

Exercises

(A). Pick the correct option.

- 1) The substance does not undergo change in its chemical composition.
- 2) crushing of a glass
- 3) both a and b
- 4) exothermic reaction
- 5) a substance breaks into two or more new substances

(B). True or false. Also, correct the false statement.

- 1) False because rusting and burning are chemical changes.
- 2) False because physical change is sometime reversible and Irreversible also.
- 3) False because the cutting of an apple is an irreversible physical change.
- 4) False because we need a super-saturated solution for crystallization.

(C). Match the following :

- | (A). | (B) |
|---------------------|----------------------------|
| 1) Rusting. | (iii) Moisture |
| 2) Chemical Change. | (iv) Usually irreversible |
| 3) Physical change. | (ii) Evaporation |
| 4) Crystallization. | (i) Solid in its pure form |

(D). Answer the following in brief : (Ans.)

1) The properties of physical change are :

- a) Physical properties such as size, shape, colour or state may undergo change.
- b) No new substance is formed.
- c) Physical changes are reversible but some of them can be irreversible too. For example:
Cutting of cloth is physical change but you cannot regain the cut piece of cloth in its original form.

2) Chemical changes involve the following properties :

- a) Two or more substances react to form an entirely new product.
- b) The properties of the new substance formed are different from those of the original reactants.
- c) Chemical reactions are usually irreversible. The original substance cannot be recovered easily.

3) Causes of rust are :

- a) Iron can become rusted if left uncovered or without protection in the environment.
 - b) The process of rusting accelerates if the climate has lot of moisture in it.
- " Rusting is an undesirable chemical change because it results in formation of a compound which corrodes the metal and makes it weak."

4) The four characteristics of chemical change are :

- a) Most chemical reaction involves heat or light- heat is either evolved or absorbed. Light may be given out

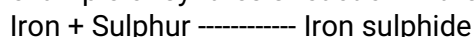
too.

- b) Colour change : Chemical reaction may result in colour change or formation of a new substance with different colour.
- c) Gas may be produced. Some chemical changes can result in formation of a new substance in the gaseous state.
- d) Precipitate may form. In some chemical reactions involving liquids, the new substance which forms may be in the form of an insoluble substance. This insoluble substance in the solution is called precipitate.

5) Types of chemical reaction are :

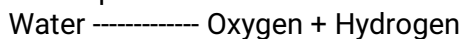
- a) Synthesis reaction or a combination reaction is a chemical change in which two or more simple substances combine to form one complex substance.

One example of synthesis reaction in the combination of iron and sulphur to form iron sulphide.



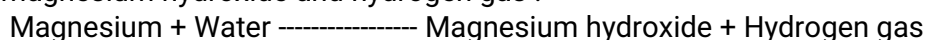
- b) Decomposition reaction : A chemical reaction in which a substance breaks down to form two or more substances is called decomposition reaction.

One example of a decomposition reaction is the breaking down of water molecule into Oxygen and hydrogen gas :



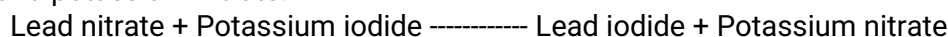
- c) Single displacement : In chemical reaction, when atoms of one complex substance in this place the atoms of another simple substance to form two new substances, it is called single displacement reaction.

An example of a single displacement reaction is when magnesium replaces is hydrogen in water to make magnesium hydroxide and hydrogen gas :



- d) Double displacement : In a double displacement reaction atoms of two substances switch places to form two new substances. In such reactions, two reactants form two new products.

For example : Two reactants such as lead nitrate & potassium iodide form two new products, lead iodide and potassium nitrate.



(E) Answer the following in short : (Ans.)

1) Differentiate between physical and chemical changes are :

Physical change :

- a) It is reversible.
- b) No, new substances formed.
- c) No, chemical reaction takes place.
- d) Arrangement of atoms remains same.
- e) Examples : Folding o paper, dissolving sugar in water.

Chemical change :

- a) It is not reversible.
- b) New substances are formed.
- c) Chemical reactions take place.
- d) Atoms of substances are rearranged.
- e) Examples : Digestion of food, curdling of milk.

2) Two irreversible physical changes are :

- a) Cutting of paper is a physical but irreversible change because the properties of each piece of paper is remain same.
- b) Carving statue out of wood is another example of an irreversible physical change because we cannot get the original piece of wood again. The change cannot be reversed.
- 3) Rusting occurs when iron comes in contact with atmosphere oxygen in the presence of moisture. That is why rusting is very common during monsoon season when the climate is humid.
Four methods by which rusting can be prevented are :
- a) By painting : Paint contents of oil in them so the surface gets a thin protective layer on them to prevent them from getting corroded.
- b) By greasing : All the methods are painted or coated with oil or grease to save them from getting corroded.
- c) Alloying : It means mixing homogenously two or more metals. Example, stainless steel an alloy of iron with nickel and chromium.
- d) Anodizing : In this method artificial oxide layer of aluminium is coated on the surface. This prevents corrosion.
- 4) Two type of chemical reactions are :
- a) Decomposition reaction : A chemical reaction in which a substance breaks down to form two or more substances is called decomposition reaction.
One example of a decomposition reaction is the breaking down of water molecule into oxygen and hydrogen gas : Water ----- Oxygen + Hydrogen
- b) Synthesis reaction or a combination reaction is a chemical change in which two or more simple substances combine to form one complex substance.
One example of synthesis reaction in the combination of iron and sulphur to form iron sulphide.
Iron + Sulphur ----- Iron sulphide

HOTS :

- 1) Mumbai because this city located close to the sea as compared to Delhi which is in plains. The air which is moist therefore may result in the rusting of several objects.
- 2) When a candle burns both physical and chemical changes occur. Physical changes in burning candle on heating candle wax melts and form liquid wax. It is a physical change. This wax vapours near to flame burns and gives new substances like carbon dioxide, water vapours heat and light.
- 3) Burning of LPG involves both physical and chemical changes because when LPG comes out of cylinder and is converted from liquid to gaseous state it is a physical change. When the gas burns in air it is a chemical change.

