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CHEMISTRY

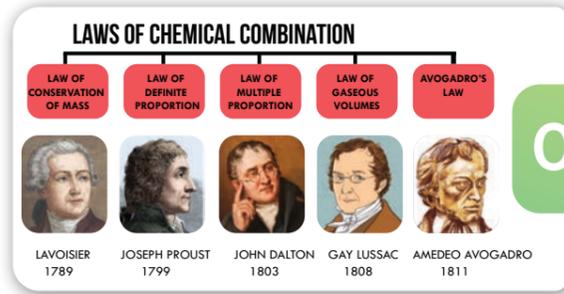# SOME BASIC CONCEPTS OF CHEMISTRY
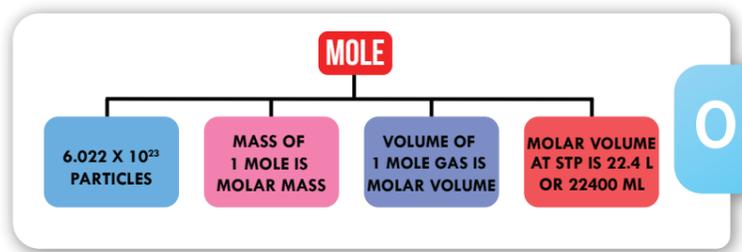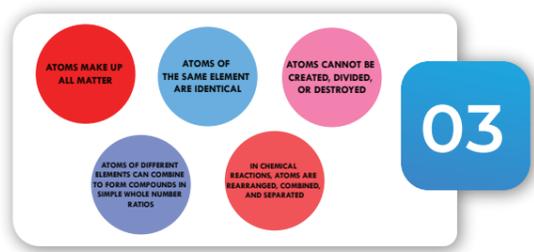
01 — NATURE OF MATTER
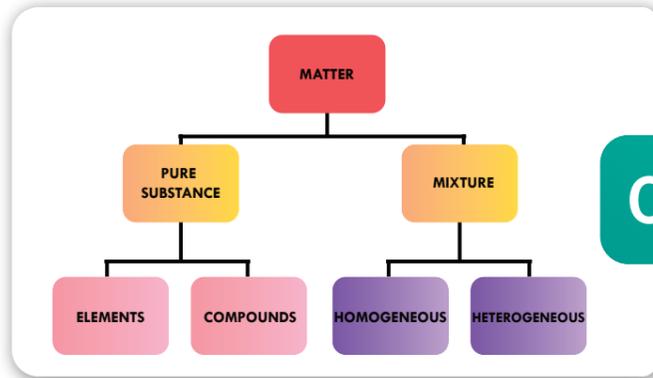
Q) Which one of the following is not a mixture ?
(A) Tap water   (B) Distilled water
(C) Salt in water   (D) Oil in water

02 — LAWS OF CHEMICAL COMBINATIONS

LAWS OF CHEMICAL COMBINATION

LAW OF CONSERVATION OF MASS	LAW OF DEFINITE PROPORTION	LAW OF MULTIPLE PROPORTION	LAW OF GASEOUS VOLUMES	AVOGADRO'S LAW
LAVOISIER 1789	JOSEPH PROUST 1799	JOHN DALTON 1803	GAY LUSSAC 1808	AMEDEO AVOGADRO 1811

Q) Which one of the following pairs of compound illustrate the law of multiple proportions ?
(A) H_2O, Na_2O (B) MgO, Na_2O
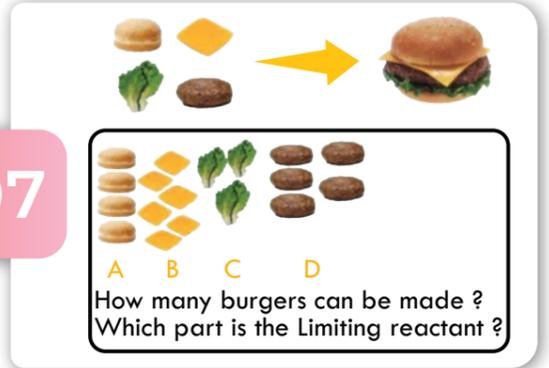(C) Na_2O, BaO (D) $SnCl_2$, $SnCl_4$

03 — DALTON'S ATOMIC THEORY

- ATOMS MAKE UP ALL MATTER
- ATOMS OF THE SAME ELEMENT ARE IDENTICAL
- ATOMS CANNOT BE CREATED, DIVIDED, OR DESTROYED
- ATOMS OF DIFFERENT ELEMENTS CAN COMBINE TO FORM COMPOUNDS IN SIMPLE WHOLE NUMBER RATIOS
- IN CHEMICAL REACTIONS, ATOMS ARE REARRANGED, COMBINED, AND SEPARATED

04 — MOLE CONCEPT

MOLE

6.022×10^{23} PARTICLES	MASS OF 1 MOLE IS MOLAR MASS	VOLUME OF 1 MOLE GAS IS MOLAR VOLUME	MOLAR VOLUME AT STP IS 22.4 L OR 22400 ML

Q) Which one of the followings has maximum number of atoms ?
(A) 1 g of $Mg(s)$ [Atomic mass of Mg = 24]
(B) 1 g of O_2 [Atomic mass of O=16]
(C) 1 g of $Li(s)$ [Atomic mass of Li = 7]
(D) 1 g of $Ag(s)$ [Atomic mass of Ag = 108]

08 — STOICHIOMETRIC CALCULATIONS

FIRST IDENTIFY THE LIMITING REACTANT BY CALCULATING THE REQUIRED MOLES & AVAILABLE MOLES OF REACTANTS.

THEN CALCULATE THE AMOUNT OF PRODUCT FROM THE AMOUNT OF LIMITING REACTANT.

Q) When 22.4L of $H_2(g)$ is mixed with 11.2L of $Cl_2(g)$, each at STP, the moles of HCl(g) formed is equal to :
(A) 0.5 (B) 1.5 (C) 1 (D) 2

07 — LIMITING REACTANT

How many burgers can be made ?
Which part is the Limiting reactant ?

Q) The number of moles of hydrogen molecules required to produce 20 moles of ammonia through Haber's process is :
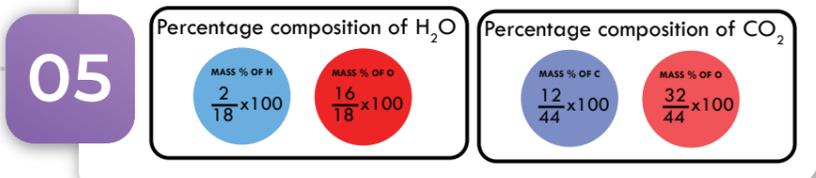(A) 40   (B) 10   (C) 20   (D) 30

06 — EF & MF

ACTUAL FORMULA	SIMPLEST FORMULA
Molecular Formula	Empirical Formula
$C_3H_6O_3$	CH_2O
$C_{10}H_{14}N_2$	C_5H_7N
$C_{12}H_{22}O_{11}$	$C_{12}H_{22}O_{11}$

Q) An organic compound contains 80% (by wt.) C & the remaining percentage of H . The empirical formula of this compound is :
(A) CH_3 (B) CH_4 (C) CH   (D) CH_2

05 — PERCENTAGE COMPOSITION

Percentage composition of H_2O

MASS % OF H	MASS % OF O
$\frac{2}{18} \times 100$	$\frac{16}{18} \times 100$

Percentage composition of CO_2

MASS % OF C	MASS % OF O
$\frac{12}{44} \times 100$	$\frac{32}{44} \times 100$

Q) Mass % of carbon in ethanol is :
(A) 52 (B) 13 (C) 34 (D) 90

01 — NATURE OF MATTER

MATTER
- PURE SUBSTANCE — ELEMENTS, COMPOUNDS
- MIXTURE — HOMOGENEOUS, HETEROGENEOUS

PW