C09–EE–**105**

3037

BOARD DIPLOMA EXAMINATION, (C–09)

OCT/NOV—2017

DEEE—FIRST YEAR EXAMINATION

BASIC ELECTRICAL 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 the terms *(a)* electrical power and *(b)* electrical work.

2. Find the resistance of 500 meters of a copper wire at 20 °C if the diameter of the wire is 4 mm and resistivity of the copper at 20 °C is $1 \cdot 7 \times 10^{8}$ ohm-meter.

3. Write the three requirements of low resistivity material.

4. Draw the field patterns for the following :

(a) Current carrying conductor

(b) Circular coil

(c) Sokenoid

5. Define and explain in brief self-inductance.

6. Find the area required for such an electromagnet to have a lifting power of 400 kg with a flux density of $0 \cdot 1$ wb/m^2.

7. What are the factors affecting on dielectric loss?

8. Define insulation resistance and volume resistance.

9. What are the advantages of impregnation?

10. Draw the energy level diagrams for conductors, insulators and semiconductors.

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PART—B   10×5=50

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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 semicircular ring copper has an inner radius of 8 cm, radial thickness of 4 cm and an axial thickness 6 cm. Find the resistance of the ring 50 °C between its two end faces. Assume specific resistance of copper at 20 °C is $1 \cdot 724 \times 10^{-6}$ ohm-cm and the temperature coefficient of resistance of copper at 0 °C is 0·0043/ °C.

12. Draw and explain the working principle of a electric cooker.

13. An iron ring 300 cm diameter circumference with a corss sectional area of 5 cm^2 has a saw cut 1 mm wide in it. The rign is wound uniformly with 350 turns of wire. Find the current required to produce a flux of 0·3 mwb across the gap. Assume leakage factor is 1·2 and relative permeability is 800.

14. *(a)* Derive the expression for dynamically induced e.m.f.   5

(b) Explain Fleming's right hand rule.   5

15. *(a)* State ane explain Coulomb's law of electrostatics.   5

(b) Two small balls having charges one double the other are placed at a distance of 0·6 m apart in air. If the repulsive force between the balls is 2·70 N, determine the charge on each ball.   5

16. *(a)* Explain factors affecting insulating revistance.   5

  (b) Mention applications of polythylene.   5

17. Draw and explain input and output characteristics of CB transister.

18. *(a)* Write the properties of manganin and eureka.   5

  (b) Explain the construction, working principle of bi metals.   5

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