

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - I Computer Science & Business Systems : WINTER : 2024
SUBJECT: PRINCIPLES OF ELECTRICAL ENGINEERING

Day : Friday
Date : 06/12/2024

W-24132-2024

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate **FULL** marks.
- 3) Assume suitable data **WHEREVER** necessary.
- 4) Draw neat labeled diagrams **WHEREVER** necessary.
- 5) Use of non-programmable calculator is allowed.

Q.1 State and explain Kirchhoff's laws. Define resistance and discuss the factors (10) affecting resistance value.

OR

Q.1 Explain the concept of ideal voltage source and ideal current source. Define and (10) write down the unit of following terms:
i) Current ii) Power iii) Energy

Q.2 Derive the formula for star to delta conversion and delta to star conversion for (10) resistive circuit.

OR

Q.2 State and explain maximum power transfer theorem. Derive the condition for (10) maximum power transfer for the resistive circuit.

Q.3 Sketch AC waveform and define the following terms related to AC circuit: (10)
i) Frequency ii) Power factor iii) Form factor iv) Peak factor

OR

Q.3 A series R-L circuit with $R=50\ \Omega$ and $L=0.2\ H$ is connected to 230 V, 50 Hz source. (10)
Calculate: i) Impedance ii) Current iii) Power factor iv) Active power v) Sketch vector diagram

Q.4 Define and write down the unit of following terms: (10)
i) Electrostatic field ii) Electric flux density iii) Relative permittivity
iv) Capacitance v) Absolute permittivity

OR

Q.4 List-out different types of electric battery. Discuss construction, working and (10) applications of Nickel-Cadmium cell.

P.T.O.

Q.5 Define the term magnetic hysteresis and explain B-H curve of magnetic material in detail. (10)

OR

Q.5 Define transformer efficiency and voltage regulation of transformer. Explain in detail direct load test method to calculate efficiency and voltage regulation of transformer. (10)

Q.6 List-out different types of wiring system and wiring accessories. Explain clear wiring system in detail. (10)

OR

Q.6 Discuss the necessity of earthing. List-out different types of earthing system and explain rod earthing in detail. (10)

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