

Seat No. **MAR\_APR 2025 SUMMER EXAMINATION****11731 Bachelor of Technology (NEP-2.0)****Sub. Name: Basic Electrical Engineering****Sub. Code: 108720/109819****Day and Date: AUGUST ,25-08-2025****Total Marks: 60****Time: 10:30 AM To 01:00 PM**

- Instructions:**
1. All questions are compulsory
  2. Draw neat labelled diagrams wherever necessary
  3. Figures to the right indicate full marks
  4. Use of Scientific calculator is allowed

**Q1) Attempt any Three questions. [15]**

- a. Define the terms in DC- E.M.F, Potential Difference, Current, Resistance with their unit. [5]
- b. Explain the concept of Magnetic Leakage & Fringing. [5]
- c. Derive the mathematical expression for RMS value of sinusoidal AC by analytical method. [5]
- d. A R-C series is connected across 230 volts, 50 Hz AC supply. R = 50 ohm, L = 100 mH. Find- (i) Impedance (ii) Current (iii) Power factor [5]

**Q2) Attempt any Three questions. [15]**

- a. State the advantages of three phase supply system over single-phase supply system. [5]
- b. Prove that line current is  $\sqrt{3}$  times phase current in a balanced delta connected system. [5]
- c. Explain how three phase AC supply voltage is generated. Draw waveform along with equations. [5]
- d. Draw the star connected network and show all the line and phase quantities. [5]

**Q3) Attempt any Two questions. [15]**

- a. Obtain the mathematical expression for EMF equation of transformer. [7]  
OR  
With neat sketch explain operating principle & construction of single-phase Induction Motor.

- b. A 30 KVA 3300/230 Volt single phase 50 Hz transformer has full load copper loss 500 watts & iron loss 300 watts. Calculate transformer efficiency at full load & also at half load, when power factor is 0.866 lagging. [8]

**Q4)** Attempt any Three questions. [15]

- a. State Necessity of Earthing with different Earthing methods. Explain any one in detail with neat sketch. [5]
- b. Describe operating principle of LED Lamp. State different types of LEDs. Also, state its applications. [5]
- c. Compare Fuse and MCB on various aspects. [5]
- d. Comment on different types of batteries with its characteristics. [5]

## End Of Question Paper

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

- 1] (11731) Bachelor of Technology (NEP-2.0) (108720) Basic Electrical Engineering Part 1 SEM 1  
2] (11731) Bachelor of Technology (NEP-2.0) (109819) Basic Electrical Engineering Part 1 SEM 2