Roll No. | | | | | | | | | | | |

Total No. of Pages : 02

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B.Tech. (Agriculture Engineering/Artificial Intelligence & Machine Learning/Artificial Intelligence (AI) and Data Science/Artificial Intelligence/Automation & Robotics/Automobile Engineering/Bio Technology/Civil Engineering/Computer Science & Engineering/Computer Science & Engineering (Artificial Intelligence & Machine Learning)/ Computer Science & Engineering (Cyber Security)/ Computer Science & Engineering (Data Science)/ Computer Science & Engineering (IOT)/ Data Science/Electrical & Electronics Engineering/Electrical Engineering/Electronics & Communication Engineering/Electronics & Electrical Engineering/Food Technology/Information Technology/Mechanical Engineering/CSE (Internet of Things and Cyber Security including Block Chain Technology)/B.Tech Computer Engg./CSE/ECE (PIT))

(Sem-1,2)

BASIC ELECTRICAL ENGINEERING

Subject Code : BTEE-101-18

M.Code : 75339

Date of Examination : 15-07-22

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

Answer the following questions in brief :

1. a) Define apparent power and reactive power of an AC circuit.

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

   c) A resistance of 15Ω is connected in series with an inductance of 0.02H. This combination is connected across 200V, 50hz supply. Calculate (i) current flowing in the circuit, (ii) power factor.

   d) Differentiate between star and delta connections.

   e) What is series resonance?

f) What material are used in these parts of a DC motor (i) commutator segments (ii) brushes?

g) Define the voltage regulation for a transformer.

h) What is admittance? Give its units.

i) "*For electric traction DC series motors are best suited*". Why?

j) List the properties of an ideal fuse wire.

SECTION-B

2. Derive the relationship between voltage and current for a purely inductive circuit. Also show that the average power consumed by the circuit is zero.

3. An alternating voltage is given as v = 220sin 314t, determine its (i) maximum value (ii) effective value (iii) form factor (iv) value of voltage after 0.002 sec taking reckoning time from the instant when voltage is zero and becoming positive; (v) time after which voltage attains 110 V for the first time.

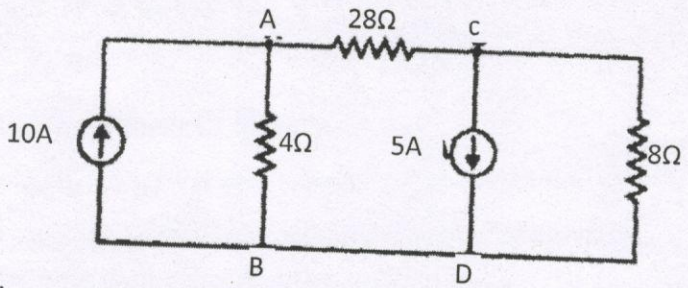
4. Discuss the principle of operation of a DC motor. Also, derive the emf equation.

5. Using a diagram explain the construction of an underground cable. Also write regarding is the function of each part.

SECTION-C

6. Distinguish between a three-phase squirrel cage induction motor and phase wound induction wound.

7. Find the current in 28Ω resister using source conversion method.



8. For the "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.

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

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.