	XI-SCI : Physics Semiconductors,	DATE:
Quality Checkers		TIME: 1 hour 30 minutes
Only way to fulfill your dreams		MARKS: 25
		SEAT NO:

Note:-
1. All Questions are compulsory.
2. Numbers on the right indicate full marks.

Section A

Q.1 Select and Write the correct answer. **(4)**

1. Electric conduction through semiconductor is due to

   A) electrons   B) holes

   C) none of these   D) both electrons and holes

2. The behaviour of pure Ge crystal, at absolute zero temperature is that it behaves as

   A) perfect conductor   B) perfect insulator

   C) intrinsic semiconductor   D) extrinsic semiconductor

3. Current through a reverse biased p-n junction, increases abruptly at

   A) breakdown voltage   B) 0.0 V

   C) 0.3 V   D) 0.7 V

4. A potential barrier of 0.5 V exists across a p-n junction. If depletion region is 5×10^{-7} m wide. The intensity of electric field is

   A) 1×10^{6} V/m   B) 2×10^{6} V/m

   C) 2×10^{-6} V/m   D) 2.5×10^{5} V/m

Q.2 Answer the following. **(3)**

1. Which element would you use as an impurity to make germanium an n-type semiconductor?

2. Define : Donor Impurity.

3. Define : Intrinsic semiconductor.

Section B
Attempt any Four

Q.3   Discuss the effect of external voltage on the width of depletion region of a p-n junction.   **(2)**

Q.4   What are advantages of semiconductor devices?   **(2)**

Q.5   What are the types of thermistors?   **(2)**

Q.6   Draw IV characteristic for p-n junction diode.   **(2)**

Q.7   What is the importance of energy gap in a semiconductor?   **(2)**

Q.8   On which factors does the electrical conductivity of a pure semiconductor depend at a given temperature?   **(2)**

Section C
Attempt any Two

Q.9   Explain electric conduction through intrinsic semiconductors.   **(3)**

Q.10   What are n-type semiconductors?   **(3)**

Q.11   Explain I-V characteristic for reverse biased mode of p-n junction diode.   **(3)**

Section D
Attempt any One

Q.12   Explain concept of potential barrier in p-n junction diode.   **(4)**

       Explain charge neutrality in extrinsic semiconductors.

Q.13   Explain static and dynamic resistance of p-n junction diode.   **(4)**