ICSE Board
Class VIII Chemistry
Sample Paper – 3 Solution

Question 1

1. **(d)** Allotropy
   The phenomenon due to which an element can exist in more than one structural form in the same physical state is called allotropy.

2. **(c)** Sodium, potassium
   Alkali metals such as sodium and potassium are soft metals and can be cut easily with a knife.

3. **(a)** Four
   Carbon has four unpaired electrons in its outermost shell.

4. **(a)** Sulphur
   Sulphur is an element.

5. **(c)** more compressibility than solids
   The intermolecular space between the particles of liquids is more than that of solids. The particles in liquid can slip and slide over each other. Thus, liquids have more compressibility than solids.

6. **(a)** Nitrogen dioxide
   Nitrogen dioxide dissolves in water and gives nitric acid.

7. **(b)** Increases
   At 0°C, water becomes ice and has a density of 0.92 g/cm^3.

8. **(d)** two; one
   When an electric current is passed through acidulated water, two volumes of hydrogen are formed at the cathode and one volume of oxygen is formed at the anode (by electrolysis).

   This concludes that water contains hydrogen and oxygen in the ratio of 2:1.
   Reaction:

$$\underset{\text{[Acidified water]}}{2H_2O} \xrightarrow{\text{Electric Current}} \underset{\text{[Cathode]}}{2H_2} + \underset{\text{[Anode]}}{O_2}$$

9. **(a)** Chlorination

Chlorination is the process of sterilisation of water by the addition of chlorine. It is used as a treatment against bacterial infection.

10. (b) 2

An element exhibits two different positive valencies.

For higher valency, use suffix –ic at the end of the name of the element.

Cuprous [Copper(I)]

Cupric [Copper(II)]

11. (b) effervescences.

The formation of gas bubbles in liquid during a reaction is called effervescences.

12. (d) Allotropy

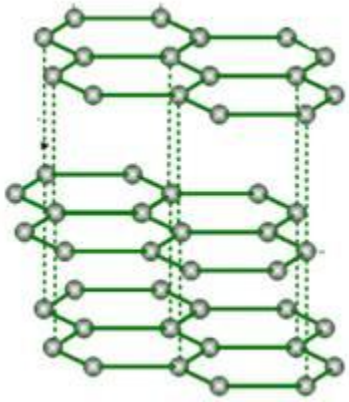
The phenomenon due to which an element can exist in more than one structural form in the same physical state is called allotropy.

13. (c) Hexagonal

A graphite crystal has a layered structure in which every carbon atom is bonded to three carbon atoms which are at equal distance from it.

These three carbon atoms are again in turn bonded to three carbon atoms each.

Thus, six carbon atoms form a hexagon and are at specific distances from one another.



14. (b) Silver

Silver has symbol derived from its Latin name Argentum.

15. (a) Baking soda

Baking soda is bitter to taste and soapy to touch. This is because these substances are basic in nature.

Question 2

(A)

i. Common salt
Sodium chloride NaCl

ii. Sand
Silicon dioxide SiO_2

iii. Marble
Calcium carbonate $CaCO_3$

iv. Acetic acid
CH_3COOH

v. Aluminium oxide
Al_2O_3

(B)

1. The unique ability of the carbon atom to combine with innumerable carbon atoms and atoms of other elements resulting in the formation of millions of organic compounds is called **catenation**.
2. Alkalis are bases which are **soluble** in water.
3. If the outermost shell of an atom is filled, the valency is **zero**.
4. Metals are **electropositive** because metals readily **lose** electrons and form positively charged ions.
5. Hydrogen can be prepared in the laboratory by the reaction of zinc and **dilute sulphuric acid**.

Question 3

(A)

1. False. Bituminous is the third stage in the formation of coal.
2. True.
3. False. Dehydration of carbohydrates is a chemical change
4. True
5. True

(B)

1. Neutron
2. Nucleon
3. Valence electrons
4. Atomic number
5. Isotopes

Question 4

(A)

Modern Atomic Theory

According to the modern, standard model of atom:

1.An atom comprises of three fundamental particles. They are electron, proton and neutron.

2.There are two structural parts of an atom.

(i) The nucleus

(ii) The orbits or the shells described in the empty space that surrounds the nucleus.

3.The nucleus is the positively charged, central part of an atom. Protons and neutrons are present inside the nucleus of the atom. Hence, they are also known as nucleons.

4.They are held firmly in the nucleus by strong nuclear forces.

5.The entire mass of an atom lies in its nucleus, since electrons have negligible mass.

6.The positive charge of the nucleus is due to the protons present in it. The protons remain unaffected by the neutrons since the latter have no electrical charge.

7.Orbits (or shells) are the imaginary paths traced by the electrons in the empty space surrounding the nucleus.

8.Each orbit is associated with a fixed amount of energy.

9.The negatively charged electrons revolve round the nucleus in these orbits. The shell (or the orbit) lying closest to the nucleus carries the lowest amount of energy and the shell that lies farthest from it carries the highest amount of energy.

10.An atom is electrically neutral because the number of protons and the number of electrons present in it are the same thus, balancing the charge budget of the atom.

(B)

A catalyst is a substance which either increases or decreases the rate of a chemical reaction without itself undergoing any chemical change during the process.

Some chemical reactions need a catalyst to change the rate of the reaction.

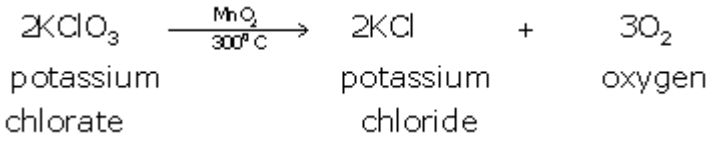
i. Positive catalyst

When catalyst increases the rate of reaction, it is known as a positive catalyst.

Example:

On being heated to 7000C, potassium chlorate decomposes to evolve oxygen. But when manganese dioxide is mixed with it, the decomposition takes place at a much lower temperature, at about 3000C. In this reaction,

manganese dioxide acts as catalyst and remains unaffected.



ii. Negative catalyst

When catalyst decreases the rate of reaction, it is known as a negative catalyst.

Example:

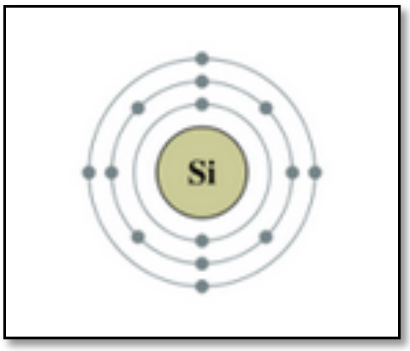
Phosphoric acid acts as negative catalyst to decrease the rate of decomposition of hydrogen peroxide.

Alcohol also act as a negative catalyst in certain chemical reactions.

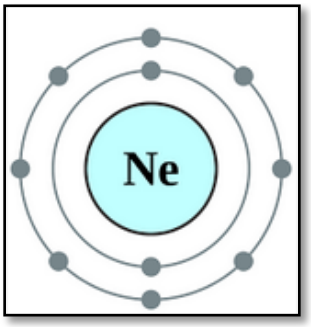
Question 5

(A)

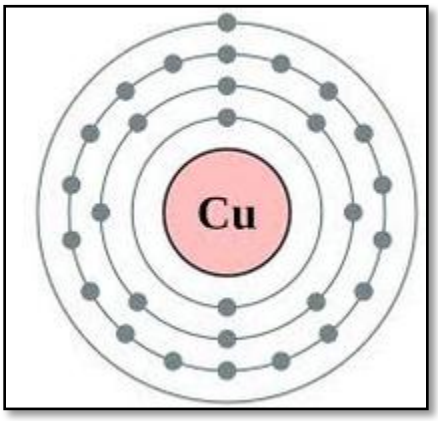
1. **Silicon**



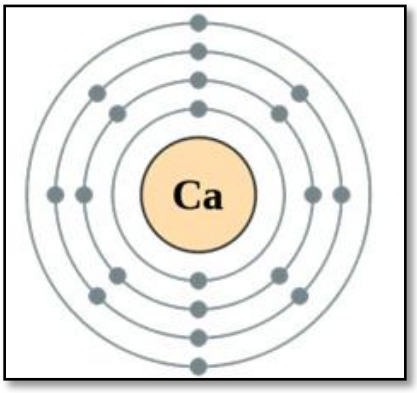
2. **Neon**



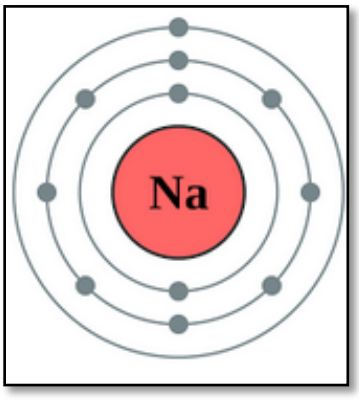
3. **Copper**



4. **Calcium**



5. **Sodium**



(B)

1. Citric acid: Food preservation and vitamin C preparation
2. Acetic acid: Table vinegar, cooking food
3. Tartaric acid: Baking powder
4. Boric acid: Antiseptic, eye wash
5. Carbonic acid: Flavoured drinks

Question 6

(A)

A chemical bond is the attractive force which holds two or more atoms of a molecule together in a compound.

1. **Valency**: An element may exhibit one valency in one compound and another valency in other compound. This property is called variable valency
2. Boiling point: The constant temperature at which a liquid becomes gas upon absorbing heat under normal pressure is called as the boiling point of that liquid.
3. **Radicals:** Two or more non-metals which collectively accept or donate one or more electrons and become negatively or positively charged in the process are called radicals.
4. **Mass number:** The sum of the number of protons and the number of neutrons present in the nucleus of an atom of an element is called the mass number of that element. It is denoted by the letter A.

(B)

Name	Symbol
Ammonium	NH_4^+
Nitrite	NO_2
Aluminium	Al^{3+}
Carbonate	CO_3^{2-}

Question 7

(A)

1.

Hydrogen, produced by the action of dilute sulphuric acid on zinc, is passed through anhydrous calcium chloride and then lighted at the end of a jet.

Water droplets are produced which condense on the cold surface of a flask.

The droplets can be tested by sprinkling a few drops of it on white anhydrous copper sulphate.

The white colour of anhydrous copper sulphate changes into blue hydrated copper sulphate.

2.

Oxidation	Reduction
1. Addition of oxygen	1. Removal of oxygen
2. Removal of hydrogen	2. Addition of hydrogen
3. Addition of electro-negative ion or atom	3. Removal of electro-negative ion or atom
4. Removal of electro-positive ion or atom	4. Addition of electro-positive ion or atom
5. Loss of electrons	5. Gain of electrons

(B)

1. Hydrogen is not collected by the downward displacement of air because a mixture of hydrogen and air forms an explosive mixture.

2. Protons are positively charged particles [+1] found in the nucleus of an atom. They have a unit mass [1].
   Neutrons are particles without any charge (no charge) [0] found in the nucleus of an atom. They have a unit mass [1].
   Electrons are negatively charged particles [−1] found in the space outside the nucleus of an atom. They have a negligible mass [0].