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C14–EE–105

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BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2016

DEEE—FIRST YEAR EXAMINATION

ELECTRICAL ENGINEERING MATERIALS

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. State the examples of low-resistivity and high-resistivity materials. 1½+1½

2. State the advantages of ACSR.

3. List the semiconductors commonly used.

4. State the classification of insulating materials.

5. Write the permittivity values of air, Bakelite, glass, mica, paper and porcelain.

6. Define Curie point of magnetic materials.

7. Write the applications of enamel-coated copper wires.

8. State the importance of nano-materials.

9. Compare between primary cells and secondary cells.

10. Write the chemical reaction of lead-acid cell during charging and discharging.

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. *(a)* State the properties and applications of carbon. 5

(b) Distinguish between copper and aluminium in five aspects. 5

12. *(a)* State the properties and applications of platinum and tungsten. 5

(b) List the colour codes of resistors as per BIs. 5

13. *(a)* Define and classify semi-conducting materials. 5

(b) Distinguish between intrinsic and extrinsic semi-conductors in six aspects. 5

14. *(a)* State the properties of wood, cardboard and glass. 5

(b) State the properties and applications of air and hydrogen. 5

15. *(a)* Briefly explain dielectric loss. 5

(b) Explain the operation of thermocouple with neat sketch. 5

16. *(a)* Briefly explain hysteresis loss. 5

(b) Define hard magnetic material and write its properties and applications. 5

17. *(a)* State different parts of lead-acid battery and explain each part. 5

(b) Distinguish between lead-acid cell and nickel-iron cell. 5

18. *(a)* Explain the operation of lead-acid cell during charging and discharging modes. 5

(b) Distinguish between lead-acid batteries and maintenance-free batteries. 5

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