7039

BOARD DIPLOMA EXAMINATION, (C-20)

JUNE/JULY—2022

DEEE - FIRST YEAR EXAMINATION

ELECTRICAL ENGINEERING MATERIALS

Time : 3 hours]   [*Total Marks* : 80

PART—A

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 any three applications of ACSR conductors.   3

3. State any three factors affecting the insulation resistance.   3

4. State the permittivity values of the following :   1+1+1
    (a) Air
    (b) Mica
    (c) Transformer oil

5. State any three applications of dielectrics.   3

6. Define the term magnetostriction in magnetic materials.   3

7. Draw the B-H loop of magnetic material and specify its features. 3

8. State any three uses of enamel coated copper wires.   3

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

10. Distinguish primary and secondary cells in three aspects. 3

PART—B

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 and applications of copper. 8

(OR)

(b) State the properties and applications of nichrome. 8

12. *(a)* Explain the formation of P-type semiconductor with a neat sketch. 8

(OR)

(b) Define semi-conducting materials and compare intrinsic and extrinsic semiconducting materials. 2+6

13. *(a)* Classify the insulating materials on the basis of temperature with examples. 8

(OR)

(b) State the properties and applications of sulphur-hexafluoride (SF_6) as insulating material. 8

14. *(a)* Explain the process of galvanizing and impregnation. 4+4

(OR)

(b) State and explain about the bi-metal. 8

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15. *(a)* Explain construction details of lead-acid battery.   8

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(OR)

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(b) A lead-acid battery is discharged at a steady current of 22 A for 10 hours and at an average voltage of 1·8 volts. If the battery is charged at a steady current of 36 A for 8 hours at an average voltage of 2·1 volts, calculate ampere-hour and watt-hour efficiencies.   4+4

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PART—C   10×1=10

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Instructions : (1) Answer the following question.

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

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

16. Explain the effects of the following on PVC :

(a) Fillers

(b) Stabilizers

(c) Plasticizers

(d) Additives

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