a current of 10 A is passed through the coil, Find: **(05)**
i) M.M.F. ii) Reluctance of ring iii) Flux

Q.2 What are the advantages of AC system? Draw AC sinusoidal waveform and define the following terms: **(10)**
i) Time period ii) Frequency iii) Instantaneous value iv) Cycle

OR

Q.2 Define power factor. Discuss the causes and problems of low power factor. Explain the methods of power factor improvement in detail. **(10)**

Q.3 **a)** Explain Faraday's law of electromagnetic induction. **(05)**

b) Explain construction and working principle of transformer in short. **(05)**

OR

Q.3 Define efficiency and voltage regulation. Explain direct load test to calculate efficiency and voltage regulation of single phase transformer. **(10)**

P.T.O.

Q.4 What are the advantages of 3 - phase AC system? Explain different methods of 3 – phase power measurement in detail. **(10)**

OR

Q.4 a) A balanced delta connected load of (8 + j6) Ω / phase is connected to three phase 440 V supply. **(07)**

Calculate :

i) Phase current ii) Line current iii) Power factor iv Active power

v) Reactive power vi) Total volte ampere

b) Explain the concept of electrical grid, balanced supply and balanced load in short. **(03)**

Q.5 a) Explain the principle of operation of single phase induction motor and write down it's applications. **(05)**

b) Explain slip – torque characteristic of three phase induction motor and write down it's applications. **(05)**

OR

Q.5 Explain the principles of electromechanical conversion and derive the EMF equation of generator. **(10)**

Q.6 Explain construction and working of Nickel-Cadmium cell. Compare Lead-acid cell and Nickel-Cadmium cell. **(10)**

OR

Q.6 Explain the concept of: **(10)**

i) Solar cell ii) Solar panel iii) Fuel cell iv) Maintenance free battery

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