Roll No. | | | | | | | | | | | | | Total No. of Pages : 03

Total No. of Questions : 09

B.Tech. (AE/AI&ML/AI&DS/AI/AR/AE/BT) (Sem–1,2)
(CE/CSE/DS/EEE/EE/ECE/FT/IT/ME/Robotics & AI)

BASIC ELECTRICAL ENGINEERING

Subject Code : BTEE-101-18
M.Code : 75339
Date of Examination : 10-06-2023

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 atleast TWO questions from SECTION - B & C.

SECTION-A

1. Answer following questions in brief :

a) Define power factor. What is the power factor of a pure capacitor?

b) What is the effect of frequency on inductive reactance?

c) In a RL series circuit a voltage of 10V at 50Hz produces a current of 700mA 2 while the same voltage at 75Hz produces a 500mA current. What is the value of R' and L in the circuit?

d) What is the relation between line and phase values of voltage and current for (i) 2 Star connection (ii) Delta connection?

e) **Define** (i) Peak factor and (ii) Form factor.

f) What material are used for a transformer (i) core (ii) windings?

g) Draw the power flow diagram of an induction motor.

h) Draw the phasor diagram of an ideal transformer.

i) Transformer cannot be used on DC. Why?

j) What is impedance? Give its unit.

SECTION-B

2. Show that the instantaneous power consumed in a purely resistive circuit is not 5 constant but is fluctuating.

3. An alternating voltage is given as v=400 sin-314t determine its (a) maximum value (b) effective value (c) form factor (d) value of voltage after 0.0025 sec taking reckoning time from the instant when voltage is zero and becoming positive; (e) time after which voltage attains 200 V for the first time.

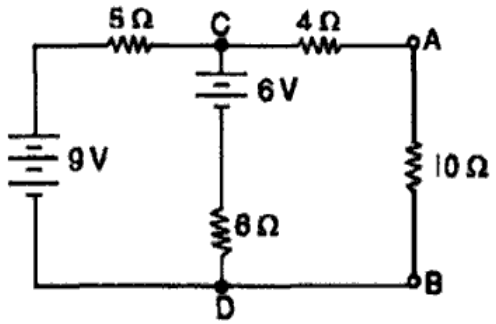
4. A 4-pole, 440V, dc motor takes an armature current of 50A. The resistance of 5 the armature circuit is 0.28 ohm. The armature winding is wave connected with 800 conductors and the useful flux is 23mWb.

   Calculate :

   a) The back emf.

   b) Speed of the motor.

5. Using Thevenin's theorem, find p.d. across terminals AB.



SECTION-C

6. Discuss the following three phase transformer connections :

   (a) Star-Delta connection

   (b) Star-star connection.

7. What is a fuse? For a one time use type of fuse what do the following convey :

   a) Fuse Current Carrying Capacity

   b) Breaking capacity

   c) I^2t value of fuse

   d) Rated voltage of fuse

8. Discuss the construction of an auto-transformer and derive the expression for the copper savings in it.

9. What is the objective of earthing? Using suitable diagrams explain the different methods of earthing.

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.