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Total No. of Pages: 03

Total No. of Questions: 09

**B.Tech.(EEE/AI&ML/AI&DS/EE/CSE/DS/ECE/FT/IT/IOT/AI/CE/ME/Internet
of Things and Cyber Security including Block Chain Technology)**

(Sem.-1, 2)

BASIC ELECTRICAL ENGINEERING

Subject Code: BTEE-101-18

M.Code : 75339

Date of Examination : 06-01-2026

Time : 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY** consisting of TEN questions carrying TWO marks each.
2. **SECTION - B & C** have FOUR questions each.
3. **Attempt any FIVE** questions from **SECTION B & C** carrying EIGHT marks each.
4. **Select at least TWO** questions from **SECTION - B & C**.

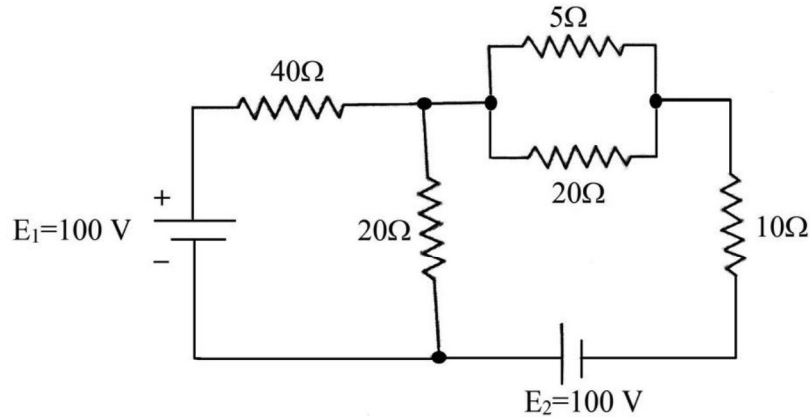
SECTION - A

1. **Answer the following questions in brief :**

- a) Discuss Kirchhoff's current law.
- b) Differentiate between reactive and apparent powers.
- c) What do you mean by rms value? What is its significance?
- d) List the important characteristics of batteries.
- e) Discuss the importance of BH curve.
- f) Discuss the significance of torque slip characteristics.
- g) Why speed control is required in motors? Discuss.
- h) Discuss the importance of power factors.
- i) Discuss the significance of phasor representation.
- j) What do you mean by the term earthing? Discuss.

SECTION - B

2. By the mean of Superposition, find the current which flows in $R_2 = 20\ \Omega$ for the circuit of the given Figure.



3. A coil of inductance 0.08 and negligible resistance is connected in series with a 15 ohms non – inductive resistance. The combined circuit is energized from a 240 V, 50 Hz supply. **Calculate :**
- Reactance of the coil.
 - Impedance of the circuit.
 - The current in the circuit.
 - Voltage across the resistance.
 - Voltage across the coil.
 - Power absorbed by the circuit.
 - Power factor of the circuit.
4. What is the need of a transformer? How is an ideal transformer different from a practical transformer? Also, discuss the different losses that occur in a transformer.
5. Discuss the working principle and construction of a single – phase induction motor.
6. What do you mean by miniature circuit breaker? Discuss its principle of operation and uses in detail.

SECTION - C

7. Explain :

- a) MCCB
- b) Parallel resonance

8. a) Discuss the principle of operation, equivalent circuit and phasor diagram of an auto transformer.

- b) Discuss the time domain analysis of first order RC circuit.

9. Discuss :

- a) Construction and working of synchronous generator.
- b) Speed control of separately excited DC motor.

NOTE : Disclosure of identity by writing mobile number or making passing request on any page of Answer sheet will lead to UMC against the Student.