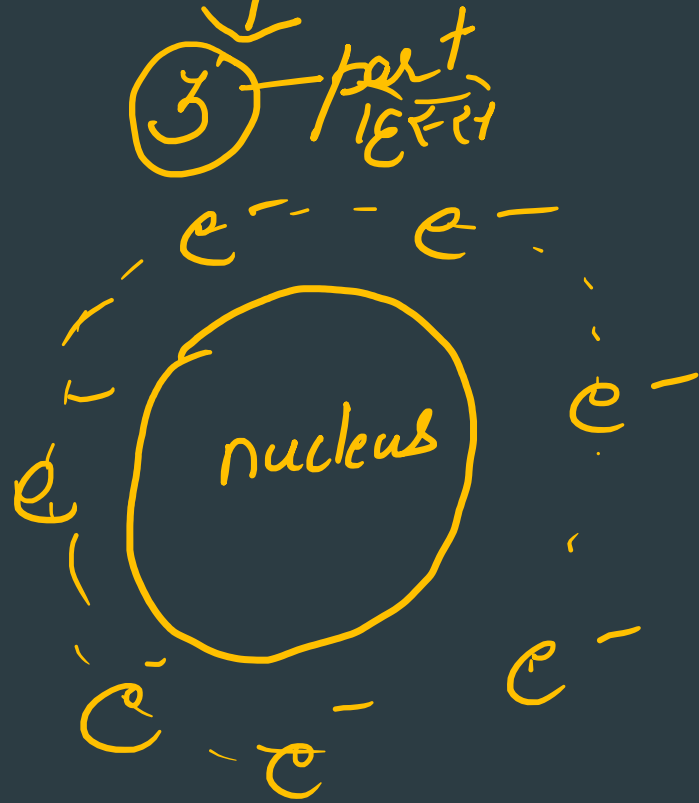


Chemistry  $\Rightarrow$

again — start  
 $\Downarrow$

Atom  $\text{यस्य}$



Electron

Proton  
प्रोटोन

Neutron  
न्यूट्रॉन

Charge  $\Rightarrow$  -ve  
ऋण

$$-1.6 \times 10^{-19} \text{ C}$$

+ve  
 $+1.6 \times 10^{-19} \text{ C}$

no charge  
कोई आवेश  
नहीं

electron  $\Rightarrow -ve (-1.6 \times 10^{-19}C)$   
discovery  $\Rightarrow$  J.J Thomson

\* Goldstein proposed that there is a positive charge like electron

Proton  $\Rightarrow$  केंद्रीय  $\Rightarrow$  Goldstein  
discovery  $\Rightarrow$  Rutherford  
nucleus discovered by Rutherford

neutron  
न्यूट्रॉन  $\rightarrow$  discovery  
खोज  
Chadwick

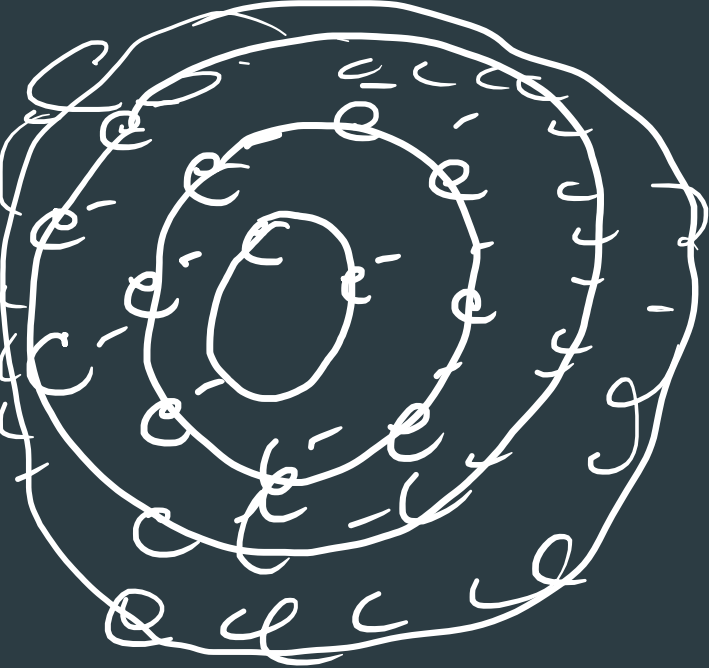
trick  
Electron  $e^-$  Thomson  
Proton  $p^+$  but Goldstein  
Rutherford (nucleus)  
neutron  $n^0$  Chadwick

Atomic no  $\rightarrow$  no of proton + no of neutron  
परमाणु संख्या प्रोटॉन संख्या और न्यूट्रॉन संख्या

$$Z = p + n$$

for ex  $\rightarrow$  no of proton  $\Rightarrow 10$   
Atomic no is  $= 11$  then find the neutron  
न्यूट्रॉन को पता लगाये

$$\begin{aligned} Z &= p + n \\ n &\Rightarrow Z - p = 11 - 10 \Rightarrow 1 \end{aligned}$$



Shell

$$2n^2$$

$n = \text{no of shell}$



$$\begin{aligned} K &= 2 \\ L &= 8 \\ M &= 18 \\ N &= 32 \end{aligned}$$

$\Rightarrow$  (1)  $\Rightarrow$  K shell  
 $2n^2 \Rightarrow 2(1)^2 \Rightarrow 2$

(2) L shell  
 $2n^2 = 2(2)^2 = 2 \times 4 \Rightarrow 8$

(3) M shell  
 $2n^2 = 2(3)^2 = 9 \times 2$   
 $\Rightarrow 18$

(4) N shell  
 $2n^2 = 2(4)^2 = 2 \times 16$   
 $\Rightarrow 32$



# Periodic Table of the Elements

Diagram illustrating the Periodic Table of the Elements, highlighting the first two columns (IA and IIA) and the element Oxygen (O) in the bottom right corner.

**Legend:**

- State of matter (color of name):** GAS (red), LIQUID (blue), SOLID (green), UNKNOWN (grey).
- Subcategory in the metal-metalloid-nonmetal trend (color of background):**
  - Alkali metals (red)
  - Alkaline earth metals (orange)
  - Transition metals (blue)
  - Lanthanides (light blue)
  - Actinides (light green)
  - Post-transition metals (light purple)
  - Metalloids (yellow)
  - Reactive nonmetals (light green)
  - Noble gases (pink)
  - Unknown chemical properties (grey)

**Highlighted Elements:**

- Group 1 (IA):** Hydrogen (H), Lithium (Li), Sodium (Na), Potassium (K), Rubidium (Rb), Cesium (Cs), Francium (Fr).
- Group 2 (IIA):** Beryllium (Be), Magnesium (Mg), Calcium (Ca), Strontium (Sr), Barium (Ba), Radium (Ra).
- Oxygen (O):** Atomic Number 8, Symbol O, Name Oxygen, Atomic Weight 15.999, State of matter: Gas.
- Oganesson (Og):** Atomic Number 118, Symbol Og, Name Oganesson, Atomic Weight 284, State of matter: Unknown.

|                                  |                                |                                     |                                 |                                   |                                  |                                  |                                  |                                  |                                    |                                    |                                 |                                     |                                  |                                    |
|----------------------------------|--------------------------------|-------------------------------------|---------------------------------|-----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|------------------------------------|------------------------------------|---------------------------------|-------------------------------------|----------------------------------|------------------------------------|
| 57<br>La<br>Lanthanum<br>138.905 | 58<br>Ce<br>Cerium<br>140.12   | 59<br>Pr<br>Praseodymium<br>140.908 | 60<br>Nd<br>Neodymium<br>144.24 | 61<br>Pm<br>Promethium<br>144.913 | 62<br>Sm<br>Samarium<br>150.36   | 63<br>Eu<br>Europium<br>151.964  | 64<br>Gd<br>Gadolinium<br>157.25 | 65<br>Tb<br>Terbium<br>158.925   | 66<br>Dy<br>Dysprosium<br>162.50   | 67<br>Ho<br>Holmium<br>164.930     | 68<br>Er<br>Erbium<br>167.259   | 69<br>Tm<br>Thulium<br>168.934      | 70<br>Yb<br>Ytterbium<br>173.054 | 71<br>Lu<br>Lutetium<br>174.967    |
| 89<br>Ac<br>Actinium<br>227.03   | 90<br>Th<br>Thorium<br>232.038 | 91<br>Pa<br>Protactinium<br>231.036 | 92<br>U<br>Uranium<br>238.029   | 93<br>Np<br>Neptunium<br>237.048  | 94<br>Pu<br>Plutonium<br>244.064 | 95<br>Am<br>Americium<br>243.061 | 96<br>Cm<br>Curium<br>247.070    | 97<br>Bk<br>Berkelium<br>247.070 | 98<br>Cf<br>Californium<br>251.081 | 99<br>Es<br>Einsteinium<br>252.083 | 100<br>Fm<br>Fermium<br>257.105 | 101<br>Md<br>Mendelevium<br>258.106 | 102<br>No<br>Nobelium<br>259.108 | 103<br>Lr<br>Lawrencium<br>262.109 |



# Elements - દ્વિતીય

Metal ધાતુ  
ex → Iron લોહ  
copper તાંબા  
Zinc ઝાકા

Non-Metal  
અધાતુ  
ex → gases ગેસ  
Carbon

Metalloids  
↓  
(ધાતુ અને અધાતુ  
કે વચ્ચે કે  
b/w metal and  
non-metal)  
↓  
(ex) Silicon and Germanium

Elements  $\rightarrow n\overline{c}a$

Acc<sup>n</sup> to Modern periodic table

118 elements  
 $n\overline{c}a$  ✓✓

Clement dīā - 1<sup>st</sup> line  
ET - (ET - 1) ↓ ×

Symbol  
↓  
given by  
J.J Berzelius

ET → H - Hydrogen

ET → Li - Lithium

ET → Na - Sodium

ET → K - Potassium

ET → Rb - Rubidium

ET → Cs - Cesium

ET → Fr - Francium

Hydrogen  $\rightarrow H \Rightarrow {}^1_1H$   
 $\rightarrow$  no neutron is found  
जु शोन नई फाय जात।

Atomic no  $\Rightarrow p+n$   
परमाणु संख्या

$$Z = p + n$$

$$Z = 1 + 0$$

$$\boxed{Z = 1}$$

Smallest element सबसे छोटा तत्व

$\rightarrow$  known as Rogue element  
अबारा धातु के नाम से जाना जाता है

Lithium  $\rightarrow$  Li  $\Rightarrow$

lightest element  
✓ સૌથી હલકો તત્વ

use  $\Rightarrow$  for making artificial Pacem-  
aker  
(Battery)

Sodium ના  $\text{Na}$  — ① સવામે વાલા નામક  
edible salt  $\Rightarrow$  NaCl

Sodium Chloride  
(Common salt, table salt)  
Rock salt

→ Baking soda → Sodium biCarbonate ( $\text{NaHCO}_3$ )  
Caustic Soda → Sodium hydroxide ( $\text{NaOH}$ )  
Washing Soda → Sodium Carbonate ( $\text{Na}_2\text{CO}_3$ )

Potassium - K ⇒ → Red medicine  
लाल दवा  
↓  
 $\text{KMnO}_4$  (Potassium  
per Manganate)





## II line $\Rightarrow$ नाप और बेर

बेर  $\rightarrow$  Be  $\rightarrow$  Beryllium

माग  $\rightarrow$  Mg  $\rightarrow$  Magnesium

कार  $\rightarrow$  Ca  $\rightarrow$  Calcium

स्ट्रॉन्  $\rightarrow$  Sr  $\rightarrow$  Strontium

बा  $\rightarrow$  Ba  $\rightarrow$  Barium

रेड  $\rightarrow$  Rb  $\rightarrow$  Radium

Beryllium - Be → Coloured stone  
રંગીન પત્થર



Magnesium - Mg →  pigment ⇒ Chlorophyll  
ભરણ

metal ધાતુ

magnesium

Calcium - Ca  $\Rightarrow$

①  $\Rightarrow$  Calcium found in blood  
रक्तधेर में पाया जाता है

$\downarrow$   
To form blood clott रक्तधेर को  
थक्का जमाने के लिए

②  $\text{CaO} \rightarrow$  चूना  
Calcium oxide Quick lime

Use  
= cement

$\text{CaO} + \text{H}_2\text{O} \Rightarrow \text{Ca(OH)}_2 \rightarrow$  Slack lime  $\Rightarrow$  white wash  
Calcium hydroxide बुझा चूना

Strontium  $\rightarrow$  X

Barium - Ba  $\Rightarrow$

Use  $^{235}\text{U}$

nuclear fission  
विखण्डन

Nuclear reactor or Atomic Reactor  
परमाणु reactor

Chain reaction

