



C09-M-304/CHST-304

3248

BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—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 magnetic field strength and state its unit.
2. Define electric field.
3. Define self-inductance and mention its units.
4. Write voltage and current equation of long shunt compound motor.
5. State the materials used for the following parts of DC generator :
 - (a) Armature winding
 - (b) Commutator
 - (c) Yoke

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6. State the ^{*}working principle of a transformer.
7. Define RMS value.
8. State the indications of a fully charged lead acid battery.
9. Draw a neat diagram of output characteristic of CB configuration of a transistor.
10. List any three parts of moving coil instrument and also mention their function.

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 coil having 120 turns has a resistance of 100 Ω and is placed in a magnetic field of 1.5 m wb. The coil is connected in series with a galvanometer of resistance 500 Ω . Find the e.m.f. induced in coil and current in the circuit if the coil is moved in 0.02 sec from the given field to a field of 0.7 m wb. 10
12. Explain the classification of DC generators with simple diagrams. 10
13. (a) Explain the necessity of a starter. 5
(b) Explain the working principle of a 1-phase induction motor. 5
14. A series circuit consisting 10 Ω resistance, 10 Ω inductive reactance and 5 Ω capacitive reactance in series is connected across a 1-phase supply of 230 V, 50Hz; calculate—
(a) impedance;
(b) current;
(c) voltage across the resistance;
(d) power factor;
(e) power consumed. 10

15. (a) Explain^{*} the difference between intrinsic and extrinsic semiconductors. 5
(b) Explain the formation of P-N junction diode. 5
16. Explain the construction and working principle of single-phase induction-type energy meter. 10
17. (a) (i) State Lenz's law.
(ii) State Fleming's right-hand rule. 5
(b) Draw a neat sketch of 3-point starter. 5
18. (a) Describe with sketch star-delta starter. 5
(b) Explain the chemical reactions of Nickel-Iron cell during charging. 5

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