

**BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)**  
**B. Tech. Sem - II Computer Science & Engineering : WINTER: 2025**  
**SUBJECT: ELECTRICAL TECHNOLOGY**

Day : Friday  
Date : 28/11/2025

**W-24027-2025**

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) Draw neat diagrams **WHEREVER** necessary.
- 4) Assume suitable data, if necessary.
- 5) Use of non – programmable **CALCULATOR** is allowed.

**Q. 1** State and explain the right – hand thumb rule. Compare an electric circuit with a magnetic circuit. (10)

**OR**

**Q. 1** Describe the following concepts related to magnetic circuit: (10)  
i) Absolute permeability    ii) Relative permeability    iii) Hysteresis loss  
iv) Eddy current loss    v) Magnetic coupling

**Q.2** Illustrate an AC waveform and define the following terms: (10)  
i) Average value    ii) Power factor    iii) Form factor    iv) Peak factor

**OR**

**Q. 2** Explain the concept of resonance in series R-L-C circuit. Discuss it's characteristics and derive the expression for the resonant frequency. (10)

**Q. 3** State and explain Faraday's laws of electromagnetic induction. Briefly explain the concept of an auto-transformer. (10)

**OR**

**Q. 3** Define a transformer and explain the direct load test on a transformer for calculating it's efficiency and voltage regulation. (10)

**Q. 4** Sketch the general layout of a power system and write down the functions of it's elements. (10)

**OR**

**Q. 4** Explain the following concepts related to a three - phase system: (10)  
i) Balanced supply    ii) Balanced load    iii) Star connected system  
iv) Delta connected system

**Q. 5** Write down the types and applications of D.C. motors. Derive the E.M.F. equation of a D.C. generator. (10)

**OR**

**Q. 5** Explain the single – phase induction motor with respect to the following points: (10)  
i) Principle of operation    ii) Methods of starting    iii) Applications

**Q. 6** Explain the following concepts related to batteries: (10)  
i) Primary and secondary cells    ii) Series and parallel connection of batteries  
iii) Maintenance – free battery

**OR**

**Q. 6** Explain the solar cell and solar panel and write down their applications. Briefly discuss the concept of a fuel cell. (10)

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