C-16S-EE-205

5256

BOARD DIPLOMA EXAMINATION, (C-16S)

NOVEMBER - 2019

DEEE - II SEMESTER EXAMINATION

ELECTRICAL ENGINEERING MATERIALS - II

Time : 3 Hours] [Total Marks : 80

PART - A 2×15=30

Instructions : *(1) Answer any 15 questions.*

(2) Each question carries 2 marks.

(3) Answer should be brief and straight to the point and shall not exceed five simple sentences.

1 Define semiconducting materials with examples.

2 Classify semiconducting materials.

3 Distinguish between Intrinsic and Extrinsic Semiconductors in any two aspects.

4 Distinguish between p-type and n-type semiconductor in any two aspects.

5 Draw the p-n junction diode symbol and label the parts.

6 Draw the characteristics of Zener diode.

7 Draw the symbolic representation of pnp and npn transistors.

8 State the different transistor configurations.

9 State Coulomb's law of Electrostatics.

10 Define absolute and relative permitivity.

11 Plot electronic field due to isolated positive charge.

12 Define Dielectric strength and mention its units.

13 Define capacitance and state its units.

14 Classify different types of capacitors.

15 Write any four uses of capacitors.

16 Three Capacitors $2\mu F$, $1\mu F$ and $4\mu F$ are connected in parallel across 220 V DC supply. Find the equivalent capacitance.

17 Compare primary and secondary cells in any two aspects.

18 What is trickle charging ?

19 List the indications of a fully charged lead Acid Battery.

20 Define Ampere-hour efficiency of battery.

PART - B 10×5=50

Instructions : *(1) Answer any FIVE questions.*

(2) Each question carries TEN marks.

(3) Answer should be comprehensive and criterion for valuation is the content but not the length of the answer.

21 Explain the formation of P-type semi conductors and N-type semi conductors.

22 Explain the working of PN-Junction diode with No bias, Forward bias and Reverse bias. 2+4+4

23 Draw the circuit diagram of CE configuration of transistor and explain its working.

24 (a) Compare electrostatic and magnetic lines of force. 5

(b) Determine the force between two charges of +2C and +3C 5

when they are spaced 2m apart in air. Assume suitable data.

25 (a) Derive an expression for Energy stored in a capacitor. 5

(b) Derive an expression for equivalent capacitance when three capacitors are connected in series. 5

26 Three capacitors $10\,\mu F$, $25\,\mu F$ and $50\,\mu F$ are connected in 5+5

(a) Series

(b) Parallel across a 400 V supply.

Find the Energy stored in each case.

27 Explain charging of batteries by 5+5

(a) Constant current method

(b) Constant voltage method.

28 Explain the construction and working of Maintenance free batteries.