



C16-EC-106

6033

BOARD DIPLOMA EXAMINATION, (C-16)

MARCH/APRIL—2018

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. Define ampere.
2. State Laplace law (Biot-Savart law).
3. State unit of capacitance.
4. Calculate the energy stored in a capacitor of 100 F connected across 230 V supply.
5. Define the following terms :
 - (a) Admittance
 - (b) Power factor
6. Define Q-factor of coil.
7. List the applications of a potential transformer.

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8. Why is core laminated in the transformer?
9. What is the need for starter?
10. List specifications of AC motor.

PART—B

10×5=50

Instructions : (1) Answer *any five* questions.
 (2) Each question carries **ten** marks.
 (3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. (a) Explain the concept of lines of force and magnetic field. 5
 (b) State Faraday's laws of electromagnetic induction. 5
12. (a) State Lenz's law and Fleming's right-hand rule. 5
 (b) Explain the terms electric potential and potential difference. 5
13. (a) Explain the equivalent capacitance of capacitor connected in series. 6
 (b) Three capacitors of 10 F, 20 F and 50 F are connected in series. Find the total capacitance. 4
14. Explain the effect of AC through inductance with vector diagrams. 10
15. A resistance of 50 ohms, inductance of 100 mH and a capacitance of 100 F are connected in series across 200 V, 50 Hz supply. Determine the following : 10
 (a) Inductive reactance
 (b) Capacitive reactance
 (c) Impedance
 (d) Current flowing through the circuit
 (e) Power factor

- 16.** (a) Explain the working principle of an autotransformer. 5
(b) Explain constructional details of (a) core type and (b) shell type transformers. 5
- 17.** Explain DC motor characteristics of (a) DC series motor and (b) DC shunt motor. 10
- 18.** (a) Explain the working principle of servomotor. 6
(b) Write the applications of servomotor. 4
