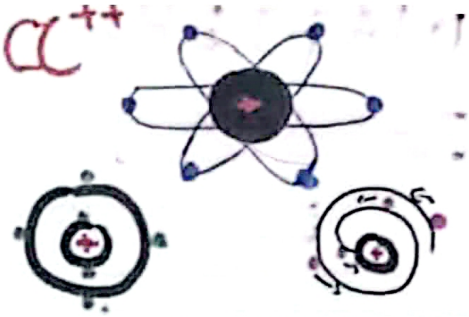
Atomic Structure :-

MAP OF :-



Dalton's Model :- (1803) (John Dalton)

Postulates:-

- Elements composed of atoms that are indivisible.
- Identical.
- During chemical reactions, atoms combine, separate or re-arrange. (law of conservation of mass)
- atoms neither be created nor destroyed.

Bohr Model :- (1918)

- (•) Light absorption
- (•) $\Delta E = E_2 - E_1$
- (•) Electron revolves.
- (•) Electron $\propto$ Distance from nucleus
- (•) Light emitting

Atom emits energy

Atom absorb energy

Quantum Mech. M:-

- current Model
- Electron as wave-particle.

Heisenberg U.P:-

- Impossible to determine the exact location of Electron.

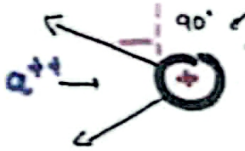
Neutron = An isotope
Proton = An atom

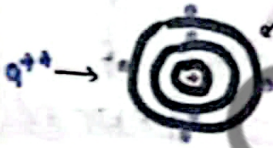
RUTHERFORD MODELS:- (1911)

(•) Purpose:- To find arrangement of atoms which contain sub-atomic particles like electrons by protons.

(•) Observation:-

Straight





α-particles are called massive because they have double positive charge

(•) Conclusion:-
- Planetary model.
- Atom is neutral.
- Electron revolve.
- Circles are called orbits
- Mass of an atom is concentrated in a small dense.

(•) Note:- The C.F by E.S.F are equal so that's why electron is still in one points.

Radioactivity:-

- unstable nuclei.

Examples:-

$^{14}_{6}C \longrightarrow {}^{14}_{7}N + \beta + \nu$

$^{238}_{92}U \longrightarrow {}^{234}_{90}Th + {}^{4}_{2}He$

Movement of protons by neutrons occurs when the nucleus emits radiation.

R.A.M:-

- Refers:- To the average mass of an atom of an element compared to 1/12th the mass of a carbon-12 atom.

A.M.U:-

It is the Standard unit for measuring atomic & molecular masses, defined as 1/12th the mass of a C-12 atom.

Isotopes:-

- Iso = Same
- Tope = place
- Chemically alike
- Used by Soddy.
- Nuclei are different.
- diff in physical properties.
- Greek word, isos, tope.
- Atoms are similar.

- H-1, H-2, H-3
- C-12, C-13, C-14
- Cl-35, Cl-75
- U-234, U-235, U-238

(•) Metals are cations
(•) Non-metals are anions.

Uses :-

- (•) Thyroid problem
- (•) Trace to flow of blood.
- (•) Image the brain.
- (•) Irradicate cancer cells.
- (•) Trace path of carbon.
- (•) Study mechanism of chemical reactions.
- (•) used to date rocks soil, mummies, archaeological objects.

Cations:- positively charge (+)

Anions:- negatively charge. (-)

$Na \longrightarrow Na^+ + e^-$ (cation)

$Cl + e^- \longrightarrow Cl^-$ (Anion)