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C09–M–304/CHST–304

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BOARD DIPLOMA EXAMINATION, (C–09)

MARCH/APRIL—2017

DME—THIRD SEMESTER EXAMINATION

ELECTRICAL ENGINEERING AND BASIC 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 :

(a) Reluctance

(b) Permeability

2. State Lenz's law.

3. Classify induced EMFs.

4. List out different types of DC motors.

5. Draw the power flow diagram of a d.c. generator.

6. Define the terms of an alternating quantity :

(a) Form factor

(b) Frequency

7. List out types of 1-phase induction motors.

8. What are the active materials of lead-acid cell?

9. What is Zener diode? Draw its *V-I* characteristics.

10. What are the effects of electric shock in human body?

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)* Define Ohm's law.

(b) State the laws of resistance.

(c) Calculate the effective resistance, when three resistances of 20 , 25 and 50 are connected in parallel.

12. *(a)* An air-cored circular coil having an internal diameter of 5 cm is wound uniformly with 300 turns. Calculate the self-inductance of the coil if its mean length is 80 cm.

(b) Draw the connection diagram of welding generator.

13. With a neat diagram, explain the operation of 3-point starter.

14. A circuit consists of 12 resistance in series with a capacitance of 100 micro farads. It is considered across a supply of 230 V, 50 Hz. Find :

(a) Reactance

(b) Impedance

(c) Current

(d) Power factor

(e) Power

15. *(a)* Explain the working principle of transformer.

(b) Explain the construction detail of alternator.

16. *(a)* Explain the working principle of 1-phase induction motor.

(b) Explain the care and maintenance of lead-acid cells in 5 sentences.

17. *(a)* Distinguish between Zener and Avalanche breakdown.

(b) Explain the operation of LCD.

18. Explain the procedure for pipe earthling with a neat sketch.

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