

Formula:

① Atomic mass (A) = no. of protons (P) + no. of neutrons (N)

Atomic no. (Z) = no. of protons (P)

$A = P + N$

$Z = P$

$1 \text{ u} = 1.660539 \times 10^{-27} \text{ kg}$

② Isotopes:— Atomic no. same but mass different.

If there are n isotopes of any atoms with atomic masses m_1, m_2, \dots, m_n and corresponding abundances of isotopes are p_1, p_2, \dots, p_n % then

average mass = $\frac{p_1 m_1 + p_2 m_2 + \dots + p_n m_n}{100}$

③ Size of the nucleus:—

$R = R_0 A^{1/3}$

$R_0 = 1.2 \times 10^{-15} \text{ m}$

$A \rightarrow$ Atomic mass

nuclear density = $\frac{\text{mass}}{\text{Volume}}$

④ Mass energy relation:—

$E = mc^2$

c = speed of light

If $m = 1 \text{ gram}$

$E = 9 \times 10^{16} \text{ J}$