Chemistry Worksheet Class 12 on Chapter 1 Solid State - Set 1

Q-1: Pure Silicon and Germanium are____.

a) Semiconductors
b) Insulators
c) Conductors
d) None of the above

Q-2: Among the given crystals, the distance between the cationic and anionic centre is maximum in____.

a) LiF
b) CsF
c) CsI
d) LiI

Q-3: Which type of a semiconductor is formed when Germanium is doped with Indium?

Q-4: LiAg, an intermetallic compound, has both its ions crystallised in the cubic lattice each with a coordination number 8. Which kind of a crystal lattice is this?

a) Face-centred cubic
b) Body centred cubic
c) Simple cubic
d) None of the above

Q-5: What does an increase in the pressure and temperature do to a solid crystal structure?

Q-6: Schottky defect occurs when____.

a) An unequal number of the cations and anions are missing from the crystal lattice.
b) An equal number of cations and anions are missing from the crystal lattice.
c) A cation enters the interstitial site.
d) The density of the crystal is increased.

Q-7: Calculate the number of unit cells present in 1g NaCl crystals.

Q-8: Calculate the molar mass of an element that occurs in a BCC structure with the cell edge of 250 pm. The density of the element is 8.0 g cm^{-3}.

Q-9: Identify the type of defect represented below:

Na^+ Cl^- Na^+ Cl^- Na^+ Cl^-
Cl^- __ Cl^- Na^+ __ Na^+
Na^+ Cl^- __ Cl^- Na^+ Cl^-
Cl^- Na^+ Cl^- Na^+ __ Na^+

a) Schottky Defect
b) Interstitial Defect
c) Schottky Defect and Interstitial Defect
d) Frenkel Defect

Q-10: An element occurring in a FCC arrangement with a cell width of 400 pm has an atomic mass of 60 g mol^{-1}. Calculate the density of the element.

Q-11: Why does potassium sometimes look violet instead of looking pure white?

Q-12: Which defect causes a decrease in the density of the ionic crystal?

Q-13: State one difference between the properties: Ferromagnetism and Paramagnetism.

Q-14: What causes the electrical density in ionic solids and semiconductors?

Q-15: The number of octahedral sites per sphere in a FCC structure is ___.

a) 1
b) 2
c) 4
d) 8

Q-16: The formula of Nickel oxide is $Ni_{0.98}O$. In what fractions do the Ni^{2+} and Ni^{3+} ions exist in the crystal lattice?

Q-17: The density of the crystal remains unchanged by ____.

a) Schottky defect
b) Interstitial defect
c) Frenkel defect
d) All of the above

Q-18: Give reason for the following:
$CaCl_2$ added to AgCl crystal introduces the Schottky defect.

Q-19: With which group's element must a group 14 element be doped in order to obtain a n-type semiconductor?

Q-20: Distinguish between the hexagonal and monoclinic unit cells.