

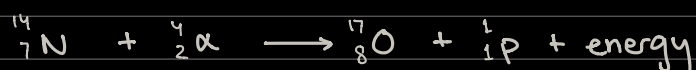
NUCLEAR REACTIONS : RADIOACTIVITY

- Nuclear reactions are important because these reactions are capable of releasing large amounts of energy
- They are classified into two types :
 - i) Nuclear Fission
 - ii) Nuclear Fusion

Fission refers to the breaking up of a large nucleus into smaller fragments



Fusion involves the combining of smaller fragments to form a large nucleus



The syllabus that the following symbolic representations for subatomic particles be learned :

Proton ${}_1^1\text{p}$ Alpha ${}_2^4\text{He}$ or ${}_2^4\alpha$

Neutron ${}_0^1\text{n}$ Beta ${}_{-1}^0\beta$ or ${}_{-1}^0\text{e}$ or β^-

Electron ${}_{-1}^0\text{e}$ Gamma γ

- During any nuclear reaction, the proton number, momentum, nucleon number and mass + energy is conserved
- However, mass or energy alone is not conserved because some of the mass gets converted into energy

Q. Why is energy released in a nuclear reaction?

A. It is believed that in a nuclear reaction, there is always a loss in mass i.e. the mass of the products is less than the mass of the reactants

↳ This difference in mass releases energy in a nuclear reaction