

WORKSHEET

CLASS: XII

SUB: CHEMISTRY

Lesson : Solid state

1. In a crystalline solid, oxide ions are arranged in cubic close packing. Cations A are equally distributed between octahedral and tetrahedral voids. If all the octahedral voids are occupied, what is the formula of the solid?

2. In a crystalline solid, anions C are arranged in cubic close packing. Cations A occupy 50% of the tetrahedral voids and cations B occupy 50% of the octahedral voids. What is the formula of the solid?

3. Calculate the distance between Na^+ and Cl^- ions in NaCl crystal if its density is 2.165 g cm^{-3}

4. Density of Li atom is 0.53 g cm^{-3} . The edge length of Li is 3.5 \AA . Find out the number of Li atoms in unit cell.

5. Give reasons

a. Schottky defect lowers density of a solid

b. Zinc oxide on heating becomes yellow colour

c. Frenkel defect is not found in alkali metal halides

6. Which out of two CdCl_2 or NaCl will produce vacancy defect when added to AgCl crystal?

7. Aluminium crystallises in ccp. Its metallic radius is 125 pm

a. What is the length of the side of the unit cell?

b. How many unit cells are there in 1 cm^3 volume?

8. a. Name a point defect in ionic crystals which does not alter the density of the solid

b. Name a point defect in ionic crystals which decreases the density of solid

c. LiCl heated in Li vapour develops colour. Why?

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Lesson : p block

1. Draw structures of: H_3PO_3 , XeOF_4 , SF_4 , XeF_4 , BrF_3 , H_3PO_4 , $\text{H}_2\text{S}_2\text{O}_8$,
 $\text{H}_2\text{S}_2\text{O}_7$, HClO_4 , HClO_3 , XeF_6 .

2. Write one chemical reaction each to show that con: H_2SO_4 can be an oxidizing agent.

3. Write chemical equation involved in the preparation of the following. (i) XeF_4

(ii) H_3PO_3

4. Account for the following

1. Thermal stability of water is much higher than that of H_2S
2. White phosphorus is more reactive than red phosphorus
3. In solid state PCl_5 behaves as an ionic species
4. the acid strength decreases in the order $\text{HF} < \text{HCl} < \text{HBr} < \text{HI}$
5. Ammonia is a stronger base than phosphine
6. The +5 oxidation state of Bi is less stable than its +3 state.
7. SF_6 is not easily hydrolysed whereas SF_4 is readily hydrolysed
8. Bond dissociation enthalpy F_2 is lesser than that of Chlorine.
9. Nitrogen does not form pentahalide
10. Fluorine is a stronger oxidizing agent than chlorine.

5. Complete the equations:

1. $\text{Ca}_3\text{P}_2 + \text{H}_2\text{O} \longrightarrow$
2. $\text{Cu}^{2+} \text{aq} + \text{NH}_3 \longrightarrow$
3. $\text{XeF}_6 + \text{H}_2\text{O} \longrightarrow$
4. $\text{NaCl} + \text{MnO}_2 + \text{H}_2\text{SO}_4 \longrightarrow$
5. $\text{NaI} + \text{Cl}_2 \longrightarrow$
6. $\text{PCl}_3 + \text{SO}_2\text{Cl}_2 \longrightarrow$

6. Which is the most stable thermodynamic form of phosphorus?

7. Describe contact process for the manufacture of H_2SO_4

8. Write chemical equation: (i) Chlorine treated with a hot concentrated solution of NaOH

(ii) Orthophosphoric acid is heated.