

SECTION A

Q.1. Attempt all:

1x15=15

- a) At absolute zero temperature, the conduction band of a semiconductor is totally _____.
- b) To obtain p-type semiconductor, _____ impurity is added to a pure semiconductor.
- c) The value of knee voltage for germanium diode is _____ volt.
- d) The maximum value of rectification efficiency of full wave rectifier can be _____%.
- e) Usually, a zener diode is used as a _____.
- f) The material used for the construction of LED is _____.
- g) In a transistor, there are _____ pn junctions.
- h) A transistor is usually applied for _____.
- i) The method by which the operating point is made independent of temperature variations or variations of transistor parameters (β) is called _____.
- j) For a good voltage amplifier, its input impedance should be _____ as compared to the source impedance.
- k) A FET is also called as _____ polar transistor.
- l) Filter circuits are used to reduce _____.
- m) PIV stands for _____.
- n) A capacitor circuit does not allow to pass _____ component.
- o) Define Drift Current.

SECTION B

Q.2. Attempt any SIX Questions:

6x5=30

- a) Explain with suitable diagram Intrinsic and Extrinsic semiconductors.
- b) Draw the block diagram of a power supply. Explain in brief the functioning of each block.
- c) Explain how a zener diode maintains constant voltage across the load.
- d) Explain the working of *npn* transistor.
- e) Describe the potential divider circuit in detail.
- f) In what way the temperature variations affect the operating point of a transistor?
- g) Explain the working principle of a FET?
- h) Explain working of shunt capacitor filter.

SECTION C

Note: Attempt any THREE

3x10=30

Q.3. With the help of circuit diagram explain the working of Full Wave Bridge Type Rectifier.

Q. 4. Explain the input and output characteristics of CE Configuration? Also derive the relation between α and β .

Q. 5. Explain Conductors, Insulators and Semiconductors on the basis their energy band diagrams.

Q. 6. Write a short note on

- a) V-I characteristics of a diode
- b) Atomic structure of Germanium atom