KV ADOOR

HOLIDAY HOMEWORK

CLASS : X11

SUBJECT : CHEMISTRY

CHAPTERS : 1. SOLIDS

2. SOLUTIONS

QUESTIONS

1. Distinguish between crystalline solids and amorphous solids ?

2. How are the crystalline solids classified? Give examples for each type?

3. Calculate the number of atoms per unit cell in: simple cubic, b.c.c and F.c.c.

4. Atoms of elements B form hcp lattice and those of the element A occupy 2/3 rd of tetrahedral voids. What is the formula of the compound formed by element A and B?

5. Show the packing efficiency in 1) h.c.p and 2) B.c.c structure? 1. Distinguish between crystalline solids and amorphous solids?

6. Write the difference between Schottky and Frenkal defects?

7. What are F centre? What causes pink colour for LiCl and violet for KCl crystals and yellow colour for ZnO ?

8. With the help of a diagram explain distinction in the conductivity of :

a) Metals

b) Insulators

c) Semi conductors

9. Define the following with suitable examples:

1) Diamagnetism

2) Ferromagnetism

3) Antiferromagnetism

4) Ferrimagnetisms

10. A f.c.c centred cubic element (atomic mass 60) has cell edge length of 400 pm . Calculate the density.   [6.23 gm/cc]

11. Metallic gold crystallizes in ffc lattice and has a density of 19.3 gm/ cm^3. Calculate the density of gold. [Atomic mass of gold is 197 gm/mol]

12. Analysis shows that the nickel oxide has formula $Ni_{0.98}$ $O_{1.00}$. What fractions of nickel exist as Ni^{2+} and Ni^{3+} ion?

13. An element with molar mass 2.7×10^{-2} kg/mol forms a cubic unit cell with edge length 450pm. If the density is 2.7×10^3 kg/m^3, what is the nature of the cubic unit cell.

14. Niobium crystallizes in b.c.c structure. If density ids 8.55gm/cm^3. Calculate the atomic radius of Nb using its atomic mass equal to 93gm/mol. a=3.306 x 10^2pm. R=143.1pm

15. Aluminium crystallizes in a cubic close packed structure. Its metallic radius is 125pm.

a) What is the length of the sides of the unit cell?

b) How many unit cells are there in 1.00 cc of aluminium?

16. Calculate the density of silver which crystallizes in f.c.c structure. The distance between the nearest silver atoms in the structure is 287pm.

17. Write and learn all important formulas.

18. What are soils, gels, emulsions and aerosols?

19. Concentrated HNo_3 used in the lab work in 68% HNo_3 by mass is aqueous solutions. What should be the molarity of such a sample of acid if the density of the solution is 1,.=.504gm/lit?

20. State Henry's law and illustrate it graphically?

21. Write application of Henry's law.

22. State Raoult's law and find an expression for total pressure of two gases in a mixture.

23. Vapour pressure of a solution is less than that of pure solvent. Why?

24. What are ideal and non-ideal solutions?

25. Write a short note on positive and negative deviation from ideal behavior with the help of a graph.

26. Represent graphically the positive deviation and negative deviation.

27. Write examples of liquid mixture showing positive and negative deviation.

28. What are minimum boiling azeotropes and maximum boiling azeotrpes?

29. What do you mean by colligative properties?

30. Derive an expression for finding molecular mass of a non-volatile solute by lowering of v.p method.

31. V.P of pure water at 298k is 23.8mm of Hg . 50gm of urea is dissolved in 850gm of water. Calculate the v.p of water for this solution and find the relative lowering of v.p

32 Derive an express for molecular mass in terms of elevaton in B.P and depression in B.P. Explain with the help of a graph.

33. On dissolving 3.24gm of sulphur in 40gm of benzene with the B.P of solution was higher than that of benzene by 0.81k. K_b for benzene is 2.553k kg/mol. What ia the molecular formula for benzene.

34. A solution containing 18gm of non-volatile solute in 200gm of water freezes at 272.07k. Calculate the molecular mass of solute.

35. What is osmosis, osmotic pressure, isotonic, hypertonic and hypertonic solutions?

36. Derive an expression for (osmotic pressure method) molecular mass.

37. At 300k, 36gm of glucose present per litre in its solution has an osmotic pressure of 4.98 bar. If the osmotic pressure of its solution is 1.52 bar. At the same temperature, what would be its concentration?

38. What is association and disassociation which leads to abnormal molecular maass?

39. What is Vant's Hoff's factor? 2gm of benzoic acid dissolves in 25gm of C_6H_6 shows a depression in F.P equal to 1.62K. K_b for benzene is 4.9 kg/mol. What is the percentage of association of acid if it is forms adimer in solution?

40. Find the Vant's Hoff's factor of:

1) NaCl

2) CH_3COOH

3) $K_4[Fe (CN)_6]$

4) $BaCl_2$

5) KCl