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C14–EE–105

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BOARD DIPLOMA EXAMINATION, (C–14)

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. Write any three properties of nichrome.

2. Expand ACSR and AAAC.

3. Define intrinsic and extrinsic semiconductors.

4. Write the general classification of insulating materials.

5. Define dielectric constant and dielectric strength.

6. Define residual magnetism and coercive force of a magnetic material.

7. Classify the special purpose of materials.

8. What is meant by thermocouple? State any two alloys used as thermocouple.

9. Compare primary cells with secondary cells.

10. State the function of separators in lead-acid cell and mention the material used for it.

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. Write the properties and applications of aluminium. 10

12. *(a)* Explain the effect of hardening and annealing on copper. 5

(b) Write the properties and applications of tungsten. 5

13. Explain the methods of formation of *P-N* junction. 10

14. Write the properties and applications of PVC. 10

15. *(a)* Briefly explain the polarization of dielectric materials. 5

(b) Write a short note on bimetals. 5

16. *(a)* Write a short note on hysteresis loss. 5

(b) Compare soft magnetic materials with hard magnetic materials. 5

17. *(a)* Write the chemical reactions during charging and discharging of Ni-Cd cells. 5

(b) State the precautions to be taken during charging and discharging of batteries. 5

18. *(a)* Explain the constant voltage method of charging of batteries with neat diagram. 5

(b) Calculate the efficiencies for an accumulator which is charged in 8 hours by 30 ampere at an average potential difference of 2·2 V and is discharged in 9 hours by 24 ampere at an average potential difference of 1·9 V. 5

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