

6246

BOARD DIPLOMA EXAMINATION, (C-16)

OCTOBER/NOVEMBER—2023

DME - THIRD SEMESTER EXAMINATION

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

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 the laws of resistance.
2. Classify different types of induced EMF.
3. State the applications of DC shunt motors.
4. List out types of motors.
5. Define the terms (a) amplitude, (b) time period and (c) frequency.
- * 6. Define phase and phase difference.
7. List the different types of 1- ϕ induction motor.
8. Distinguish between intrinsic and extrinsic semiconductors.
9. State the procedure to be immediately adopted in case of electric shocks.
10. What is the need of earthing of electrical equipment?

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PART—B

10×5=50

- 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) State and explain Fleming's right-hand rule. 4
(b) Two coils *A* and *B* having 400 and 500 turns respectively are magnetically coupled. When 5A current flows in coil *A*, a flux of 7.5 mWb links with both the coils. Calculate self-inductance of coil *A* and mutual inductance between the two coils. 6
- 12.** (a) State and explain Kirchhoff's laws. 6
(b) Calculate the current flowing through a 20 Ω electric heater when a voltage of 230 V is supplied and also calculate power consumed by it. 4
- 13.** (a) Explain the working principle of a DC motor. 6
(b) Explain the significance of back emf. 4
- 14.** (a) Classify the DC generators based on excitation and draw each type. 5
(b) Explain the working of welding transformer with a neat sketch. 5
- 15.** A resistance of 50 Ω, an inductance of 0.15 H and a capacitance of 150 μf are connected in series and the combination is connected across 230 V, 50 Hz AC supply. Calculate (a) impedance, (b) current, (c) power factor and (d) power consumed. 10
- * **16.** Explain the working principle of single-phase induction motor. 10
- 17.** Explain the characteristics and working of PN junction diode with a neat sketch. 10
- 18.** Explain the construction and working principle of dynamometer wattmeter. 10

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