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C09-EE -105

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**BOARD DIPLOMA EXAMINATION, (C-09)
OCTOBER/NOVEMBER-2018
DEEE - FIRST YEAR EXAMINATION**

BASIC ELECTRICAL ENGINEERING

Time : 3 Hours]

[Total Marks: 80

PART-A

3X10=30

- Instructions :**
1. Answer **All** questions.
 2. Each question carries **three** marks.
 3. Answer should be brief and straight to the point and shall not exceed five simple sentences.

1. Define the following terms based on valance electrons
(a) Conductors (b) Insulators (c) semiconductors
2. Write the formula for equivalent resistance of three resistances connected in series.
- * 3. Write the properties of nichrome
4. Define the following terms (a) Permeability (b) Magnetic flux.
5. Define self-inductance.
6. Find the area required for such an electromagnet to have a lifting power of 400kg with a flux density of 0.1 wb/m^2
7. Define permittivity.
8. Classify the insulating materials
9. What are the advantages of impregnation?
10. List the different configurations of a transistor.

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PART-B

10X5=50

Instructions :

1. Answer any **Five** questions.
2. Each question carries **ten** marks.

11. A semicircular ring of copper has an inner radius of 8cm, radial thickness of 4cm and an axial thickness 6cm. Find the resistance of the ring 50°C between its two ends faces. Assume specific resistance of copper at 20°C is 1.724×10^{-6} ohm-cm and the temperature coefficient of resistance of copper at 0°C is $0.0043/^{\circ}\text{C}$
12. Two heaters A and B are parallel across V volts. Heater A produces 500Kcal in 20min and heater B produces 1000Kcal in 10 minutes. The resistances of heater A is 10ohms. What is the resistance of heater B, if the two heaters are connected in series across the same supply, how much heat will be produce in 5 minutes?
13. An iron ring 300cm diameter circumference with a cross sectional area of 5cm^2 has a saw cut 1mm wide in it. The ring is wound uniformly with 350 turns of wire. Find the current required to produce a flux of 0.3mwb across the gap. Assume leakage factor is 1.2 and relative permeability is 800
14. (a) Derive the expression for dynamically induced emf
(b) Explain Fleming's right hand rule.
15. Two capacitors having capacitances of 10microfarad and 15microdfarad respectively are connected in series across a 200V d.c supply. Calculate:
(a) The charge on each capacitance (b) The potential difference across each capacitor
(c) The energy stored in each capacitor.
16. Explain thermoplastic and thermosetting series with examples.
17. What is PN junction? Explain it under forward bias and reverse bias condition with neat sketches?
18. (a) Write four examples of low and high resistivity materials.
(b) Write any five properties of thermocouple materials.
