7039

BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2023

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 hardening.

2. State any three properties of conducting materials.

3. State the effects of additives on PVC.

4. List any three applications of di-electrics.

5. Define di-electric loss.

6. Define magnetostriction.

7. State curie point.

8. Define soldering and state any three soldering materials.

9. State any three applications of *(a)* lead-acid battery and *(a)* nickel-iron cell.

10. Define Trickle charging of a battery.

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

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

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

11. *(a)* State the properties of nichrome and state its applications.

(OR)

(b) State the properties of carbon and state its applications.

12. *(a)* Explain the formation of N-type semiconductor with a neat sketch.

(OR)

(b) Explain the formation of P-type semiconductors with a neat sketch.

13. *(a)* State the properties of PVC and state its applications.

(OR)

(b) State the properties of hydrogen and state its applications.

14. *(a)* Explain the working of thermocouple materials with a neat sketch.

(OR)

(b) Explain the process of impregnation with a neat sketch.

15. *(a)* Explain the construction of lead-acid battery.

(OR)

(b) An alkaline cell is discharged at a steady current of 4 amps, 12 hours, the average terminal voltage being 1.2 V. To restore it to its original state of charge, a steady current of 3 amps for 20 hours is required. The average terminal voltage being 1.6 V. Calculate *(i)* ampere hour efficiency and *(ii)* watt hour efficiency.

PART—C

Instructions : (1) Answer the following question.

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

(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

16. State the properties and applications of *(a)* mica and *(b)* glass.

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