6033

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

## 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

★ ★ ★