C14–M–**303**

4251

BOARD DIPLOMA EXAMINATION, (C–14)
MARCH/APRIL—2016
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.

1. Define *(a)* magnetic field strength and *(b)* reluctance.

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

3. State Fleming's right hand rule.

4. Classify the DC generators on the basis of excitation.

5. Define *(a)* RMS value, and *(b)* form factor.

6. List any six applications of a 3-phase induction motor.

7. Define phase and phase difference.

8. Distinguish between intrinsic semiconductor and extrinsic semiconductor.

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

10. Compare moving coil instruments with moving iron instruments in any three aspects.

PART—B   10×5=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

11. Two lamps of ratings 100 W, 230 V and 250 W, 250 V are connected in parallel across a supply of 230 V. Calculate *(a)* the resistance of each lamp, *(b)* total current, *(c)* total power drawn from the supply and *(d)* the electrical energy taken from the supply in 10 hrs.   1×10=10

12. *(a)* Explain dynamically induced EMF and statically induced EMF.   5

(b) Derive an expression for energy stored in a magnetic field.   5

13. *(a)* Explain the significance of back EMF.   4

(b) Explain the speed control of DC series motor by field control methods.   6

14. A coil of inductance 0·03 H is connected in series a resistance of 10 ohm and is connected across single phase 230 V, 50 Hz AC supply. Calculate *(a)* impedance, *(b)* current, *(c)* active power, *(d)* power factor and *(e)* voltage drop across inductance and resistance.   10

15. *(a)* Explain the working principle of a transformer.   5

(b) Draw the circuit diagram for a capacitor start single-phase induction motor and explain briefly its working.   5

16. *(a)* Explain the working of NPN transistor.   5

(b) Explain the operation of light emitting diode.   5

17. Explain the construction and working principle of moving iron ammeter with a neat diagram.   10

18. *(a)* Explain the working of Star-Delta Starter.   5

(b) List the losses take place in DC machine.   5

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