

QUESTION BANK

STD-IX

SUBJECT-CHEMISTRY

CHAPTER-3

TOPIC- WATER

Q1. Short Question and Answer

1.A water sample does not form lather easily with soap. What does this show?

Answer: The water is hard water because it contains calcium and magnesium ions.

2. On boiling a water sample, a white solid is formed. Which type of salt was present in the water?

Answer: Soluble salts of bicarbonate of magnesium or Calcium.

3.A water sample contains calcium chloride and magnesium sulphate. Which type of hardness does it have?

Answer: Permanent hardness.

4.Why can boiling remove temporary hardness but not permanent hardness?

Answer: Bicarbonates break down on heating, but chlorides and sulphates do not.

5.A kettle is used for boiling hard water every day. A white layer forms inside it. What is this layer called?

Answer: Scale.

6.Why does scale reduce the efficiency of a boiler?

Answer: Scale does not allow heat to pass easily, so more fuel is needed.

7.Which chemical is used in Clark's process?

Answer: Calcium hydroxide (slaked lime).

8.Which chemical is used to remove permanent hardness from water?

Answer: Sodium carbonate (washing soda).

9.A water sample forms lather quickly with soap. What does this show?



Answer: The water is soft water.

10. What is the common product formed when temporary hardness is removed by boiling?

Answer: Calcium carbonate (CaCO_3).

11. Why does boiling not remove permanent hardness?

Answer: The salts causing permanent hardness do not break down on heating.

12. Why is hard water not suitable for boilers?

Answer: It forms a scale, which reduces heating efficiency.

13. How does washing soda remove permanent hardness?

Answer: It changes soluble calcium and magnesium salts into insoluble carbonates.

14. Write the reaction that shows removal of temporary hardness by boiling.

Answer: $\text{Ca}(\text{HCO}_3)_2 \rightarrow \text{CaCO}_3 \downarrow + \text{CO}_2 + \text{H}_2\text{O}$

Q2. Fill in the blanks

1. Water obtained after condensation of steam is called ____ water.
2. Temporary hardness is mainly caused by the bicarbonates of calcium and ____.
3. The gas evolved when steam reacts with red-hot iron is ____.
4. The chemical formula of washing soda is ____.
5. The compound used to remove temporary hardness by the Clark's process is ____.
6. The process of removing hardness by adding sodium carbonate is known as ____.
7. The anhydrous substance that turns blue on absorbing water is ____.

Answers

1. distilled
2. magnesium
3. hydrogen
4. $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$
5. slaked lime
6. precipitation
7. anhydrous copper sulphate

Q3. Assertion–reason questions



Choose:

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is not the correct explanation of A.

C. A is true but R is false.

D. A is false but R is true.

1. A: Ice floats on water. R: The density of ice is lower than that of water.
2. A: Distilled water is a good conductor of electricity. R: Pure water contains a large number of ions.
3. A: Temporary hardness can be removed by boiling. R: Boiling decomposes bicarbonates into insoluble carbonates.
4. A: Washing soda removes permanent hardness. R: Washing soda forms insoluble carbonates of calcium and magnesium.
5. A: Steam reacts with magnesium to produce magnesium oxide and hydrogen. R: Magnesium reacts only with cold water.
6. A: Anhydrous copper sulphate is used to test the presence of water. R: It changes from white to blue in the presence of water.
7. A: Hard water forms lather readily with soap. R: Calcium ions react with soap to form insoluble scum.

Answers

1. A
2. D
3. A
4. A
5. C
6. A
7. D

Q4.Case study questions

Case study 1: A village water supply

The water from a tube well forms scum with soap and gives poor lather.

1. Is the water hard or soft?
2. Name one ion responsible for this property.
3. Suggest one method to remove temporary hardness.

Answers: hard water; Ca^{2+} or Mg^{2+} ; boiling.



Case study 2: Heating hard water

A student boils hard water and observes a white deposit.

1. Which type of hardness is removed?
2. Name the deposit formed.
3. Why is boiling ineffective for permanent hardness?

Answers: temporary hardness; calcium carbonate; sulphates and chlorides do not decompose on boiling.

Case study 3: Steam and iron

Steam is passed over red-hot iron.

1. Name the gas evolved.
2. Write the product formed with iron.
3. Is the reaction oxidation, reduction, or both?

Answers: hydrogen; Fe_3O_4 ; both (redox reaction).

Case study: 4

A student heated hydrated copper sulphate crystal strongly. Then he added a few drops of water, and observed some changes.

Questions:

1. Name the colour of hydrated copper sulphate.

Answer: Blue

2. Why Hydrated is written with copper sulphate?

Answer: Because Copper sulphate contains Water of crystallization.

3. What were the observations on heating hydrated copper sulphate?

Answer: Observations- Crystals give out steamy fumes

Fumes condenses and forms colourless liquid

Crystals crumble to form powdery mass

The blue colour changes to white

4. Write the balanced equation.

Answer: $\text{CuSO}_4 + 5\text{H}_2\text{O} \rightarrow \text{CuSO}_4 \cdot 5\text{H}_2\text{O}$



5. What happens when water is added to heated copper sulphate?

Answer: The white colour changes to blue again.

Case study 5

A laboratory technician left sodium hydroxide pellets and quicklime exposed to air. After some time.

Questions:

1. What will he observe?

Answer: The sodium hydroxide became a liquid solution, while quicklime remained solid but increased in mass.

2. Which substance is deliquescent?

Answer: Sodium hydroxide.

3. Which substance is hygroscopic?

Answer: Quicklime.

4. Why did quicklime increase in mass?

Answer: It absorbed moisture from air.

5. Which can be used as a drying agent?

Answer: Quicklime.

6. Which should be stored in airtight containers?

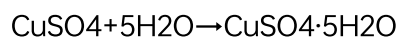
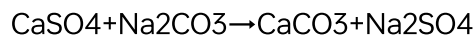
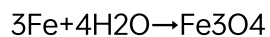
Answer: Both sodium hydroxide and quicklime.

Q5. Write balanced equations for the following reactions:

1. Steam reacts with red-hot iron.
2. Temporary hardness is removed by boiling.
3. Permanent hardness is removed using washing soda.
4. Anhydrous copper sulphate is exposed to water.



Answers



Q6. Write the equation and any one observation for the following reactions

1. Temporary hardness is removed by boiling calcium bicarbonate solution.



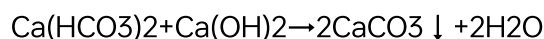
Observation: White precipitate of calcium carbonate is formed.

2. Temporary hardness is removed by boiling magnesium bicarbonate solution.



Observation: White precipitate of magnesium hydroxide is formed.

3. Removal of temporary hardness by Clark's process.



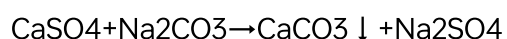
Observation: Insoluble calcium carbonate is formed.

4. Magnesium bicarbonate reacts with slaked lime.



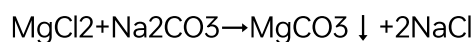
Products: Magnesium hydroxide and calcium carbonate precipitates.

5. Removal of permanent hardness using washing soda.



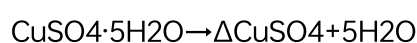
Observation: Calcium carbonate precipitates.

6. Magnesium chloride reacts with washing soda.



Products: Magnesium carbonate and sodium chloride.

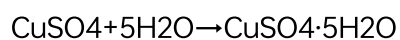
7. Water of crystallization is removed from hydrated copper sulphate.



Observation: Blue crystals become white.

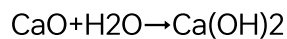
8. Anhydrous copper sulphate absorbs water.





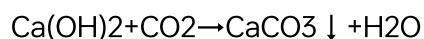
Observation: White powder turns blue.

9. Calcium oxide reacts with water.



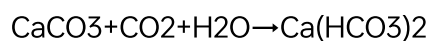
Product: Slaked lime.

10. Carbon dioxide reacts with lime water.



Observation: Lime water turns milky.

11. Excess carbon dioxide is passed through lime water.



Observation: Milkiness disappears due to formation of soluble calcium bicarbonate.

Q7. Multiple Choice Questions

1. Which of the following is a true solution?

- (a) Milk
 - (b) Salt in water
 - (c) Mud in water
 - (d) Chalk in water
- Ans- b

2. The particles in a suspension:

- (a) pass through filter paper
 - (b) settle on standing
 - (c) are invisible
 - (d) do not scatter light
- Ans- b

3. Which solution contains the maximum amount of solute at a given temperature?

- (a) Dilute
 - (b) Unsaturated
 - (c) Saturated
 - (d) Colloidal
- Ans- c

4. The Tyndall effect is shown by:



- (a) sugar solution
 - (b) sodium chloride solution
 - (c) starch solution
 - (d) copper sulfate solution
- Ans- c

5.A supersaturated solution is:

- (a) unstable
 - (b) very dilute
 - (c) a suspension
 - (d) insoluble
- Ans - a

6.Which compound shows a decrease in solubility with increase in temperature?

- (a) Potassium nitrate
 - (b) Sodium chloride
 - (c) Calcium hydroxide
 - (d) Sugar
- Ans-c

7.A concentrated solution contains:

- (a) less solute
 - (b) more solute
 - (c) equal solute and solvent
 - (d) no solvent
- Ans-b

8.Which of the following is not a colloid?

- (a) Blood
 - (b) Fog
 - (c) Air
 - (d) Butter
- Ans-c

9.Solubility is generally expressed in:

- (a) kg per 100 g water
 - (b) mg per litre
 - (c) g per litre
 - (d) percentage
- Ans-c

10.Which process is used to obtain crystals from a saturated solution?

- (a) Distillation
 - (b) Filtration
 - (c) Crystallization
 - (d) Sublimation
- Ans-c

11.Which has almost no change in solubility with increase in temperature?



- (a) KNO_3
- (b) NaCl
- (c) NH_4Cl
- (d) KClO_3

Ans-b

12.The solvent for rust is:

- (a) alcohol
- (b) water
- (c) benzene
- (d) oxalic acid

Ans- d

13.Which of the following shows anomalous property?

- (a) Epsom salt
- (b) Glauber's salt
- (c) Washing soda
- (d) Baking powder

Ans- b

14.Which property distinguishes a true solution from a suspension?

- (a) Homogeneity
- (b) Colour
- (c) Density
- (d) Taste

Ans-a

15. The particle size of colloids is

- (a) between 1nm to 1000nm
- (b) less than 1nm
- (c) more than 1000nm
- (d) between 1000nm to 2000nm

Ans-a

Q8.Give reason questions

1. Hydrated copper sulfate is blue whereas anhydrous copper sulfate is white.

Answer: The blue colour is due to the presence of water of crystallization.

2. Calcium chloride is kept in desiccators.

Answer: It absorbs moisture from the air.

3. Sodium hydroxide pellets become sticky when exposed to air.

Answer: They are deliquescent and absorb moisture.

4. Concentrated sulfuric acid is called a dehydrating agent.



Answer: It removes chemically combined water from compounds.

5. Anhydrous copper sulfate is used to detect water.

Answer: It turns blue in the presence of water.

6. Washing soda loses its shine on exposure to air.

Answer: It undergoes efflorescence by losing water from crystallization.

7. Dry ammonia gas cannot be dried with concentrated sulfuric acid.

Answer: Sulfuric acid reacts with ammonia.

8. Blue vitriol becomes white on heating.

Answer: It loses water of crystallization.

9. Quicklime is used for drying ammonia gas.

Answer: It absorbs moisture without reacting with the gas

10. A dehydrating agent is more powerful than a drying agent.

Answer: It can remove chemically combined water.

11. Zinc sulfate crystals become powdery on heating.

Answer: They lose water of crystallization.

12. Hygroscopic substances should be stored in airtight containers.

Answer: They absorb moisture from the atmosphere.

13. Deliquescent substances cannot be weighed accurately in open air.

Answer: They absorb moisture and dissolve.

14. Efflorescent salts should be stored in closed bottles.

Answer: They lose water of crystallization on exposure to air.

Q9. Name the following

1. A substance that absorbs moisture and dissolves in it.

Answer: Deliquescent substance.



2. A substance that absorbs moisture without dissolving.

Answer: Hygroscopic substance.

3. A substance that loses water of crystallization on exposure to air.

Answer: Efflorescent substance.

4. Water chemically combined with salt.

Answer: Water of crystallization.

5. White powder obtained by heating $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$.

Answer: Anhydrous copper sulfate.

6. Blue crystalline copper sulfate.

Answer: Hydrated copper sulfate.

7. A drying agent for ammonia gas.

Answer: Quicklime.

8. A dehydrating agent.

Answer: Concentrated sulfuric acid.

9. A deliquescent alkali.

Answer: Sodium hydroxide.

10. A hygroscopic oxide.

Answer: Calcium oxide.

11. A salt containing seven molecules of water.

Answer: Ferrous sulfate.

12. A salt containing ten molecules of water.

Answer: Washing soda.

13. The process of losing water of crystallization.

Answer: Dehydration.

14. The process by which a salt absorbs water and becomes hydrated.



Answer: Hydration.

15. A laboratory drying agent.

Answer: Anhydrous calcium chloride.

16. A substance used to test moisture.

Answer: Anhydrous copper sulfate.

17. A substance used in desiccators.

Answer: Calcium chloride.

18. A salt that effloresces.

Answer: $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$.

19. A salt known as blue vitriol.

Answer: $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$.

20. A salt known as green vitriol.

Answer: $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$.

CHAPTER- 4 ATOMIC STRUCTURE

Q1. MCQs

- Which particle has no charge?
a) Electron b) Proton c) Neutron d) Nucleus
Answer: c
- The atomic number is equal to the number of:
a) Neutrons b) Protons c) Nucleons d) Shells
Answer: b
- The maximum number of electrons in the K-shell is:
a) 2 b) 8 c) 18 d) 32
Answer: a
- Which scientist discovered the nucleus?
a) J.J. Thomson b) Rutherford c) Bohr d) Chadwick
Answer: b
- Isotopes have the same:
a) Mass number b) Number of neutrons c) Atomic number d) Atomic mass
Answer: c
- The charge on an electron is:



a) +1 b) -1 c) 0 d) +2

Answer: b

7. Electronic configuration of oxide ion is:

a) 2,6 b) 2,8 c) 2,5 d) 2,7

Answer: b

8. Mass number is the sum of:

a) Protons and electrons b) Electrons and neutrons c) Protons and neutrons
d) Electrons only

Answer: c

Q2. Assertion-Reason

Read the statements and choose the correct option.

a. Both A and R are correct, and R is the correct explanation of A
b. Both A and R are correct and R is not the correct explanation of A.
c. A is true but R is false
d. A is false but R is true

1. A: Atoms are electrically neutral. R: Number of protons equals number of electrons.

Ans- a

2. A: Isotopes have similar chemical properties. R: They have the same electronic configuration.

Ans- a

3. A: Electrons revolve around the nucleus. R: The nucleus is positively charged.

Ans- b

4. A: Neutrons do not affect atomic number. R: Atomic number depends only on protons.

Ans- a

5. A: Carbon-12 and Carbon-14 are isotopes. R: They have different numbers of neutrons.

Ans- b

6. A: Noble gases are chemically inert. R: Their outermost shell is completely filled.

Ans- a

7. A: Rutherford's model could not explain atomic stability. R: Revolving electrons should lose energy continuously.

Ans- c

8. A: An atom becomes a cation by losing electrons. R: Loss of electrons increases positive charge.

Ans- a

Q3. Name the Following.

1. The negatively charged subatomic particle.

Answer: Electron

2. The central, dense part of an atom.

Answer: Nucleus



3. The scientist who discovered the electron.
Answer: J. J. Thomson
4. Number that represents the total number of protons in an atom.
Answer: Atomic number
5. Number that is equal to the total number of protons and neutrons in an atom.
Answer: Mass number
6. Arrangement of electrons in different shells of an atom.
Answer: Electronic configuration
7. Shell closest to the nucleus.
Answer: K-shell
8. Electrons present in the outermost shell of an atom.
Answer: Valence electrons
9. The atoms of the same element have the same atomic number but different mass numbers.
Answer: Isotopes
10. Particles present inside the nucleus.
Answer: Protons and neutrons (nucleons)
11. The shell that can accommodate a maximum of 8 electrons.
Answer: L-shell
12. Force that keeps electrons attracted to the nucleus.
Answer: Electrostatic force of attraction

Q4. Fill in the Blanks

1. Rutherford used a thin ____ foil for the experiment.
Ans- Gold
2. The first shell is represented by the letter ____.
Ans-K
3. A neutron carries a ____ charge.
Ans- No
4. The electrons present in the innermost shell are called ____ electrons.
Ans- Bound
5. When a nitrogen atom gains 3 electrons, it becomes ____.
Ans- Nitride ion
6. Magnesium ions are formed by the ____ of ____ electrons.
Ans- loss, 2
7. During the formation of a chemical bond, the energy between the combining atoms ____.
Ans- Decreases
8. ____ is a non metal who forms cation.
Ans- Hydrogen.

Q5. Give Reasons

1. Atoms are electrically neutral.



Answer: Atoms are electrically neutral because they contain an equal number of protons (positive charge) and electrons (negative charge), so the charges cancel each other.

2. Most of the mass of an atom is concentrated in the nucleus.

Answer: The nucleus contains protons and neutrons, which are much heavier than electrons. Therefore, almost the entire mass of an atom is concentrated in the nucleus.

3. Rutherford concluded that most of the atom is empty space.

Answer: During the gold foil experiment, most alpha particles passed straight through the foil without any deflection, indicating that most of the atom is empty space.

4. Isotopes of an element have similar chemical properties.

Answer: Isotopes have the same atomic number and identical electronic configuration, so they have the same chemical properties.

5. Isotopes of an element have different mass numbers.

Answer: Isotopes have different mass numbers due to different (more or less) numbers of neutrons present in the nucleus.

6. The atomic number determines the identity of an element.

Answer: The atomic number is equal to the number of protons in the nucleus, and every element has a unique number of protons.

7. Noble gases are chemically inert.

Answer: Noble gases have completely filled outermost electron shells, making them stable and unreactive.

8. Electrons are not considered as nucleons.

Answer: Electrons revolve around the nucleus on fixed orbits, while the nucleus contains only protons and neutrons which are called nucleons.

9. An atom becomes a positively charged ion when it loses electrons.

Answer: On losing electrons, the number of protons becomes greater than the number of electrons, giving the atom a net positive charge.

Q6. Correct the sentence by changing the underlined word. Rewrite the correct sentence.

- Most of the nuclear energy is obtained by nuclear fusion.
- Alpha particles are the nuclei of hydrogen atoms.
- Sulphate radicals have 3 (or trivalent) valency.
- The particle having 11 positive charges and 10 negative charges is a magnesium ion.
- The isotope of Hydrogen which has 2 neutrons is protium.

ANSWERS-



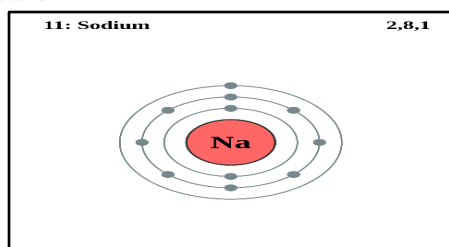
1. Most of the nuclear energy is obtained by nuclear fission.
2. Alpha particles are the nuclei of helium atoms.
3. Sulphate radicals have 2 (or divalent) valency.
4. The particle having 11 positive charges and 10 negative charges is a **sodium ion**.
5. The isotope of Hydrogen which has 2 neutrons is tritium.

Q7.Define

1. Bound electrons-The electrons in the shells close to the nucleus are called bound electrons.
2. Isotopes -The atoms of the same element, having the same atomic number but different mass numbers, are called isotopes.
3. Ions-The electrically charged particle formed by the loss or gain of electrons to get the nearest noble gas configuration is called an ion.
4. Radioactive elements -The elements which emit high-energy radiations on their own are called radioactive elements.
5. Halogens- Elements having 7 electrons in their valence shell are known as halogens.
6. Chemical bond- A chemical bond is defined as the force of attraction which holds the constituent atoms together in a molecule.
5. Nuclear fission-The process of splitting of the nucleus of heavy atoms to form lighter nuclei (atoms) is called nuclear fission.

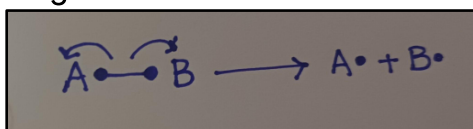
Q8. Answer the following questions from the given diagram.

DIAGRAM-1



1. Identify the element shown in the diagram.
Answer: Sodium (Na)
2. What is the atomic number of the element?
Answer: 11
3. What is the electronic configuration of the element?
Answer: 2,8,1
4. How many electron shells are present?
Answer: Three (K, L and M shells)
5. How many electrons are present in the outermost shell?
Answer: One
6. What is the valency of the atom?
Answer: 1
7. What type of element is it—metal, non-metal or metalloid?
Answer: Metal
8. Which is the nearest noble gas to the atom?
Answer: Neon
9. It forms a __ ion.
Ans- Electropositive or Cation
10. How many neutrons are present in this atom if its atomic mass is 23?
Ans- 12

Diagram-2



1. The products are called__.
2. The process is called __.
3. The conditions needed for the reaction are__.
4. It forms in __ type of bond.
5. Define the process.
6. Define the term used for the products.
7. Give one similar example for the above process.

Answer-

1. Radicals
2. Homolytic bond fission or Homolysis
3. High temperature or Ultra violet rays or in the presence of peroxides
4. Non polar covalent bond
5. The process in which shared pair of electrons in a covalent bond is divided equally between the two bonded atoms and forms radicals.
6. A radical is an atom or group of atoms that contains one or more unpaired electrons in it.
7. When a chlorine molecule is exposed to ultraviolet light ,it breaks into two chlorine radicals.

DIAGRAM-3



1. Write the atomic number, atomic mass and electronic configuration of the above atom.
Answer- $Z=17$, $A=35$ and 37 , Elec. Config.- $2, 8, 7$

2. Write the composition of their nuclei.
Answer- $p=17$ and $n=18$ $p=17$ and $n=20$

3. How are they related to each other?
Answer- Both are isotopes of Chlorine

4. Define the term expressed in Q3.
Answer- Isotopes are the atoms of the same element having the same atomic number but different mass number.

5. Which property is similar and which one is different between them?
Answer- their chemical properties are the same and physical properties are different.

6. Give reason for the similar property they have asked for in Q5.
Answer- As they are isotopes, they have the same atomic number and same valence electrons which decides the chemical properties.

7. Write the valency and valence electrons of the atoms.
Answer- Both have valency 1 and valence electrons 7.

8. Chlorine is a ____.
Answer- Halogen

9. Write the names of atoms of Hydrogen who show the same property.
Answer- Protium, Deuterium and Tritium'

Q9. Case Study based question.

CASE-1

A metal burns in oxygen which forms white ash and produces dazzling white flame.

Answer the following questions based on the data.

Questions:

1. Magnesium has the electronic configuration ____
2. How many valence electrons does magnesium have?
3. What is its valency?
4. Will magnesium gain or lose electrons?
5. Write the formula of the ion formed.

Answers:

1. $2, 8, 2$
2. Two
3. Two



4. Lose two electrons
5. Mg^{2+}

CASE-2

A patient receives iodine-131 for treating thyroid disorders.

Questions:

1. Iodine-131 belongs to which class of atoms?
2. Why does it have chemical properties similar to ordinary iodine?
3. Which particle is different in iodine-131?
4. Mention one medical use of isotopes.

Answers:

1. Isotope
2. Same electronic configuration
3. Neutrons
4. Diagnosis or treatment of diseases

Q10. Differentiate Between the following on the basis of given criteria.

1. Proton and Electron (Position in atom)

Proton

Present in the nucleus of the atom.

Electron

Present in shells (orbits) around the nucleus.

2. Proton and Neutron (Charge, Mass)

Proton

Charge: +1

Mass: 1 u (approximately)

Neutron

Charge: 0 (neutral)

Mass: 1 u (slightly greater than proton)

3. Atomic Number and Mass Number (Definition)

Atomic Number (Z)

Number of protons present in the present in the nucleus of an atom.

Mass Number (A)

Total number of protons and neutrons Present in the nucleus of an atom

4. Atom and Ion (Electrical charge)

Atom

Electrically neutral.

Ion

Electrically charged (positive or negative).

7. Cation and Anion (Charge, Formation, Number of electrons and protons)

Cation

Positive charge.

Formed by loss of electrons.

Electrons are less than protons

Anion

Negative charge.

Formed by gain of electrons.

Electrons is more than number of protons.

8. Nucleus and Electron Shell (Particles present)

Nucleus

Contains protons and neutrons.

Electron Shell

Contains electrons only.

10. Valence Electrons and Bound Electrons (Position)

Valence Electrons

Present in the outermost shell.

Bound Electrons

Present in the inner shells of the atom.



11. K-shell and N-shell (Maximum electron capacity, Distance from nucleus)

K-shell

Maximum capacity: 2 electrons.
Nearest to the nucleus.

N-shell

Maximum capacity: 32 electrons.
Farther from the nucleus than the K-shell.

12. Sodium Atom and Sodium Ion (Number of electrons and protons, Electronic configuration, Symbol)

Sodium Atom

Electrons: 11
Protons: 11
Electronic configuration: 2,8,1
Symbol: Na

Sodium Ion

Electrons: 10
Protons: 11
Electronic configuration: 2,8
Symbol: Na⁺

16. Chlorine Atom and Chloride Ion (Number of electrons, Charge, Symbol)

Chlorine Atom

Electrons: 17
Charge: 0
Symbol: Cl

Chloride Ion

Electrons: 18
Charge: -1
Symbol: Cl⁻

17. Deuterium and Tritium (Number of neutrons, Mass number)

Deuterium

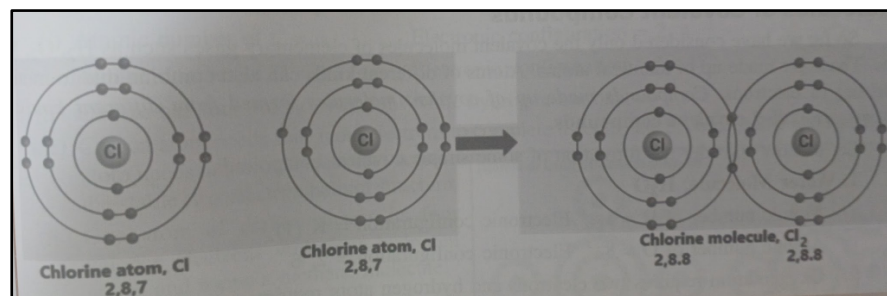
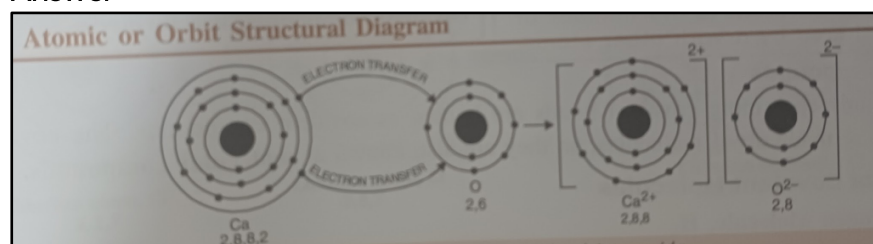
Number of neutrons: 1
Mass number: 2

Tritium

Number of neutrons: 2
Mass number: 3

Q10. Draw the diagram (Orbital structure) of formation of Calcium oxide and Chlorine molecule.

Answer



Q11. Complete the following table.

S.No.	Symbol	Atomic Number	Mass Number	Number of Protons	Number of Neutrons	Number of Electrons	Electronic Configuration
1.	Nitrogen, ${}^{14}_{7}\text{N}$						
2.	Silicon, ${}^{28}_{14}\text{Si}$						
3.	Argon, ${}^{40}_{18}\text{Ar}$						
4.	Sulfur, ${}^{32}_{16}\text{S}$						
5.	Calcium, ${}^{40}_{20}\text{Ca}$						

Answer

S.No.	Symbol	Atomic Number	Mass Number	Number of Protons	Number of Neutrons	Number of Electrons	Electronic Configuration
1.	Nitrogen ${}^{14}_{7}\text{N}$	7	14	7	7	7	2, 5
2.	Silicon, ${}^{28}_{14}\text{Si}$	14	28	14	14	14	2, 8, 4
3.	Argon, ${}^{40}_{18}\text{Ar}$	18	40	18	22	18	2, 8, 8
4.	Sulfur, ${}^{32}_{16}\text{S}$	16	32	16	16	16	2, 8, 6
5.	Calcium, ${}^{40}_{20}\text{Ca}$	20	40	20	20	20	2, 8, 8, 2

