

Chapter 6

STRUCTURE OF AN ATOM

REVIEW EXERCISES

Q.1 Write short answers of the following questions:

- a) Which particles are found within the nucleus of an atom? What electrical charges do they carry?**

Ans: The particles are found within the nucleus are following.

Proton Neutron and Electron

Proton has positive charge of +1.

Electron has a negative electrical charge -1.

Neutron has no charge.

- b) Name the particles which revolve around the nucleus of an atom.**

Ans: Electron is a particles which revolve around the nucleus of an atom.

- c) Why atom is neutral?**

Ans: Atom is neutral because it loss and gain electrons.

- d) Draw the atomic structures of the following elements?**

(i) Magnesium

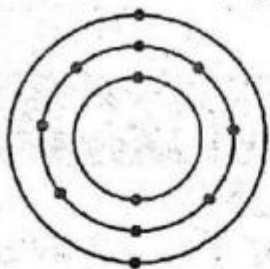
(ii) Silicon

(iii) Sulphur

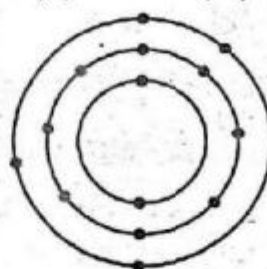
(iv) Calcium

(v) Aluminium

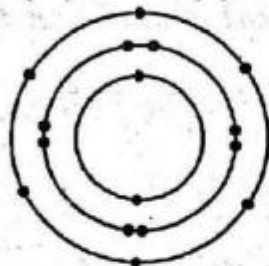
(i) Magnesium(Mg)



(ii) Silicon(Si)



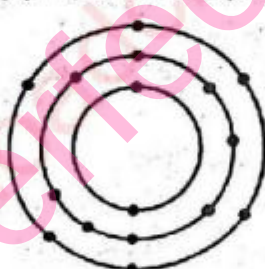
(iii) Sulfur(S)



(iv) Calcium(Ca)



(v) Aluminum(Al)



e) *Differentiate between cations and anions.*

Ans: Cations

- 1) Atoms which lose electrons will become positively charged are known as cations.
- 2) The size of a cation is smaller than that of its parent neutral atom.

Anions:

- 1) Atoms which gain electrons will become negatively charged and form negative ion which is

called anion.

- 2) The size of an anion is greater than that of its parent neutral atom.

Q.2 Complete the table below.

S.No.	Atom	Ion	No. of Protons in ion	No. of electrons in ion
1.	Chlorine	-1	17	18
2.	Sodium	+1	11	10
3.	Potassium	-1	19	18

Q.3 How many electrons do the following elements have in their valence shells? Write down their valencies.

- (a) Nitrogen (b) Helium
(c) Lithium

S.No.	Elements	Electron in Valence Shell	Valencies
1.	Nitrogen	5	-1
2.	Helium	0	-1
3.	Lithium	1	+1

Q.4 Which element has one electron in its outermost shell?

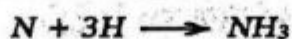
Ans: Lithium has one electron in its outermost shell.

Q.5 Write down the number of carbon and hydrogen atoms in methane?

Ans: Methane has one carbon atom and four hydrogen atoms.

Q.6 Write down the chemical formula of ammonia molecule, which contains one nitrogen and three hydrogen atoms.

Ans: NH_3



Q.7 Complete the table:

S.No.	Compounds	Chemical formula	Elements	Ratios between atoms
1	Water	H_2O	Hydrogen Oxygen	2 : 1
2	Aluminium oxide	Al_2O_3	Aluminum oxygen	2 : 3
3	Calcium oxide	CaO	Calcium oxygen	1 : 2
4	Hydrochloric acid	HCl	Nitrogen Chlorine	2 : 1
5	Calcium fluoride	CaF_2	Chlorine Calcium	1 : 2

Q.8 Choose the correct answer from the given choices.

- The entire mass of an atom is concentrated in the center of an atom is called Nucleus.
- The mass of an atom is determined by Neutron + proton.
Neutron + electron, Electron + proton, Neutron + proton.
- Atoms of same element having different mass number are called Isotopes.
Anions, Cations, Isotopes
- Chemical formula shows Number of atoms in a compound.
Number of atoms in a molecule, Number of atoms of each element, Number of atoms in a compound.
- An atom has atomic number 16 and mass number 32, the number of protons is 16.
16, 32, 18

Q.9 Fill in the following chart.

Atomic No.	Mass No.	No. of Protons	No. of neutrons	No. of electrons	Symbol of element	Isotope
6	12	6	7	6	S	13:14
12	24	12	13	12	Mg	25:6
17	35	17	18	17	Cl	35:36
13	26	13	14	13	Al	27:28

Q.10(a) Define Valency.

Ans: Valency

Valency is the power of combining of an atom with other atoms to form molecules or compound.

An atom may need to gain or lose an electron from its outermost or valence shell, which has to complete its outermost shell, so that it will be like noble gases. This tendency to lose or gain an electron is called Valency.

(b) State the law of constant composition and give examples.

Ans: Law of Constant Composition

A chemical compound always contains the same element combined together in the same proportion or ratio. For example clean water obtained from different sources such as river, well spring, sea etc., always made up of 2 hydrogen atoms and one oxygen atom in the ratio of 2 : 1.

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