ODM EDUCATIONAL GROUP
Changing your Tomorrow

ATOMS, MOLECULES AND RADICALS

SUBJECT-CHEMISTRY

CHAPTER NO- 4

Concept of Radicals, Valency and Variable valency.

PERIOD-3

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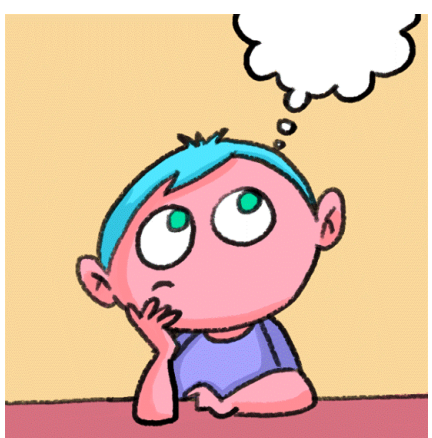
LEARNING OBJECTIVE

Students will be able to

- Know about the concept of Radicals
- Get aware of the concept of Valency.
- Know about the Variable Valency along with some examples.



WARM UP QUESTIONS

- Activate prior knowledge by asking students what is the Molecular formula of an element.
- After listening to their responses, test their knowledge on the symbols of some elements.
- Then ask them about Atomicity.
- Guide them to know about the radicals and its utility in writing a chemical formula.

RADICALS

- A Radical is an atom of an element or a group of atoms of different elements that behaves like a single unit.
- Radicals are of two types: -
- Basic Radical: - They have positive charge and are also called Cations.
- Acid Radical: - They have negative charge and are also called Anions.

POSITIVE RADICALS

Name of Radical	Representation	Valency
Hydrogen	H^+	1
Sodium	Na^+	1
Potassium	K^+	1
Silver	Ag^+	1
Ammonium	NH_4^+	2
Magnesium	Mg^{2+}	2
Calcium	Ca^{2+}	2
Zinc	Zn^{2+}	2
Iron(II)	Fe^{2+}	2
Gold	Au^{2+}	2
Copper(II)	Cu^{2+}	2
Iron(III)	Fe^{3+}	3
Aluminium	Al^{3+}	3
Tin(IV)	Sn^{4+}	4
Platinum(IV)	Pt^{4+}	4

NEGATIVE RADICALS

Name of Radical	Representation	Valency
Chloride	Cl^-	1
Bromide	Br^-	1
Hydroxide	OH^-	1
Acetate	CH_3COO^-	1
Nitrate	NO_3^-	1
Nitrite	NO_2^-	1
Bisulphate	HSO_4^-	1
Bisulphite	HSO_3^-	1
Bicarbonate	HCO_3^-	1
Oxide	O^{2-}	2
Carbonate	CO_3^{2-}	2
Sulphate	SO_4^{2-}	2
Sulphite	SO_3^{2-}	2
Dichromate	$Cr_2O_7^{2-}$	2
Nitrite	N^{3-}	3
Phosphate	PO_4^{3-}	3

CONCEPT OF VALENCY

Valency

- Valence electrons are those electrons which are present in the outermost orbit of the atom.
- The capacity of an atom to lose, gain or share valence electrons in order to complete its octet determines the valency of the atom.
- Examples: - The valency of hydrogen is one
- In hydrogen chloride molecule (HCl) one atom of chlorine combines with one atom of hydrogen, hence valency of chlorine is 1

CONCEPT OF VARIABLE VALENCY

Variable Valency

- Some elements show more than one valency or simply variable valency.
- The suffix *ous* is used for the lower valency and the suffix *ic* is used for the higher valency
- For example, IRON (II) is known as Ferrous with valency 2 and IRON (III) is known as Ferric with valency 3.

WATCH A VIDEO ON RADICALS

- https://youtu.be/h3mKX3QzrrI

HOME ASSIGNMENT

- Exercise Q1 (d) , Q5
- Define Valency.
- What do you mean by variable valency. Support your answer with an example.
- Mention the representation of the following Radicals a) Chloride b) Bromide c) Carbonate d) Calcium

THANKING YOU

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