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C16–EE–105

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BOARD DIPLOMA EXAMINATION, (C–16)

MARCH/APRIL—2017

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. Define the term hardening. 3

2. State the composition for manganin and constantan. 1½+1½=3

3. What is a semiconductor? Give two examples of semiconductor. 2+1=3

4. State the classification of insulating materials on the basis of temperature. 3

5. State the properties of PVC. 3

6. What is meant by polarization in dielectric materials? 3

7. Define the term magnetostriction. 3

8. State the materials used for fuses. 3

9. State any three applications of maintenance free batteries. 3

10. State any three indications of fully charged lead-acid battery. 3

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 of conducting materials. 5

(b) State any five properties of aluminium. 5

12. *(a)* State the properties and applications of nichrome. 6

(b) Explain the colour coding of resistor. 4

13. *(a)* Explain the formation of *p*-type semiconductors. 5

(b) Explain dielectric loss and state the factors affecting dielectric loss. 5

14. *(a)* Compare thermoplastic and thermosetting resins in five aspects. 5

(b) Write the properties of SF_6 (sulfur hexafluoride) as insulating material. 5

15. Explain hysteresis loop with neat sketch. 10

16. Explain the working of thermocouple and list the different thermocouple materials. 7+3=10

17. Compare maintenance free battery with lead-acid battery. 10

18. *(a)* State any five precautions to be observed while maintaining lead-acid battery. 3

(b) Calculate the ampere-hour and watt-hour efficiencies for an accumulator, which is charged for 8 hours at 30 amp at an average voltage of 1·2 volt and discharged at 24 amp for 9 hours at an average voltage of 1·1 volt. 7

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