BACHELOR OF TECHNOLOGY (CBCS - 2023)

B. Tech. Sem-I Computer Science & Business Systems : WINTER: 2025

SUBJECT: PRINCIPLES OF ELECTRICAL ENGINEERING

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

Date : 16/12/2025 | **W-27624-2025** | 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 diagrams **WHEREVER** necessary.
5) Use of non-programmable calculator is allowed.

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

OR

Q.1 Define and write down the units of following terms : **(10)**
i) EMF ii) Current iii) Work iv) Power v) Energy

Q.2 Discuss the statement of Thevenin's theorem and Superposition theorem. Formulate the equation to convert star connected resistive network into equivalent delta connected network. **(10)**

OR

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

Q.3 Sketch sinusoidal AC waveform and define the following terms : **(10)**
i) Instantaneous value ii) Cycle iii) Time period iv) Frequency.

OR

Q.3 Sketch power triangle and define the following terms : **(10)**
i) Active power ii) Apparent power iii) Reactive power iv) Power factor.

Q.4 **a)** Derive the expression for energy stored in capacitor. **(05)**

b) Two condensers of 60 μF and 30 μF are connected in series across a 200V DC supply. Find : **(05)**
i) Equivalent capacitance ii) Charge on each condensers .

OR

Q.4 Define battery and write down different types of battery. Explain construction and working of Nickel-Cadmium cell. **(10)**

Q.5 Define efficiency and regulation of transformer. Explain direct load test on transformer to determine efficiency and regulation. **(10)**

OR

Q.5 Explain Faraday's law of electromagnetic induction. Compare electric circuit and magnetic circuit. **(10)**

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

OR

Q.6 List out different types of wiring system and wiring accessories. Explain casing and capping wiring in detail. **(10)**

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