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C16–M–305

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BOARD DIPLOMA EXAMINATION, (C–16)

OCT/NOV—2018

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 self-inductance.

2. State Faraday's laws of electromagnetic induction.

3. Define *(a)* magnetic field strength, and *(b)* permeability.

4. Write the main function of the brush and disadvantages of carbon brushes in DC generator.

5. Define RMS value.

6. State any three applications of 3- induction motor.

7. Define *(a)* instantaneous value, *(b)* frequency, and *(c)* cycle.

8. Draw the symbol of PNP and NPN transistors.

9. Draw the connection diagram of 1- energy meter with load.

10. What is the need of earthing of electrical equipment?

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 capacitance and mention its units.

(b) Explain dynamically and statically induced EMF. 4+6=10

12. *(a)* State and explain Fleming's right-hand rule.

(b) Two identical coils *A* and *B* having 500 turns lie side-by-side such that 50% of flux $\vec{X}$ of 10 ^{5} Wb in it. Find mutual inductance between two coils. $\vec{X}$ by one coil links with the other. If a current of 5 A in a coil *A* produce a flux . 4+6=10

13. *(a)* Draw the connection diagram of DC long shunt compound motor and state the relation between voltage and currents.

(b) Explain the significance of back e.m.f. in DC motor. 6+4=10

14. *(a)* Draw the schematic diagrams for long shunt and short shunt of DC compound generator.

(b) A circuit consists of 10 resistance in series with a inductance of 100 mH. It is connected across 1- supply of 230 V, 50 Hz. Find impedance and current flowing through the circuit. 4+6=10

15. *(a)* Explain the working of shaded pole 1- induction motor.

(b) Explain the star-delta starter with neat sketch. 5+5=10

16. Explain the construction and working principle of an alternator. 10

17. Draw and explain the input and output characteristics of common-base configuration. 10

18. Explain the construction and working principle of dynamometer type wattmeter and give its applications. 10

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