



C14-EE-105

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BOARD DIPLOMA EXAMINATION, (C-14)

MARCH / APRIL - 2019

DEEE - FIRST YEAR EXAMINATION

ELECTRICAL ENGINEERING MATERIALS

Time : 3 Hours]

[Total Marks : 80

PART - A

4×10=40

- Instructions :**
- (1) Answer **ALL** questions.
 - (2) Each question carries **FOUR** marks (Two marks for each bit).
 - (3) Answer should be brief and straight to the point and shall not exceed five simple sentences.

- 1 (a) Draw the cross-section of ACSR conductor and label the parts. **2+2**
(b) List the applications of ACSR conductors.
- 2 (a) State any four properties of Copper. **2+2**
(b) Find the value of the Resistor whose colour from left to right are Violet, green, yellow and gold.
- 3 Define : **2+2**
(a) Intrinsic semi-conductor
(b) Extrinsic semi-conductor.
- 4 (a) List any four Insulating gases. **2+2**
(b) List the applications of mica.

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- 5 (a) Define relative Permittivity. 2+2
 (b) What is the value of Dielectric strength of paper and Bakelite ?
- 6 (a) Define Soft magnetic material. 2+2
 (b) Hard magnetic material.
- 7 (a) What is meant by Bi-metals ? 2+2
 (b) List the applications of bi-metals.
- 8 (a) List any 4 Special Purpose Materials. 2+2
 (b) What are Nano materials ?
- 9 (a) What is Primary cell ? 2+2
 (b) List any four Primary cells.
- 10 State the applications of (a) Nickel-iron Battery. 2+2
 (b) Nickel-cadmium Battery.

PART - B**10×4=40**

- Instructions :**
- (1) Answer any **FOUR** questions.
 - (2) Each question carries **TEN** marks.
 - (3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

- 11 (a) Explain the effects of hardening and annealing on the electrical properties of Copper. 5+5
 (b) State the properties and applications of Mercury.
- 12 (a) Compare Copper and Aluminium materials. 6+4
 (b) State the composition of Nichrome and write its uses.
- 13 (a) Distinguish between P-type and N-type Semiconductors. 6+4
 (b) Significance of energy band diagrams in crystals.

- 14 (a) Explain the properties of Impregnated Paper. 4+6
(b) State the effects of (a) Filler (b) Stabilizer (c) Plasticizer on PVC.
- 15 (a) Explain the colour code of Capacitor. 4+6
(b) Explain the processes of Galvanising and mention its applications.
- 16 (a) Explain Hysteresis Loop with a neat sketch. 7+3
(b) Write a formula for Hysteresis loss.
- 17 (a) Explain the chemical reaction of Lead-acid cell during charging and discharging. 6+4
(b) Write any six differences between Lead-acid battery and maintenance free batteries.
- 18 (a) Define Ampere-hour Efficiency and Watt-hour Efficiency. 5+5
(b) Calculate the Ampere-hour efficiency and Watt-hour efficiency of a battery which is charged in 8 hours by 30 A at an average p.d. of 2.2 V and is discharged in 9 hours by 24 A at an average p.d. of 1.9 V.
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