ATOMS AND MOLECULES
MOLE CONCEPT

❖ MOLE CONCEPT:

Mole: Mole is a link between the mass of atoms (or molecules) and the number of atoms (or molecules). A group of 6.022×10^{23} particles (atom, molecules or ions) of a substance is called a mole of that substance.

Thus, 1 mole of atoms $= 6.023 \times 10^{23}$ atoms.

1 mole of molecules $= 6.022 \times 10^{23}$ molecules.

For example: oxygen atom is O and oxygen molecule is O_2.

1 mole of oxygen atoms (O) $= 6.022 \times 10^{23}$ oxygen atom

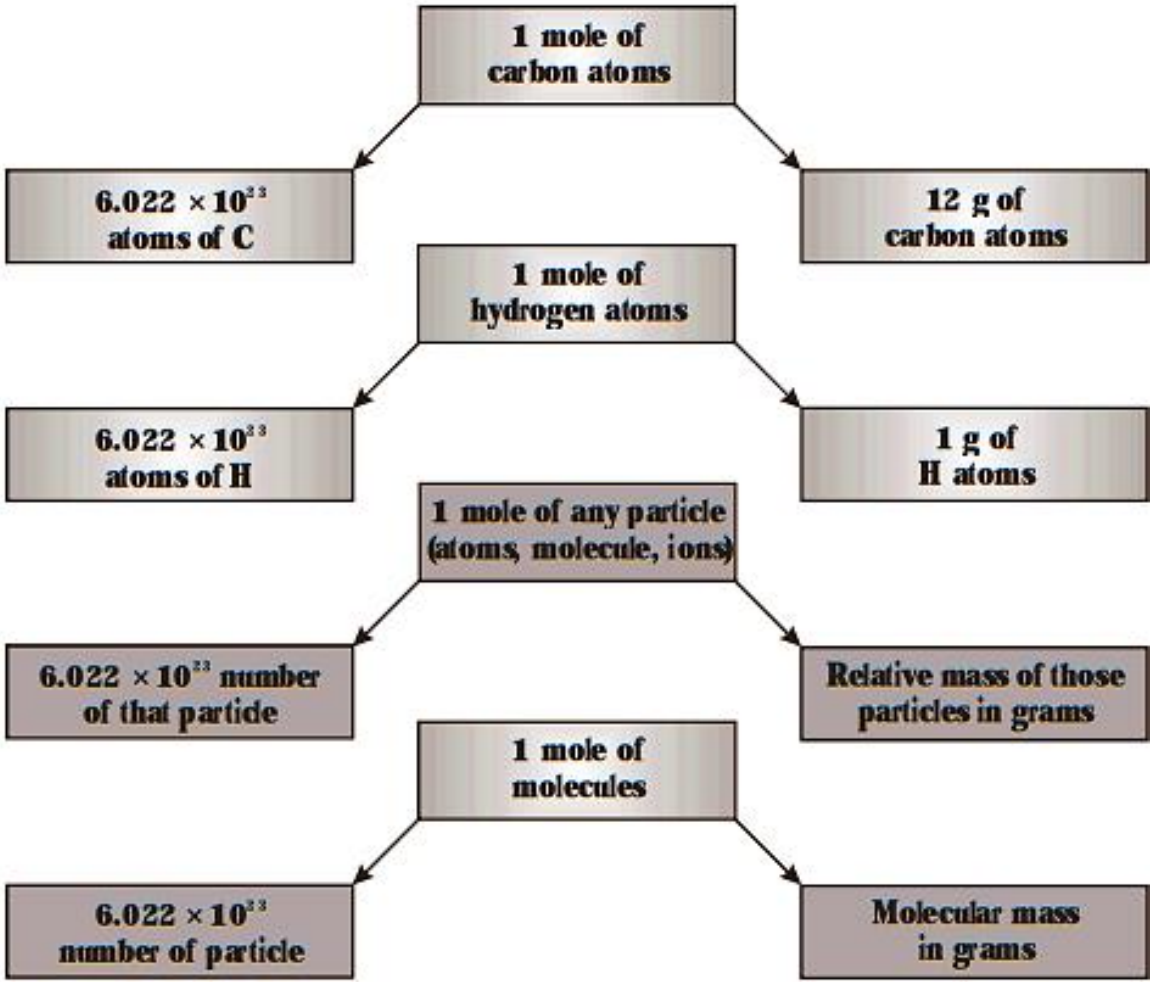
1 mole of oxygen molecules $= 6.022 \times 10^{23}$ oxygen molecules.

Number of 6.022×10^{23}, which represents a mole is known as **Avogadro number.**

❖ **Moles of Atoms:** One mole of atoms of an element has a mass equal to the gram atomic mass of the element.

1 mole of atoms of an element = Gram atomic mass of the element.

For example: The atomic mass of oxygen (O) is 16 u, so gram atomic mass of oxygen will be 16 gram.



1 mole of oxygen atoms = Gram atomic mass of oxygen = 16 gram.

❖ Mole of Molecules:

1 mole of molecules of an substance has mass equal to the gram molecular mass of the substance.

1 mole of molecules of a substance = Gram molecular mass of the substance.

For example: The molecular mass of oxygen (O_2) is 32 u. So, the gram molecular mass of oxygen molecule is 32 grams.

1 mole of oxygen molecules = Gram molecular mass of oxygen = 32 gram.

ATOMIC MASSES OF SOME COMMON ELEMENTS (IN AMU OR U)							
S.NO.	**ELEMENT**	**SYMBOL**	**ATOMIC MASS**	**S.NO.**	**ELEMENT**	**SYMBOL**	**ATOMIC MASS**
1	Hydorgen	H	1	**14**	Sulphur	S	32
2	Helium	He	4	**15**	Chlorine	Cl	35.5
3	Lithium	Li	7	**16**	Argon	Ar	40
4	Boron	B	11	**17**	Potassium	K	39
5	Carbon	C	12	**18**	Calcium	Ca	40
6	Nitrogen	N	14	**19**	Iron	Fe	56
7	Oxygen	O	16	**20**	Copper	Cu	63.5
8	Fluorine	F	19	**21**	Zinc	Zn	65
9	Neon	Ne	20	**22**	Silver	Ag	108
10	Sodium	Na	23	**23**	Platinum	Pt	195
11	Magnesium	Mg	24	**24**	Gold	Au	197
12	Aluminium	Al	27	**25**	Lead	Pb	207
13	Phosphorus	P	31	**26**	Uranium	U	238