

6033**BOARD DIPLOMA EXAMINATION, (C-16)****OCTOBER/NOVEMBER—2023****DECE - FIRST YEAR EXAMINATION****ELEMENTS OF ELECTRICAL 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 Coulomb's laws of magnetism.
2. Define permeability.
3. Define absolute and relative permittivity.
4. Define electric potential.
5. Define impedance.
6. Define power factor.
7. Write differences between core type and shell type transformer in any three aspects.
8. Write any three applications of the current transformer.
9. What is the significance of back EMF?
10. List applications of AC motors.

*

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.** State Fleming's left hand rule with a neat sketch. 10
- 12.** (a) Compare electric and magnetic circuits in any five aspects. 5
(b) State Coulomb's law of Electrostatics. 5
- 13.** Three capacitors $3\mu\text{F}$, and are connected in series across a 200V supply. Find the energy stored in each capacitor and p.d. across each capacitor. 10
- 14.** Explain the RLC series circuit connected across AC supply with circuit and phasor diagrams. 10
- 15.** A resistance of $50\ \Omega$, inductance of 400mH and a capacitance of are connected in series across 200V, 50Hz supply. Determine the following :
(a) Inductive reactance
(b) Capacitance reactance
(c) Impedance
(d) Current flowing through the circuit
(e) Power factor. 10
- 16.** Explain the constructional details of core-type transformer. 10
- 17.** Explain the characteristics of DC series motor. 10
- 18.** Explain the working of servomotor. 10

★ ★ ★

*