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C20-EE-105

7039

BOARD DIPLOMA EXAMINATION, (C-20)

JANUARY—2023

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. State any three requirements of low resistive materials. 3
2. Define conducting material and give two examples. 3
3. State any three electrical properties of insulating materials. 3
- * 4. List any four applications of Dielectric. 3
5. State the permittivity of (i) air, (ii) glass and (iii) transformer oil. 3
6. What is meant by hysteresis loss and state Steinmetz's equation? 2+1=3
7. Define Curie point in magnetic material. 3
8. What is meant by Bimetal? 3
9. State any three indications of fully charged lead-acid battery. 3
10. Distinguish between primary and secondary cells in any three aspects. 3

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PART—B

- Instructions :** (1) Answer all questions.
(2) Each question carries eight marks.
(3) Answers should be comprehensive and the criteria for valuation is the content but not the length of the answer.

11. (a) State the properties and applications of nichrome. 8
(OR)
(b) Explain the effects of annealing and hardening on copper with regard to electrical and mechanical properties. 8
12. (a) Distinguish between P-type and N-type semiconductors in any eight aspects. 8
(OR)
(b) Explain the formation of N-type semiconductor with neat sketch. 8
13. (a) Explain thermoplastic and thermosetting resins with examples. 4+4=8
(OR)
(b) Explain the properties and applications of PVC. 4+4=8
- * 14. (a) Explain the process of impregnation with a neat sketch. 4+4=8
(OR)
(b) Explain the process of galvanizing with neat sketch. 4+4=8
15. (a) Explain the constructional details of lead-acid battery. 8
(OR)
(b) Determine the ampere-hour and watt-hour efficiencies for an accumulator, which is charged for 10 hours at 25 amp at an average voltage of 1.8 volt and discharged at 20 amp for 8 hours at an average voltage of 1.5 volt. 8

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PART—C

10×1=10

- Instructions :
- (1) Answer the following question.
 - (2) The question carries ten marks.
 - (3) Answers 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 Sulphur hexafluoride (SF_6) and hydrogen gases.



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