7039

BOARD DIPLOMA EXAMINATION, (C-20)

MAY—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 conducting materials and give two examples.

2. State any three properties of mercury.

3. State any three applications of mica.

4. List any three applications of dielectrics.

5. State the permittivity of *(a)* air, *(b)* paper and *(c)* transformer oil.

6. Define soft and hard magnetic materials.

7. Define magnetostriction in magnetic materials.

8. What is meant by bi-metal? Give example.

9. Distinguish between primary and secondary cells in any three aspects.

10. State any three applications of nickel-iron cell.

PART—B

8×5=40

Instructions : (1) Answer *any* **five** 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. State the requirements of low-resistivity materials and give examples.

(OR)

List any four properties of *(a)* nichrome and *(b)* tungsten.

12. Explain the formation of N-type semiconductors with a neat sketch.

(OR)

Distinguish between P-type and N-type semiconductors in any eight aspects.

13. Explain the effect of *(a)* fillers, *(b)* stabilizers, *(c)* additives and *(d)* plasticizers on PVC.

(OR)

State the properties and applications of *(a)* hydrogen and *(b)* sulphur hexafluoride.

14. Explain the process of impregnation with a neat sketch.

(OR)

Explain thermocouple materials and give examples.

15. Explain the chemical reactions during charging and discharging of lead-acid battery.

(OR)

Explain the working of maintenance free battery and state its applications.

PART—C

10×1=10

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. Explain thermoplastics and thermosetting resins with examples.

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