

Structure of Atom

- Thomson's model
- Rutherford's model
- Bohr's model of atom
- nucleus
- valency
- Atomic no & Atomic mass
- Isotopes & Isobars

Matter \rightarrow Small part \rightarrow atom

Dalton's Atomic Theory



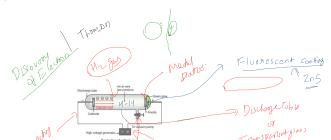
Plastic comb - charged body

Charges
Plastic comb - matter = atom.

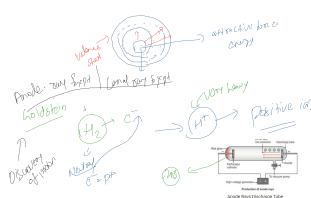
Proton \rightarrow Neutral
 $e^- = p^+$
atom is divisible

Hair \rightarrow matter $e = p$

Electron $\rightarrow e^-$
Initially neutral \rightarrow -vely charged.



Charged particle e^-
Cathode - -vely charged
Anode - +vely charged



- e^- mass $\approx 1.67 \times 10^{-27}$ kg
- proton mass $\approx 1.67 \times 10^{-27}$ kg

charge unit - Coulomb

$$\frac{e^-}{p^+} = \frac{e}{p} \quad \left\{ \begin{array}{l} \text{charge} \\ \text{mass} \end{array} \right.$$

Thomson's Atomic Model

✓ It had been well established that atom

contains -vely charged particles (ie electrons)

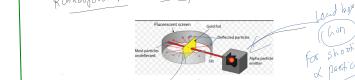
↳ to maintain electrical neutrality of the atom, positive charges were also present within the atom.

(Q) How that -ve charges & Positive charges are distributed within the atom.

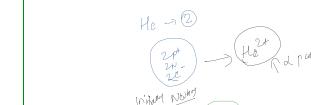
J J Thomson, in 1904, proposed that an atom was a sphere of two electricity in which were embedded no of electrons sufficient to neutralize the +ve charges.

Planetary model

Rutherford Model of atom / Gold-foil experiment



α-particles \rightarrow charged particles
A layer on e^- - very slow
Same on e^- - very rapid



Bohr's model of the atom

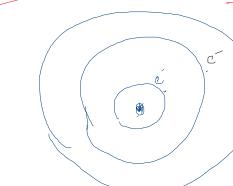
W.M.

discrete orbits

distinct,

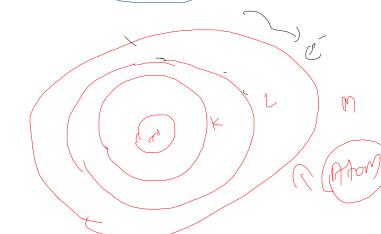
Postulates of Bohr's

2 properties \rightarrow Radius
Energy



Energy ↑

Moved outwards
from the nucleus



Arrangement of e^- & proton

↳ Thomson's model

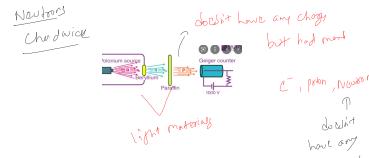
↳ Gold-foil expmd

↳ Rutherford's model

Discovery of Neutrons

Atom is divisible

Cathode ray expmd \rightarrow electrons \rightarrow J J Thomson
Anode ray expmd \rightarrow protons \rightarrow Goldstein



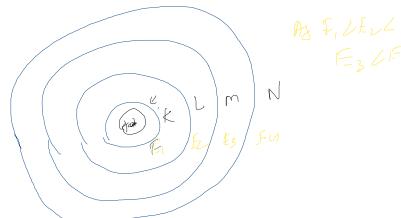
	mass	$1s^2$	$1p^1$	$1n^1$
charge	down	$-e$	$+e$	0
electron	-1 unit $(-1.602 \times 10^{-19} C)$	$9.11 \times 10^{-31} kg$	$1.67 \times 10^{-27} kg$	$(1.67 \times 10^{-19}) C$
proton	+1 unit $(1.602 \times 10^{-19} C)$	$1.67 \times 10^{-27} kg$	$-e$	$1n$
neutron	No charge	$(1.602 \times 10^{-19}) C$	$1n$	0

Distribution of Electrons

- ✓ Electronic Configuration of — Distribution or arrangement of the element

electrons in the different shells of the atom.

- ✓ How we can make stable by arranging electrons



- ✓ $2n^2$ rule → shell's capacity to accommodate 8. Shell can accommodate only fixed no. of electrons

