DELHI PUBLIC SCHOOL , RUBY PARK
CHEMISTRY ASSIGNMENT

Q1.Name the parameters that characterize a unit cell.
Q2..Ferric oxide crystallizes in a hexagonal close-packed array of oxide ions with two out of every three octahedral holes occupied by ferric ions. Derive the formula of the ferric oxide.
Q3. Ionic solids, which have anionic vacancies due to metal excess defect, develop colour. Explain with the help of a suitable example.
Q4. A group 14 element is to be converted into n-type semiconductor by doping. To which group should this impurity belong?
Q5.The vapour pressure of pure liquids A and B are 450 and 700 mm Hg respectively, at 350 K . Find out the composition of the liquid mixture if total vapour pressure is 600 mm Hg. Also find the composition of the vapour phase.
Q6..Boiling point of water at 750 mm Hg is 99.63°C. How much sucrose is to be added to 500 g of water such that it boils at 100°C?
Q7.Ethylene glycol (molar mass = 62 g/mol) is a common automobile antifreeze. Calculate the freezing point of a solution containing 12.4 g of this substance in 100 g of water. Would it be advisable to keep this substance in the car radiator during summer? Given : K_f for water = 1.86K kg/mol, K_b for water = 0.512K kg/mol.
Q8.Silver metal crystallises with a face centred cubic lattice.The length of unit cell is found to be 4.077×10^{-8} cm.Calculate atomic radius and density of silver. (atomic mass of Ag = 108 u)
Q8.15 g of an unknown molecular substance was dissolved in 450 g of water.The resulting solution freezes at -0.34^0C.What is the molar mass of the substance ? (K_f for water = 1.86 K kg mol^{-1})
Q9.What is the advantage of using osmotic pressure as compared to other colligative properties for the determination of molar masses of solutes in solution.
10.What is the significance of Henry's law constant K_H. Why is Raoult's law called a special case of Henry's law?.
11. Name the defect due to which FeO is sometimes written as $Fe_{0.98}O_{1.00}$
12. The density of KBr is 2.75 g/ cm3. The length of the unit cell is 654 pm. Predict the type of cubic lattice to which unit cell of KBr belongs. (Atomic mass: K=39, Br=80).
13. 17.4% K_2SO_4 solution at 27 0C is isotonic with 4%NaOH solution at the same temperature. If NaOH is 100% ionised, what is the degree of ionisation of K_2SO_4 in aqueous solution?
14. One molal solution of a complex of Cobalt chloride with NH3 in water showed an elevation in boiling point equal to 2.08 0C. Assuming that the complex is completely ionised in the solution , the complex is :- (a) $[Co(NH_3)_6]Cl_3$ (b)) $[Co(NH_3)_5\ Cl]Cl_2$ (c)$[Co(NH_3)_4\ Cl2]Cl$
Explain the answer.
15.Explain the following:
(a) painful condition known as bends
(b)soda water bottle kept at room temperature fizzes on opening.
(c)while making ice cream in metal or plastic cones , the ice cream seller puts a mixture of ice and common salt around the cones and not ice alone.
16. How is ferromagnetism different from paramagnetism? Give one example for each.
17. If NaCl is doped with 10-3mol % SrCl2, what is the concentration of cation vacancies?
!8. An ionic compound made up of atoms A and B has a face centered cubic arrangement in which atom A are at the corners and atoms B are at face centres. If one of the atoms is missing from corner what is the simplest formula of the compound?
19. What happens when a ferromagnetic substance is heated to high temperature?
20. A metal crystallises into two cubic phases fcc and bcc whose unit cell lengths arec $3.5A^0$ and $3.0A^0$ respectively. Calculate the ratio of the densities of fcc and bcc.

CHEMISTRY

Class - XII

Do the research work on the theory involved in invertigatory project on any one of the topic. Submit a copy of the same covering the following headings:-

a) Theme and title of the project reflecting objective
b) Principle used for investigation
c) Apparatus and chemicals required
d) Improvisation , if any

Topics;

1.To study the quantity of caesin present in different samples of milk.

2. Comparative study of the rate of fermentation of various food materials .

3 .To study the presence of adulterants in samples of chili powder , turmeric powder and pepper.

4.To compare the saturated or unsaturated fat content of different oils .

5.Details study of dyeing of different fabrics with the use of one dye.

6. To study the rate of evaporation of different liquids .

Or any other topic relevant to CBSE syllabus.

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