



SNS COLLEGE OF ALLIED HEALTH SCIENCES- COIMBATORE 35



DEPARTMENT : RADIOGRAPHY AND IMAGNG TECHNOLOGY

**SUBJECT : GENERAL PHYSICS, RADIATION PHYSICS AND PHYSICS OF
DIAGNOSTIC RADIOLOGY**

PAPER : PAPER II

**TOPIC : 1. ATOMIC NUMBER
2. MASS NUMBER
3. CLASSIFICATION OF ATOM**



ATOMIC NUMBER (Z)



- Atomic number of an atom is the number of protons in the nucleus. It is also equal to the number of electrons of the atom
- Which represented by “Z”

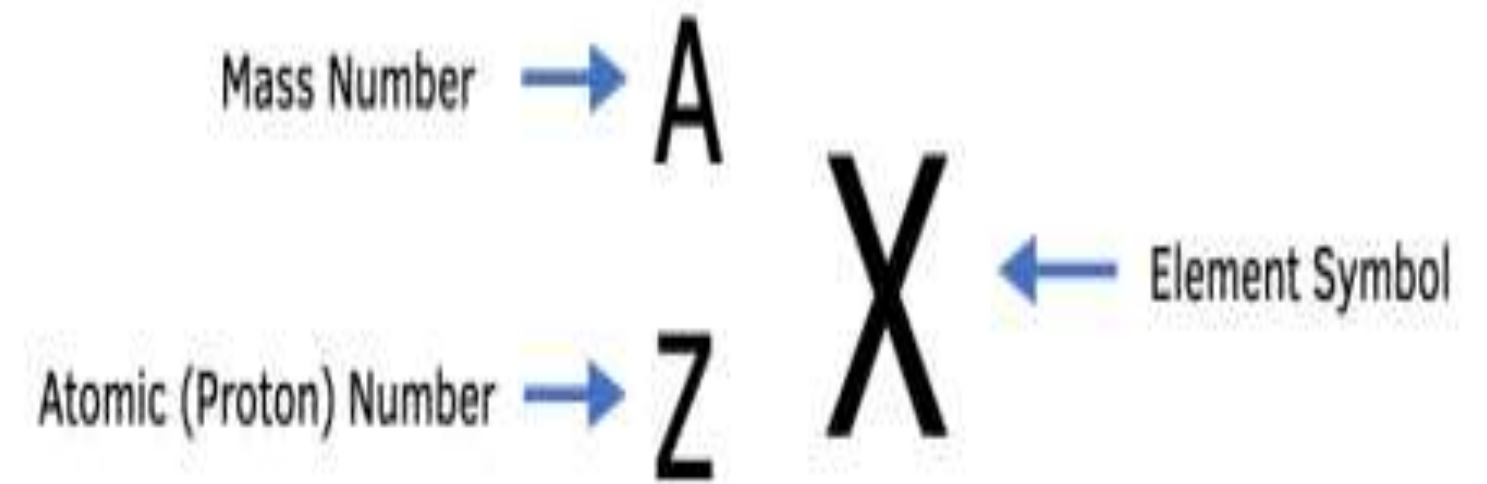


Fig 3. Nuclear Symbols.



MASS NUMBER (A)



- The mass number of the atom is the total number of protons and neutrons in the nucleus
- It is denoted by “ A “ .

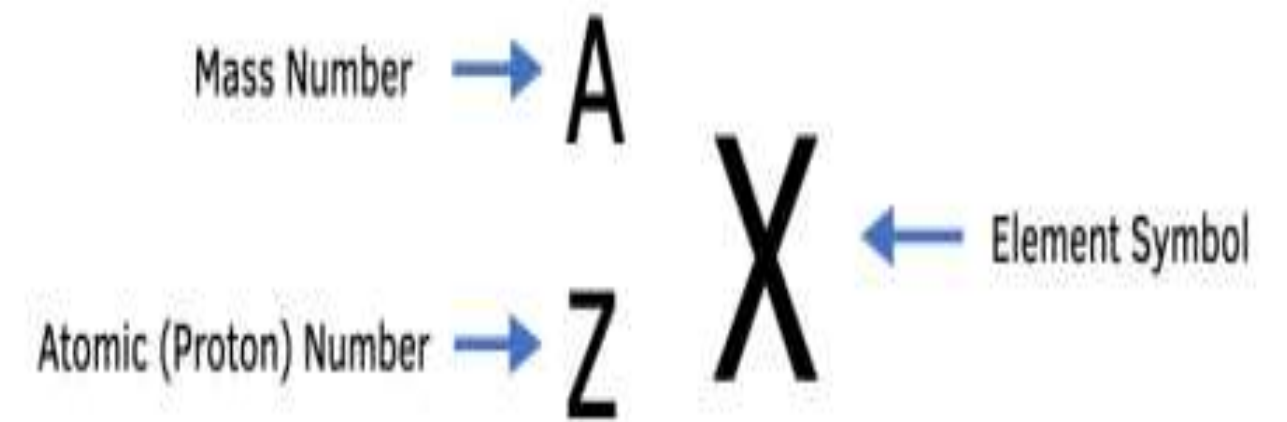
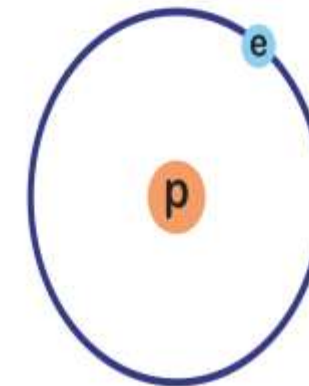


Fig 3. Nuclear Symbols.

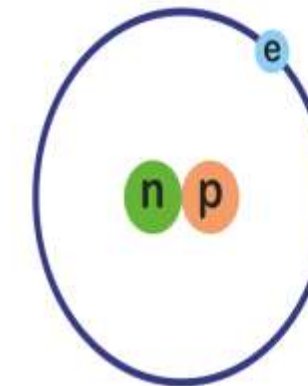
ISOTOPES

- The atoms composed of nuclei with the same number of protons but different number of neutrons is called isotopes.
- In other words, Isotopes have the same atomic number and different mass number
- Isotopes of an element have the same chemical properties but have different physical properties.
- Isotopes capable of performing radioactivity are called radio-isotopes and their nucleus is said to be unstable

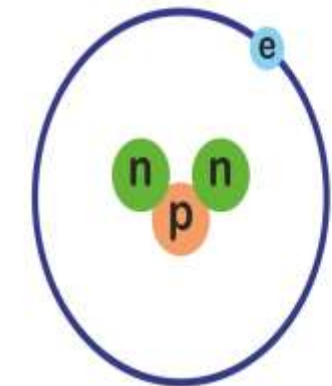
Hydrogen



Deuterium



Tritium





ISOTONES



- Atom with same number of neutrons but different of (Z) atomic number

ISOTONES	PROTONS	NEUTRONS	ELECTRONS
${}^6_6\text{C}^{14}$	6	8	6
${}^7_7\text{N}^{15}$	7	8	7



ISOTONES



- Atoms with same mass number (A). But different atomic number (Z).

- Example





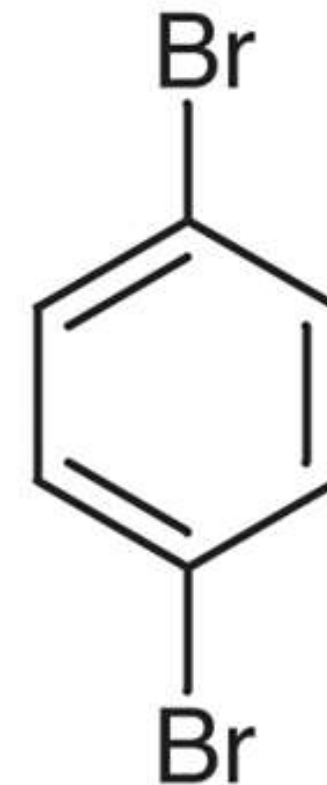
ISOMERS



- Atoms with same mass number (A). And same atomic number (Z) but different nuclear energy states.

Example (functional groups)

- Dibromobenzene





INTERROGATIONS



1. What is Atomic number ?
2. What is Mass number ?
3. Explain isotopes
4. Explain isobars
5. Define isotones
6. Define isomers



REFERENCES

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3. Basic Medical Radiation physics – Stanton.
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5. The physics of Radiology and Imaging – K Thayalan.



THANK YOU