C16-EC-**106**

6033

BOARD DIPLOMA EXAMINATION, (C-16)

JUNE—2019

DCE—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 reluctance and m.m.f.

2. Distinguish between magnetic circuit and electric circuit.

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

4. What is unit charge?

5. Define *(a)* RMS value and *(b)* Average value.

6. Find Z1 + Z2 and Z1- Z2 if Z1 = 5 – *j*2 and Z2 = –3 – *j*8.

7. State the application of isolation transformer.

8. State the losses in transformer.

9. Write any three applications of DC motors.

10. List any three important specifications of AC motors.

PART—B

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 the Concept of lines of force.   5

      (b)   Explain Flemings left hand rule.   5

12.   *(a)*   Define magnetic flux and magnetic flux density.   5

      (b)   Compare electrostatic field with magnetic field.   5

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

      (b)   Three capacitors 10 micro F, 20 micro F and 50 micro F are connected in parallel. Find total capacitance.   5

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

      (b)   A resistor of 100 ohms is connected in series with a 56 micro F capacitor to a supply of 230 V, 50 Hz. Find *(i)* Impedance.

          (ii) Current *(iii)* Power factor *(iv)* Voltage the resistor.   5

15.   *(a)*   Explain the representation of vectors by *(i)* symbolic notation. *(ii)* trigonometric form.   5

      (b)   Calculate the product of the following complex numbers :   5

          (i) $(3 - j2)(1 - j4)$

          (ii) $(-4 - j6)(2 + j4)$

16. *(a)* Explain the following : 5

      (i) Impedance matching transformer

      (ii) Potential transformer

  (b) Explain working principle of transformer. 5

17. *(a)* Derive voltage equation for DC motor. 5

  (b) Explain torque speed behaviour of DC motor. 5

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

  (b) Give five applications of servo motors. 5

* * *