

Roll No.

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 :

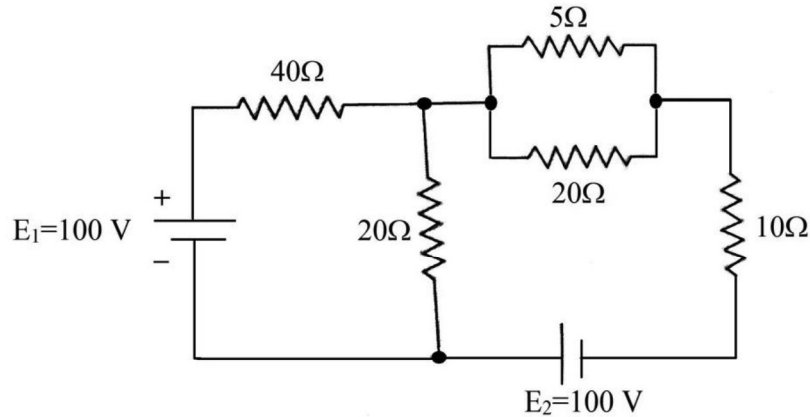
1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying EIGHT marks each.
4. Select at least TWO questions from SECTION - B & C.

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.