



C16-EC-106

6033

**BOARD DIPLOMA EXAMINATION, (C-16)
SEPTEMBER/OCTOBER - 2020
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 (a) field intensity, (b) magnetic flux density and (c) state the units.
2. State Fleming's right-hand rule.
3. Define electrostatic field.
4. Give expressions for equivalent capacitance when two capacitors are connected in series and parallel.
5. Write about active and reactive components of AC current.
6. List the methods for solving AC parallel circuits.

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7. State the losses in a transformer.
8. Define efficiency of a transformer.
9. State the need for starter in a DC motor.
10. Define slip and synchronous speed of an induction 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. State and explain Laplace law and Lenz's law.
12. (a) Explain the concept of lines of force and magnetic field. 5
(b) Find the equivalent capacitance of capacitors connected in series. 5
13. Explain charging and discharging of capacitor.
14. Explain the effect of AC through pure capacitance with vector diagrams.
- * 15. A resistance of 12 Ω , an inductance of 0.15 H and a capacitance of 100 μF are connected in series across 100 volt, 50 Hz supply. Determine the following :
 - (a) Inductive reactance
 - (b) Capacitive reactance
 - (c) Impedance of the circuit
 - (d) Current flowing through the circuit
 - (e) Power factor

16. Explain the ^{*} constructional details of core type and shell type transformers.
17. (a) Derive the voltage equation for DC motor and condition for maximum power. 6
(b) Explain the need of starter for DC motor. 4
18. Explain the working principle of induction motor.

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