



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

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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 Ω , 25 Ω and 50 Ω 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 Ω resistance in series with a capacitance of 100 micro farads. It is connected 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 earthing with a neat sketch.
