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Total No. of Pages: 02

Total No. of Questions: 09

**B.Tech. (AE/AI&ML/AI&DS/DS/CE/CSE/ME/IOT/EEE/EE/ECE/FT/IT/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: 22-01-2025

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 contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer the following questions in brief :

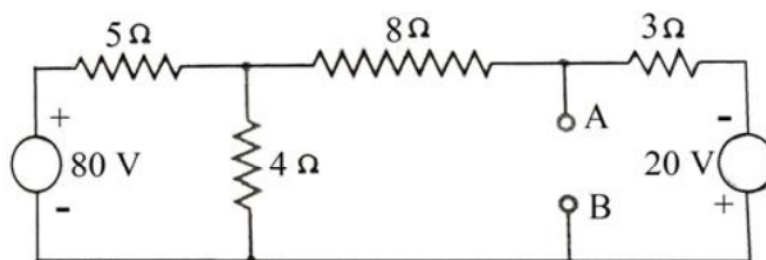
- a. Discuss Kirchoff's voltage law.
- b. Differentiate between reactive and real powers.
- c. What do you mean by rms value? What is its significance?
- d. Write down the different applications of transformers.
- e. Define voltage regulation.
- f. Discuss the importance of BH curve.
- g. Discuss the significance of torque slip characteristics.
- h. What do you mean by efficiency? Discuss.
- i. What is the importance of power factor? Discuss.
- j. List the important characteristics of batteries.

SECTION-B

2. State and prove superposition theorem by considering a suitable example.
3. A 4 ohm resistor is connected to a 10 mH inductor across a 100 V, 50 Hz voltage source. Find input current, voltage drops across resistor and inductor, power factor of the circuit, and the real power consumed in 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. A coil of resistance 40 ohm and inductance 0.75 H forms part of a series circuit for which resonant frequency is 55 Hz. If the supply is 250V, 50 Hz, find (i) line current (ii) power factor (iii) power consumed and (iv) voltage across the coil.
6. What is an earth leakage circuit breaker? Discuss its principle of operation, advantages and disadvantages.

SECTION-C

7. Obtain the Thevenin's and Norton's equivalent circuit at AB.



8. **Explain :**
 - a. MCCB
 - b. Parallel resonance .
9. **Discuss :**
 - a. Autotransformer
 - b. Time domain analysis of first order RL circuit.

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.