



C16-EE-105

5036

BOARD DIPLOMA EXAMINATION, (C-16)

MARCH/APRIL—2018

DEEE—FIRST YEAR EXAMINATION

ELECTRICAL ENGINEERING MATERIALS

Time : 3 hours]

[Total Marks : 80

PART—A

2×15=30

- Instructions** : (1) Answer *any fifteen* questions.
(2) Each question carries **two** marks.
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Define conducting material and write two examples for it.
2. Define hardening.
3. State the applications of ACSR conductors.
4. Write any four examples of high resistivity materials.
5. Define semiconducting materials. Write examples.
6. Define *P*-type semiconductor.
7. What are the factors affecting insulation resistance?
8. Write any two properties of nitrogen.
9. Define permittivity and mention its types.

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10. Define ^{*} dielectric loss.
11. Write Steinmetz equation.
12. What is meant by Curie point?
13. Name any four types of special purpose materials.
14. What is mean by bi-metals?
15. Write the characteristics of fuse element materials.
16. What is meant by galvanizing?
17. Define primary cell.
18. List the indications of a fully charged lead-acid battery.
19. What is trickle charging of batteries?
20. What is meant by a maintenance-free battery?

PART—B

10×5=50

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- 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.

21. (a) State the main requirements of high resistivity materials.
(b) Write any five properties of mercury.
22. Explain about colour coding of resistors as per BIS.
23. Explain the formation of *N*-type semiconductors with a neat sketch.
24. State the properties and applications of sulphur hexafluoride.

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- 25.** (a) * Calculate the value of five-band capacitor as with the following sequence of colour bands :
Gold, silver, orange, red, green
- (b) Write the advantages of enamel coated copper wires.
- 26.** Explain the difference between paramagnetic, diamagnetic and ferromagnetic materials.
- 27.** (a) Write the chemical reactions which take place during charging and discharging of a lead-acid battery.
- (b) Explain the constant current charging method of charging batteries.
- 28.** A lead-acid cell is discharged at a steady current of 17·2 A for 10 hours, the average terminal voltage being 1·98 V. To restore to its original state of charge, it is charged for the same time at the rate of 18 A, the average terminal voltage being 2·26 V. Determine (a) amp-hour efficiency and (b) watt-hour efficiency.

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