C16–EC–106

6033

BOARD DIPLOMA EXAMINATION, (C–16)

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 absolute and relative permeability.

2. Define leakage flux and leakage co-efficient.

3. Define electrostatic field.

4. Compare electric field and magnetic field.

5. Define admittance and conductance.

6. Define active power and Q factor.

7. List the important parts of a transformer.

8. Define transformation ratio and regulation of a transformer.

9. Why starters are needed for DC motors?

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 criteria for valuation are the content but not the length of the answer.

11. *(a)* Explain the dynamically and statically induced EMF. 5

(b) An iron ring with a mean diameter of 24 cm is wound with 40 turns to carry a current of 1·5 A. Calculate the magnetizing force. 5

12. *(a)* Give the expression for energy stored in a capacitor. 5

(b) A coil having 100 turns links with a flux of 1 mWb. If the direction of this flux is reversed in 0·01 second, find the emf induced in the coil. 5

13. *(a)* Give the expression for capacitance of a parallel plate capacitor. 4

(b) A capacitor stores 2 joules of energy when connected across 200 V DC voltage. Calculate its capacitance. 6

14. *(a)* Explain the effect of AC through pure capacitance. 5

(b) A resistance of 9 ohms is connected in series with an inductive reactance of 12 ohms. The current in the circuit is 10 A. Find

(i) The voltage across the entire circuit 5

(ii) Draw the phasor diagram of the voltage and current.

15. *(a)* Explain the effect of AC through pure resistance. 5

(b) Find the impedance for RL circuit. 5

16. *(a)* Explain : 6

(i) Isolation transformer

(ii) Current transformer

(b) Why core is laminated? 4

17. *(a)* Explain the characteristics of DC shunt motor. 6

(b) Explain the important specifications of DC motors. 4

18. *(a)* Explain the working principle of servo motors. 5

(b) Explain the working principle of capacitor start single phase induction motor. 5

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