SHRI T P BHATIA JUNIOR COLLEGE OF SCIENCE.
FIRST SEMESTER EXAM 2022
ELECTRONICS PAPER - II

CLASS: XI - H/J/M/K **TIME: 3 HOURS**
DATE: 23/11/2022 **MAX MARKS: 50**

Q1 A. Select the correct alternative and rewrite the sentences **4 marks**

1. On doping germanium metal, with a little amount of indium, what does one get?
a) Intrinsic semiconductor b) Insulator
c) n-type semiconductor d) p-type semiconductor

2. BJT stands for ____.
a) Bi-Junction Transfer b) Blue Junction Transistor
c) Bipolar Junction Transistor d) Base Junction Transistor

3. In the active region the emitter-base junction is --------biased and base-collector junction is---------biased?
a) Reversed biased, Forward biased b) Forward biased, Forward biased
c) Reversed biased, Reversed biased d) Forward biased, Reverse biased

4. Commonly used transistor configuration is?
a) CE configuration. b) CB configuration
c) CC configuration. d) Both b and c.

Q1 B. Answer any two of the following. **6 marks**

1. What are the different types of materials?
2. What are the advantages of transistors over vaccum tubes?
3. Draw the energy band diagrams of conductors, insulators and semiconductors.

Q2 A. Answer any two of the following. **6 marks**

1. What is depletion region?
2. Explain the structure of transistors.
3. What is amplification?

Q2 B. Answer any one of the following. **4 marks**

1. Draw and explain the working of PN junction diode in forward bias.
2. What are the various modes in which transistors can be operated?

Q3 A. Answer any two of the following. **6 marks**

1. Define alpha and beta of a transistor.
2. Draw the symbols of PNP and NPN transistors.
3. In a common base connection, $I_C = 0.95$ mA and $I_B = 0.05$ mA. Find the value of α.

Q3 B. Answer any one of the following. **4 marks**

1. Explain N type semiconductor in short.
2. Draw the circuit diagram for studying the characteristics of a transistor.

Q4 A. Answer any two of the following. **6 marks**

1. Define input and output characteristics of a transistor.
2. What are semiconductors? What is negative temperature coefficient of resistance?
3. What is intrinsic semiconductor?

Q4 B. Answer any one of the following. **4 marks**

1. Derive the relation between α and β for a transistor.
2. In a CE transistor circuit if $\beta=100$ and $I_B=50\mu A$. Compute the values of α, IE and IC.

Q5 A. Answer any two of the following. **6 marks**

1. How does current flow in an intrinsic semiconductor?
2. Write any three postulates of Bohr's atomic model.
3. Explain the structure of transistors.

Q5 B. Answer any one of the following. **4 marks**

1. Explain the output characteristics of a transistor with necessary diagrams.
2. Explain the common base and common emitter configuration of the transistor