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.

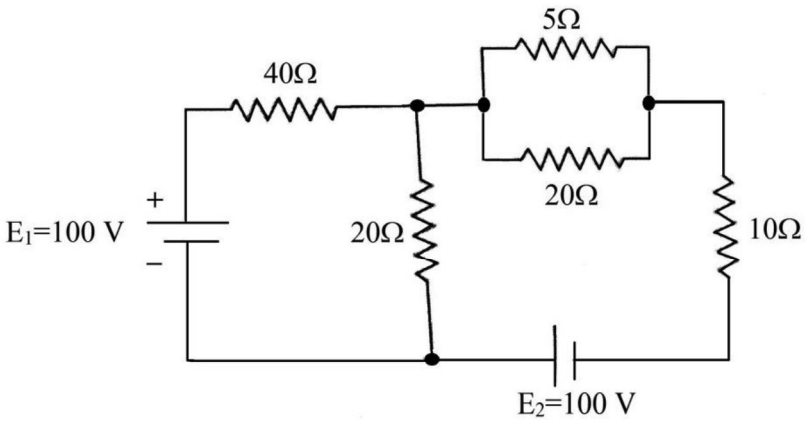
h) Discuss the importance of power factors.

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 :**

   a) Reactance of the coil.

   b) Impedance of the circuit.

   c) The current in the circuit.

   d) Voltage across the resistance.

   e) Voltage across the coil.

   f) Power absorbed by the circuit.

   g) 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.