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C16–EC–106

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BOARD DIPLOMA EXAMINATION, (C–16)

MARCH/APRIL—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 magnetic flux and flux density. 1½+1½

2. Define leakage flux and leakage coefficient. 1½+1½

3. Define the terms 'absolute permitivity' and 'relative permitivity'. 1½+1½

4. Define the term 'electric field intensity'.

5. Define the terms *(a)* 'inductive reactance' and *(b)* 'impedance'. 1½+1½

6. Write about active and reactive components of AC current. 1½+1½

7. State the losses in transformer.

8. Define the regulation of a transformer.

9. Write about the condition for maximum power in DC motors.

10. List the 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 the criterion for valuation is the content but not the length of the answer.

11. *(a)* Explain dynamically and statically induced EMF. 6

(b) State Fleming's right-hand rule. 4

12. *(a)* Explain about Coulomb's law for magnetism. 5

(b) Explain the terms 'electric potential' and 'potential difference'. 5

13. *(a)* Find the equivalent capacitance of capacitors connected in series. 5

(b) Calculate the energy given by 100 V power supply to two 100 F capacitors connected in parallel. 5

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

15. Explain the representation of vector by *(a)* symbolic notation and *(b)* trigonometric form. 5+5

16. *(a)* Explain the working principle of autotransformer. 7

(b) List the specifications of transformer. 3

17. Explain the characteristics of DC series motor with neat diagrams. 10

18. *(a)* Explain the working principle of stepper motor. 5

(b) Explain the working principle of induction motor. 5

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