6246

BOARD DIPLOMA EXAMINATION, (C-16)

AUGUST/SEPTEMBER—2021

DME - THIRD SEMESTER EXAMINATION

BASIC ELECTRICAL ENGINEERING AND ELECTRONICS

Time : 3 hours]   [*Total Marks* : 80

PART—A   3×10=30

Instructions :   (1) Answer **all** questions.

              (2) Each question carries **three** marks.

              (3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

  1.   State Kirchhoff's current law.

  2.   State Lenz's law.

  3.   State the materials used for the following in DC generator :

       (a) Armature core

       (b) Brushes

       (c) Yoke

  4.   Draw a neat circuit diagram of welding generator.

  5.   Define the terms *(a)* frequency and *(b)* form factor.

  6.   State the types of starters used for AC machines.

  7.   State any six applications of 1-phase induction motors.

  8.   Compare intrinsic and extrinsic semiconductors in any three aspects.

  9.   State any three effects of electric shock in a human body.

 10.   State the need of earthing of electrical equipment.

PART—B

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. *(a)* Three resistances 2Ω, 3Ω and 6Ω are connected in *(i)* series and *(ii)* parallel. Calculate the effective resistance in each case.   6

(b) Explain dynamically induced e.m.f.   4

12. State and explain Faraday's laws of electromagnetic induction.   10

13. Draw the schematic diagrams of each type of DC motors and also write the voltage and current equations.   10

14. *(a)* Explain field control methods of speed control of DC series motors.   5

(b) State any five advantages of polyphase system over 1-phase supply.   5

15. A series circuit having a resistance of 40Ω, capacitance of 20 μE and an inductance of 0·2 H is connected across 110 V, 50 Hz supply. Calculate *(a)* impedance, *(b)* current, *(c)* power factor and *(d)* power in watts.   10

16. Explain the constructional features of an alternator.   10

17. Explain the working of PN junction diode with forward and reverse bias with legible sketches.   10

18. Explain the construction and working principle of moving iron voltmeter.   10

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