



Physical and Chemical Changes

Question 1.

Classify the following processes into physical or chemical changes.

- (a) Beating of aluminium metal to make aluminium foil
- (b) Digestion of food
- (c) Cutting of a log of wood into pieces
- (d) Burning of crackers

Answer:

Physical changes are beating of aluminium metal to make aluminium foil and cutting of a log of wood into pieces.

Question 2. Classify the changes involved in the following processes as physical or chemical changes.

- (a) Photosynthesis
- (b) Dissolving sugar in water
- (c) Burning of coal
- (d) Melting of wax
- (e) Beating aluminium to make aluminium foil
- (f) Digestion of food

Solution:

- a) Chemical change
- b) Physical Change
- c) Chemical change
- d) Physical Change
- e) Physical Change
- f) Chemical change

Question 3.

What kind of change is shown by tearing of paper?

Answer:

Tearing of paper is a physical change although, it cannot be reversed.

Question 4.

Melting of wax is a change where a solid changes to liquid state. Give one more such change which you observe in your surroundings.

Answer:

Melting of ice is also a change where solid changes into liquid state.

Question 5.

Name the gas which turns lime water milky.

Answer:

Carbon dioxide gas (CO₂) turns lime water milky.

Question 6.

Give example of a physical change which occurs by the action of heat.

Answer:

Melting of ice to form water is a physical change which occurs by the action of heat.

Question 7.

Write the colour of copper sulphate solution obtained when iron nails are dipped in it?

Answer:

When iron nails are dipped in copper sulphate solution, then the colour of the solution changes to green.

Question 8.

What colour of flame is observed when magnesium ribbon burnt in air.

Answer:

When magnesium is burnt in air then a brilliant white flame is obtained.

Question 9.

How can you say that ripening of a fruit is a chemical change?

Answer:

Ripening of a fruit is a chemical change because after ripening, a new product with different properties is formed.

Question 10.

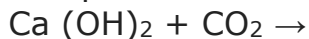
Is souring of milk a physical change or a chemical change? Why?

Answer:

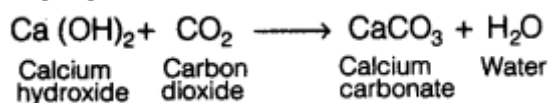
Souring of milk is a chemical change because original substances present in milk lose their nature and identity and form new chemical substances.

Question 11.

Complete the following reaction



Answer:



Question 12.

Name the process by which common salt is obtained from sea water.

Answer:

The common salt can be obtained by the evaporation of sea water and crystallization.

Question 13.

Name the metal which is used for galvanising iron.

Answer:

Zinc metal is used for galvanizing.I.

Question 14.

Suggest two methods to prevent rusting.

Answer:

The two methods to prevent rusting are

- Painting the iron articles.
- Greasing or oiling the iron articles.

Question 15.

We should eat freshly cut apple. Why?

Answer:

We should eat freshly cut apple because if we leave the apple after cutting, it starts turn to brownish due to the oxidation of the essential nutrients present in it and its food value decreases.

Question 16.

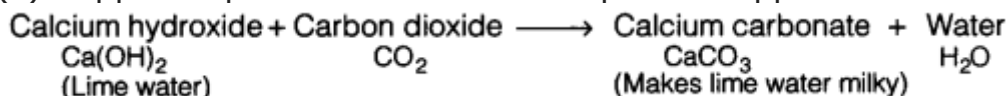
Write word equations for two chemical reactions with the help of materials given in the box.

Air, copper sulphate, iron, vinegar, iron oxide, carbon, dioxide, iron sulphate, copper, lime water, water

Answer:

(i) Iron + air + water → iron oxide

(ii) Copper sulphate + iron → iron sulphate+copper.



Question 17.

Is cloud formation a physical change or chemical change? Explain.

Answer:

Formation of clouds is a physical change. Clouds are formed by the condensation of water vapours present in the atmosphere. When rainwater goes back on the earth, no new product is formed. Therefore it is a physical change.

Question 18.

Write the differences between physical and chemical changes.

Answer:

Differences between physical and chemical changes are

Physical change	Chemical change
No new substance is formed.	New substance is formed.
It is a temporary change.	It is a permanent change.
Physical change is easily reversible.	Chemical change is irreversible.

Question 19.

In addition to the formation of new products, what changes do the chemical changes accompany?

Answer:

In addition to new products, the following may accompany a chemical change:

- Heat, light or any other radiation (e.g. ultraviolet) may be given off or absorbed.
- Sound may be produced.
- A change in smell may take place or a new smell may be given off.
- A colour change may take place.

Question 20.

Magnesium ribbon burns in air and changes to white substance, i.e. magnesium oxide. When magnesium oxide dissolves in water, what type of change take place? Give reason in support of your answer. Express the change in the form of equation.

Answer:

Mixing of ash obtained by the burning of magnesium with water is a chemical change.

When magnesium is burnt in air, it forms magnesium oxide in the form of white ash.

Magnesium (Mg)+ Oxygen (O₂) → Magnesium oxide (MgO)

When magnesium oxide dissolves in water, it forms a new substance, magnesium hydroxide.

Magnesium oxide (MgO) + Water (H₂O) → Magnesium hydroxide Mg(OH)₂

So, it is a chemical change.

Question 21..

Plants prepare their food by a process called photosynthesis. Can we call photosynthesis is a chemical change? Explain.

Answer:

During photosynthesis, the plants intake carbon dioxide and water in the presence of chlorophyll and sunlight to form two new substances, i.e. glucose (food) and oxygen gas. So, photosynthesis is a chemical change.

Question 22..

The process of digestion is a chemical change. Explain why.

Answer:

In the process of digestion, the various food materials break down to form new substances which can be absorbed by the body. So, the process of digestion is a chemical change.

Question 23.

Give two examples for each of the following cases:

- (a) Physical changes which are reversible.
- (b) Physical changes which are not reversible.
- (c) Chemical changes

Answer:

(a)

- Folding of paper
- Melting of ice

(b)

- Tearing of paper
- Breaking of glass

(c)

- Reaction between vinegar and baking soda.
- Burning of a matchstick.

- Question 24.

Why cannot a chemical change be normally reversed?

Answer:

In a chemical change, the products are quite different from the reactants. Therefore, a chemical change cannot be normally reversed.

- Question 25.

A student took a solution of copper sulphate in a beaker and put a clean iron nail into it and left it for about an hour.

(a) What changes do you expect?

(b) Are these changes chemical in nature?

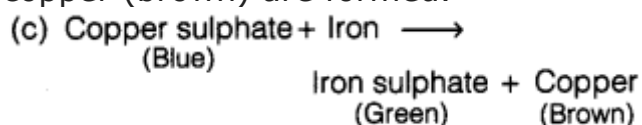
(c) Write a word equation for the chemical change, if any.

Answer:

(a)

- Colour of the solution in the beaker changes from blue to green.
- A brown coloured deposit is found on the surface of the iron nail.

(b) The changes are chemical in nature as new substances, iron sulphate (green) and copper (brown) are formed.



Question 26.

Describe two changes that are harmful. Explain why you consider them harmful? How can you prevent them?

Answer:

Harmful changes are

- Rusting of iron.
- Decaying of fruits.

Rusting of iron is harmful because it slowly destroys iron articles and makes them useless. Since, iron is used in making large number of objects or articles such as bridges, grills, railings, gates and bodies of cars, buses, trucks and ships, etc. Rusting of iron causes a great loss over a period of time.

Prevention Rusting can be prevented by oiling, greasing or painting. It can also be prevented by galvanisation.

Decaying of fruits causes health hazards. Due to decaying of fruits, there is a lot of monetary loss in food industry.

Prevention Fruits can be preserved by keeping them at low temperature and by using some specific preservatives.

Question 27.

What happens when an iron blade of a knife is dipped in a copper sulphate solution?

What kind of change takes place?

Answer:

When an iron blade of a knife is dipped in a copper sulphate solution, then iron blade is coated with reddish brown deposits of copper.

And the blue colour of copper sulphate solution changes to light green

