Chapter 9- Solutions

1. Solute + Solvent → Solution
2. Weight percent = $\frac{\text{Weight of the solute}}{\text{Weight of solute + Weight of solvent}}$ X 100
3. Solubility of NaCl = $\frac{\text{Mass of NaCl}}{\text{Mass of water}}$ X 100

Chapter 10 - Atoms and Molecules

1) Relative molecular mass of a gas = $\frac{\text{Mass of 1 molecule of the gas or vapour}}{\text{Mass of 1 atom of hydrogen}}$

For eg - Relative molecular mass of Oxygen = $\frac{2 \text{ X } 16}{1}$ = 32

2) 2 x Vapour density = Relative molecular mass
3) Avogadro number = 6.023×10^{23}
4) Number of moles = $\frac{\text{Given Mass}}{\text{Atomic Mass}}$

   For eg : Calculate the number of moles in 81g of aluminium.

   Ans: Number of moles = $\frac{81}{27}$ = 3 moles of aluminium
5) mass = atomic mass x number of moles

   For eg: Calculate the mass of 0.5 mole of iron.

   Ans: mass = = 55.9 x 0.5 = 27.95 g
6) Number of moles = $\frac{\text{Given Mass}}{\text{Molecular Mass}}$

   For eg: Calculate the number of moles in 90g of water.

   Ans : molecular mass of water = 2 X 1+ 16 = 18g

   Number of moles = $\frac{90}{18}$ = 5 moles
7) Number of moles = $\frac{\text{No. of Atoms}}{6.023 \text{ X } 10^{23}}$
8) Number of moles = $\frac{\text{No. of Molecules}}{6.023 \text{ X } 10^{23}}$

   For eg: Calculate the number of molecules in 11g of CO_2.

   Ans : molecular mass of CO_2 = 12+ 2X16 = 44g

   $\frac{11}{44} = \frac{\text{No. Of molecules}}{6.023 \text{ X } 10^{23}}$

   No. Of molecules = $\frac{6.023 \text{ X } 10^{23} \text{ X } 11}{44}$ = 1.51×10^{23} molecules

9) Mass of a substance = $\frac{\text{molecular mass} \times \text{number of particles/molecules}}{6.023 \times 10^{23}}$

For eg: Calculate the mass of 18.069×10^{23} molecules of SO_2

Ans : molecular mass $SO_2 = 1 \times 32 + 2 \times 16 = 64g$

Mass of $SO_2 = \frac{64 \times 18.069 \times 10^{23}}{6.023 \times 10^{23}} = 192$ g

10) Number of moles = $\frac{\text{Number of molecules}}{\text{Avogadro number}}$

For eg: Calculate the number of moles for a substance containing 3.0115×10^{23} molecules in it.

Ans : Number of moles = $\frac{3.0115 \times 10^{23}}{6.023 \times 10^{23}} = 0.5$ moles

Chapter 11 - Chemical Reactions

- $p^H = -\log [H^+]$

  For eg: The hydrogen ion concentration of a solution is 0.001M. What is the p^H of the solution?

  Ans : $p^H = -\log_{10} (0.001)$

  $p^H = -\log_{10} (10^{-3})$

  $= -(-3) \log_{10} 10$ [log 10 =1]

  $p^H = 3$
- $p^H + p^{OH} = 14$
- $p^{OH} = -\log_{10} [OH^-]$

  For eg: The hydroxide ion concentration of a solution is 0.001M. What is the p^H of the solution?

  Ans : $p^{OH} = -\log_{10} (10^{-3})$

  $p^{OH} = 3$

  $p^H = 14 - p^{OH}$

  $p^H = 14 - 3 = 11$

Atomic Number and Their Atomic Mass

	Element	Symbol	Atomic Mass
1.	Hydrogen	H	1
2.	Helium	He	4
3.	Lithium	Li	7
4.	Beryillium	Be	9
5.	Boron	B	11
6.	Carbon	C	12
7.	Nitrogen	N	14
8.	Oxygen	O	16
9.	Fluorine	F	19
10.	Neon	Ne	20
11.	Sodium	Na	23
12.	Magnesium	Mg	24
13.	Aluminium	Al	27
14.	Silicon	Si	28
15.	Phosphorus	P	31
16.	Sulphur	S	32
17.	Chlorine	Cl	35
18.	Argon	Ar	40
19.	Potassium	K	39
20.	Calcium	Ca	40

Hi He Lies Because Boys Can Not Operate Fire New Nations Might Also Sign Peace Security Clause Army King Can