3248

BOARD DIPLOMA EXAMINATION, (C-09)
OCT / NOV-2015
DME - THIRD SEMESTER EXAMINATION
ELECTRICAL ENGINEERING AND BASIC ELECTRONICS

Time : 3 hours]   [*Total Marks* : 80

PART - A   10 X 3 = 30

Instructions : (1) Answer **all** questions.

(2) Each questions carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Define mutual inductance and state its units.

2. Define permeability and write its unit.

3. State Fleming's right-hand rule.

4. State the materials used for the following parts of D.C. generator.

5. Sketch the connection of welding generator.

6. State the relationship among turns ratio, voltage ratio and current ratio in a transformer.

7. State any 3 applications of a 3-phase induction motor.

8. State any two maintenance actions to be taken in case of lead acid cell.

9. State different transistor configurations.

10. State the procedure to be immediately adopted in case of electrical shock.

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

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

(2) Answers should be comprehensive and the criterin for valuation is the content but not the length of the answer.

11. A coil having 120 turns has a resistance of $100\,\Omega$ and is placed in a magnetic field of 1.5 mWb. The coil is connected in series with a galvanometer of resistance 500 . 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 mWb.

12. A 380 V DC long shunt compound generator supplies a load of 22.8 kW. Its armature, series and shunt field resistances are 0.12 , 0.18 and 200 respectively. Calculate the generated e.m.f.

13. a) List applications of 1-phase induction motor.

b) Draw a neat circuit diagram of split phase type 1-phase induction motor.

14. A series circuit consisting 10 resistance, 10 inductive reactance and 5 capacitive reactance in series is connected across a l-phase supply of 230 V. 50 Hz. Calculatethe following :
(a) Impedance Ω
(b) Current
(c) Voltage across the resistance
(d) Power factor
(e) Power consumed.

15. Explain the working of a PN junction diode with forward bias and reverse bias.

16. Explain construction and working principle of moving coil voltmeter.

17. a) State Faraday's laws of electromagnetic induction.

b) Draw schematic diagram of a DC series motor and state the relationship between voltages and currents.

18. (a) Define (i) Frequency

(ii) Time period.

(iii) RMS VALUE.

(b) Explain chemical reactions of a Ni-Fe cell during discharging and charging.

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