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C16-M-RAC–305

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BOARD DIPLOMA EXAMINATION, (C-16)

MAY/JUNE—2023

DME - THIRD SEMESTER EXAMINATION

BASIC ELECTRICAL ENGINEERING AND ELECTRONICS

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 Ohm's law.

2. How much current will flow through a 20Ω electric heater when a voltage of 200 V is supplied?

3. State the e.m.f. equation of a DC generator and write the notations.

4. List the types of DC generators.

5. Define the terms *(a)* amplitude, *(b)* time period and *(c)* frequency.

6. State the types of starters used for AC machine.

7. State the relation among turns ratio, voltage ratio and current ratio in a transformer.

8. What is LED and LCD?

9. State the purpose of earthing.

10. What are the effects of electric shock?

PART—B

10×5=50

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 and explain Kirchhoff's laws. 6

(b) State the laws of resistance. 4

12. *(a)* State Faradays laws of electromagnetic induction. 4

(b) If a coil of 1000 turns is linked with a flux of 2 mWb, when carrying a current of 5 A, calculate *(i)* self-inductance of the coil and *(ii)* energy stored in a magnetic field. 6

13. *(a)* Explain the principle of operation of DC motor. 5

(b) Draw the connection diagram of welding generator. 5

14. A resistance of 12Ω, an inductance of 0.15 H and a capacitance of 130 μF are connected in series across a supply of 200 V, 50 Hz, calculate *(a)* the impedance, *(b)* current and *(c)* power factor and *(d)* power consumed. 10

15. *(a)* State how the direction of rotation of 3-phase induction motor can be reversed. 6

(b) Explain back emf in DC motor. 4

16. Explain the constructional details of alternator. 10

17. Explain the formation of PN-junction diode. 10

18. Explain the single-phase induction type energy meter with neat sketch. 10

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