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C14-EE-105

4045

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.

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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.

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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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