6033

BOARD DIPLOMA EXAMINATION, (C–16)
OCT/NOV—2017
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 absolute and relative permeability.　　　　1½+1½

2. State the Lenz's law.

3. What is the unit of capacitance? Write expression for capacitance of parallel-plate capacitor.　　　　1+2

4. State the factors affecting the capacitance of a capacitor.

5. Define the terms *(a)* power factor and *(b)* Q-factor.　　1½+1½

6. Find the impedance of an RLC series circuit having resistance of 50　, inductance 100 mH, capacitance 100 　F connected across 200 V, 50 Hz supply.

7. Define voltage transformation ratio of a transformer.

8. List any six specifications of a transformer.　　　　½×6=3

9. Write any three applications of DC motor. 1×3=3

10. Classify the AC motors based on principle of operation.

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. Explain the concept of lines of force and magnetic field. 10

12. *(a)* Explain Flemming's left-hand rule. 5

(b) Give expressions for total capacitance when capacitors are connected in series and parallel. 5

13. State Coulomb's laws of electrostatic. Compare electrostatic and magnetic fields. 5+5=10

14. Explain the effect of AC through pure inductance. 10

15. Explain about *(a)* admittance method and *(b)* vector algebra method for solving parallel AC circuits.

16. Explain the constructional details of *(a)* core-type transformer and *(b)* shell-type transformer. 5+5=10

17. *(a)* Explain the need for starters. 5

(b) Derive the voltage equation for DC motor. 5

18. Explain the working principle of servo motor and stepper motor. 5+5=10

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