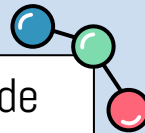


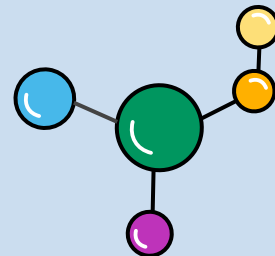
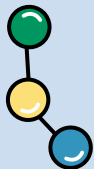
9th Grade



CHEMISTRY CHAPTER -03

ATOMS AND MOLECULES

LECTURE-01



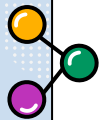


TABLE OF CONTENTS

01

ATOMIC MASS

AAM, RAM, GAM

02

MOLECULES

03

CHEMICAL FORMULAE

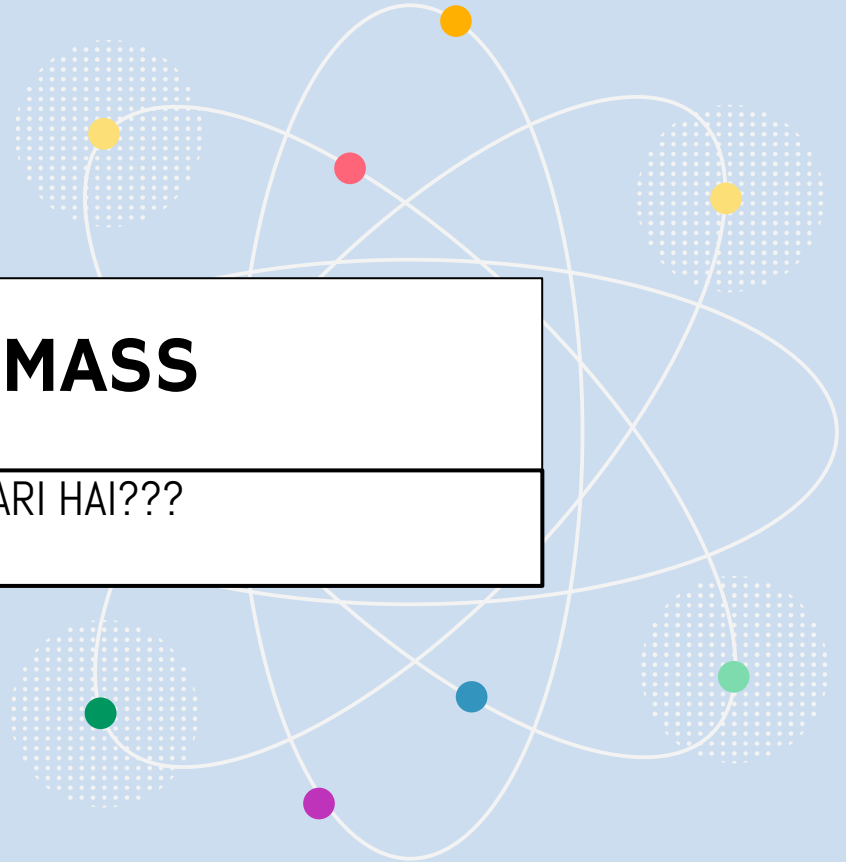
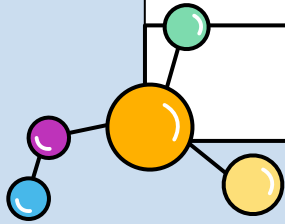
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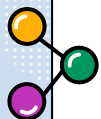
SUMMARY

01

ATOMIC MASS

ATOM KITNA BHARI HAI???





ATOMIC MASS

ACTUAL ATOMIC MASS (A.A.M)

Atom : Smallest unit of matter

Atomic mass = Mass Number

Mass of (proton + neutron)

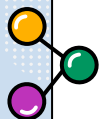
Mass of proton = 1.67×10^{-24} g = 1 amu

Atomic mass unit (amu or u)

1 amu = $1/12^{\text{th}}$ of mass of C-12 atom

AAM = mass number $\times 1.67 \times 10^{-24}$ g

- AAM NEVER CHANGES



ATOMIC MASS

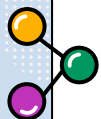
RELATIVE ATOMIC MASS (R.A.M)

- ✓ Mass of any atom in amu
- ✓ Mass of any atom **relative** to $1/12^{\text{th}}$ of mass of C-12 atom

$$\text{RAM} = \frac{AAM}{\frac{1}{12^{\text{th}}} \text{ of mass of C-12 atom}}$$

RAM = MASS NUMBER (AMU)

RAM is scale dependent quantity. Changes on changing the reference



ATOMIC MASS

AVERAGE ATOMIC MASS

ISOTOPES : Same atomic number but different mass number

Ex : H^1 H^2 H^3

Average of atomic mass of all possible isotopes of atoms

$$A_{\text{avg}} = \frac{\sum A_i n_i}{\sum n_i}$$

Where , A_i = Atomic mass of isotopes

n_i = Number of moles, mass %, ,mass ratio, mole ratio of isotopes



ATOMIC MASS

GRAM ATOMIC MASS (GAM) or MOLAR MASS

Definition : **The mass of an element expressed in grams which is numerically equal to the mass in 'u'**

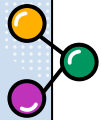
For example,

Atomic mass of Nitrogen (N) = 14u

Gram atomic mass = 14 g

Atomic mass of Sulphur (S) = 32u

Gram atomic mass = 32 g



WHAT IS MOLECULES ?

The atoms of the same or different elements are bonded together tightly by some strong forces of attraction also called chemical bonds. The new species which are formed as a result of this chemical combination are called **molecules**.

Definition : Molecules represents a group of two or more atoms (same or different) chemically bonded to each other and held tightly by strong attractive forces.

Molecules are represented in terms of symbols of constituting atoms, and it is known as chemical formula.

Molecules are of two types

- Homoatomic (Molecules of elements)
- Heteroatomic (Molecules of compounds)

1 H																	2 He
3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne
11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
55 Cs	56 Ba	71 Lu	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
87 Fr	88 Ra	103 Lr	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Cn	113 Nh	114 Fl	115 Mc	116 Lv	117 Ts	118 Og
		57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb		
		89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No		

The background is a light blue gradient. It features several stylized atomic models. Each model consists of a central nucleus made of small colored dots (yellow, green, blue, orange) and several elliptical orbits. Some orbits have small colored dots representing electrons. The central text box is white with a black border. The word "THANKS" is written in large, bold, black capital letters. Below it, in a smaller font, is the text "Revise Last Chapter, Learn 20 Elements".

THANKS

Revise Last Chapter, Learn 20 Elements