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Grade	**1.00** out of 15.00 (**7**%)

Question **1**

Incorrect

Mark 0.00 out of 2.00

Consider a p-type GaAs bar with doping concentration of $6X10^{9}/cm^{3}$. If the semiconductor was initially place at the very high temperature and the temperature is gradually decreased to room temperature, what would be the relative position (conceptually, not the numerical values) of fermi energy level of the doped semiconductor w.r.t. intrinsic fermi energy level (a) when the temperature will be very high (b) at room temperature?

Answer: a) It will be very much less than than the intrinsic fermi energy level. b) It will be c ✖

The correct answer is: (a) very close to Ei (b) far from Ei and near to Ev

Question **2**

Incorrect

Mark 0.00 out of 6.00

A Silicon bar is doped with Phosphorous atoms having a concentration of $5X10^{17}/cm^{3}$ at room temperature. Find the following:

(a) The type of majority charge carrier and its concentration

(b) Location of Fermi energy level w.r.t to intrinsic Fermi energy level

(c) What is the concentration of the minority charge carrier

(d) Location of Fermi energy level w.r.t to intrinsic Fermi energy level, if you try finding that out using the minority carrier concentrations

Answer: a) electrons are majority charge carrriers and its concentration is 25X10^34/cm^3 ✖

The correct answer is: (a) n-type, 5 X 10^17/cm3 (b) 0.4501 eV (c) 4.5 X10^2/cm3 (d) -0.4503 eV

Question **3**

Incorrect

Mark 0.00 out of 3.00

Consider a p-doped silicon under thermal equilibrium conditions, operating at a temperature where only 70% of dopant atoms are ionized. If the dopant concentration is $10^{16}/cm^{3}$, what will be the conductivity of the doped semiconductor at the specified condition, if the mobility of holes at that temperature is 350 $cm^{2}/V\text{-}s$?

Answer: 0.785 ✖

The correct answer is: 0.392 S/cm

Question **4**

Not answered

Marked out of 3.00

Derive the expression for the majority carrier concentrations of a compensated semiconductor from the charge neutrality equation. Scan your answer sheet and upload the same as answer to this question.

Question **5**

Correct

Mark 1.00 out of 1.00

List the parameters of the semiconductor that can be extracted through the Hall Effect Measurements.

Answer: Its used to find whether a semiconductor is p-type or n-type, used to find carrier ✖

The correct answer is: Majority carrier type, majority carrier concentration, mobility, conductivity

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