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C16-EC-106

6033

BOARD DIPLOMA EXAMINATION, (C-16)
JUNE—2019
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 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 $Z_1 + Z_2$ and $Z_1 - Z_2$ if $Z_1 = 5 - j2$ and $Z_2 = -3 - j8$.
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.

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

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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

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