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C16-EC–106

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BOARD DIPLOMA EXAMINATION, (C-16)

AUGUST/SEPTEMBER—2021

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.

2. State Fleming's left-hand rule.

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

4. Define the term electric field intensity and state its unit.

5. Define the terms *(a)* Impedance and *(b)* Power factor.

6. List the four methods of representing a vector.

7. State the losses in a transformer.

8. Define efficiency of a transformer.

9. What is the necessity of starter for DC motor?

10. List the applications of stepper motor.

PART—B

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. *(a)* State Faraday's laws of electromagnetism. 6

(b) State Lenz law. 4

12. *(a)* Find the equivalent capacitance of capacitors connected in parallel. 5

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

13. *(a)* Explain Coulomb's law of magnetism. 5

(b) Compare electrostatic and magnetic fields. 5

14. Explain the effect of AC through capacitance with vector diagrams. 10

15. A resistance of 12 ohms ,an inductance of 0·15 H and a capacitance of 100 μF are connected in series across a 100 V, 50 Hz supply. Calculate *(a)* impedance of the circuit, *(b)* current in the circuit, *(c)* phase angle, *(d)* power factor and *(e)* power consumed. 10

16. *(a)* Explain the working principle of transformer with neat sketch. 6

(b) Classify transformers based on *(a)* rating and *(b)* construction. 4

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

18. *(a)* Explain the working of servomotor. 6

(b) List any four important specifications of AC motors. 4

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