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C16–M–305

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BOARD DIPLOMA EXAMINATION, (C–16)

MARCH/APRIL—2018

DME—THIRD SEMESTER EXAMINATION

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

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)* magnetic flux and *(b)* flux density.

2. Define work, power and energy with their units.

3. State the functions of any two parts of a DC generator.

4. List out different types of DC motors.

5. State the relation between frequency and speed of an AC alternator.

6. State the advantages of poly-phase system over single-phase system.

7. List out types of single-phase induction motor.

8. Compare *P*-type and *N*-type semiconductors.

9. State the need of earthing of electrical equipment.

10. List the reasons for 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 the criterion for valuation is the content but not the length of the answer.

11. State and explain Kirchhoff's laws with examples. 10

12. *(a)* Define *(i)* magnetic field strength and *(ii)* permeability with their units. 5

(b) Calculate the energy stored in a magnetic field of an air cored solenoid 1 meter long having a cross-sectional area of 0 05 m^2, if it is carrying of 3 A. The number of turns of solenoid coil is 850. 5

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

(b) Sketch the connection of welding generator. 5

14. *(a)* Draw the circuit diagrams and write voltage and current equations of *(i)* DC shunt generator and *(ii)* DC long shunt compound generator. 5

(b) An inductive circuit has a resistance of 5 in series with an inductance of 0·03 H. Calculate the current and power factor, when connected across 230 V, 50 Hz supply. 5

15. *(a)* List the applications of 1- induction motor. 5

(b) Define *(i)* RMS value and *(ii)* average value. 5

16. Explain the constructional features of an alternator. 10

17. Describe the operation of Zener diode with diagram. 10

18. Describe the construction and working principle of dynamometer type wattmeter. 10

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