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C16-EC-106

6033

BOARD DIPLOMA EXAMINATION, (C-16)

AUGUST/SEPTEMBER—2021

DECE - FIRST YEAR EXAMINATION

ELEMENTS OF ELECTRICAL ENGINEERING

Time : 3 hours ]

[ Total Marks : 80

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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.

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\* 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.

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|-------|---|----|
| 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 $\mu$ F 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 $\mu$ F 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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