

Atomic Structure DPP 1

- Which one of the following proposed the atomic theory of matter?
(a) John Dalton (b) J.J. Thomson (c) Rutherford (d) Niels Bohr
- Nucleons are
(a) protons only (b) neutrons only
(c) protons and neutrons (d) protons and electrons
- proposed the apple pie pudding model of an atom.
- Mass of an electron is $1/1837$ times less than the mass of one atom of
- An atom is made of charged particles called protons and electrons. Why is an atom uncharged ?*
- What are the limitations of J.J. Thomson's model of the atom?
- Describe Bohr's model of the atom.
- Compare the properties of electrons, protons and neutrons.
- For the following statements, write T for True and F for False.
 - J.J. Thomson proposed that the nucleus of an atom contains only nucleons.
 - A neutron is formed by an electron and a proton combining together. Therefore, it is neutral.
 - The mass of an electron is about $1/1837$ times that of proton.
- Rutherford's alpha-particle scattering experiment was responsible for the discovery of
(a) Atomic Nucleus (b) Electron (c) Proton (d) Neutron

DPP 2

1. What is meant by the following statements :

(i) Atomic number of calcium is 20?

(ii) Mass number of calcium is 40?

2. What is meant by the statement that atomic number of sodium is 11?

3. What do you understand by the term electronic configuration? Write down the electronic configuration of the following elements.

(i) Magnesium (At. No. 12). (ii) Chlorine (At. No. 17).

4. An atom of fluorine may be written as ${}_{19}\text{F}$. Write down : 9

(1) the number of protons.

(2) the number of neutrons.

(3) the number of electrons in an atom of fluorine. Show the atom by geometric diagram.

5. From the symbol state : ${}_{12}^{24}\text{Mg}$

(i) its mass number, (ii) its atomic number, (iii) its electronic configuration.

6.

Element	Mass No.	Atomic No.	Number of protons	Number of neutrons
Potassium	39	19		
${}_{17}^{35}\text{Cl}$				
${}_{17}^{37}\text{Cl}$				

(a) Complete the table given above.

(b) What is the name given to the pair of atoms, such as ${}_{17}^{35}\text{Cl}$ & ${}_{17}^{37}\text{Cl}$

7. ${}_{12}^{26}\text{Mg}$ and ${}_{12}^{24}\text{Mg}$ are the symbols of two isotopes of magnesium. Compare the atoms of these isotopes with respect to :

(i) Composition of their nuclei.

(ii) Electronic configuration.

(iii) Give reason why the two isotopes of magnesium have different mass numbers.

8. Complete the following table :

Element	Mass No.	Atomic No.	Neutrons	Protons	Electrons	Electronic configuration
Carbon	12	-----	-----	-----	6	-----
Aluminium	-----	13	14	-----	-----	-----
Fluorine	19	-----	-----	-----	-----	2, 7
Argon	-----	-----	22	18	-----	-----
Helium	4	-----	-----	-----	2	-----
Sodium	23	11	-----	-----	-----	-----

DPP 3

1. What do you understand by the term valence electrons?
2. An element is represented as ${}_{20}^{40}\text{X}$. Name the shell which has valence electrons and the number of valence electrons in it.
3. Amongst the electrons revolving around the nucleus, which electrons
(i) determine the chemical properties of an element, (ii) do not determine the chemical properties of an element? Give reasons for your answer.

4. Choose the correct words from the brackets.

1. Valency is the number of (electrons/protons) donated or accepted by an atom of an element so as to have an electronic configuration of the nearest noble gas.
2. The nuclear reaction in which two lighter nuclei are fused together to form a heavier nucleus is called nuclear (fission/fusion).
3. If an element 'X' has six electrons in its outer or valence shell, its valency is (2^+ / 2^- / 1^-).
4. An application of nuclear fission is the (atomic bomb/hydrogen bomb).
5. The element (magnesium/silver) exhibits variable valency.

5. State True/False

Cations are negatively charged particles
Metals always form negatively charged ions.

6. (a) Define: (i) Valency (ii) Variable valency.
(b) Name two elements having variable valency and state their valencies.
7. Define Radioactivity and write about alpha,beta,gamma particles