

NCERT solution for Physical and chemical changes

Question 1

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

Answer

Photosynthesis	Chemical change
Dissolving sugar in water	Physical change
Burning of coal	Chemical change
Melting of wax	Physical change
Beating aluminium to make aluminium foil	Physical change
Digestion of food	Chemical change

Question 2

State whether the following statements are true or false. In case a statement is false, write the corrected statement in your notebook.

- (a) Cutting a log of wood into pieces is a chemical change. (True/False)
- (b) Formation of manure from leaves is a physical change. (True/False)
- (c) Iron pipes coated with zinc do not get rusted easily. (True/False)
- (d) Iron and rust are the same substances. (True/False)
- (e) Condensation of steam is not a chemical change. (True/False)

Answer

S.no	Answer	Correct sentence
a)	False	Cutting a log of wood into pieces is a physical change
b)	False	Formation of manure from leaves is a chemical change.
c)	True	
d)	False	Iron and rust are different substances. Rust is oxide of iron (Fe_2O_3)
e)	True	

Question 3

Fill in the blanks in the following statements:

- (a) When carbon dioxide is passed through lime water, it turns milky due to the formation of _____.
- (b) The chemical name of baking soda is _____.
- (c) Two methods by which rusting of iron can be prevented are _____ and _____.
- (d) Changes in which only _____ properties of a substance change are called physical changes.
- (e) Changes in which new substances are formed are called _____ changes.

Answer

- (a) calcium carbonate (CaCO_3).

(b) sodium hydrogen carbonate (NaHCO_3).

(c) galvanization , painting.

(d) physical

(e) chemical

Question 4

When baking soda is mixed with lemon juice, bubbles are formed with the evolution of a gas. What type of change is it? Explain.

Answer

When baking soda (Sodium Hydrogen carbonate) is mixed with lemon juice, the bubbles which are formed with the evolution of a gas is due to the evolution of carbon dioxide gas.

Baking Soda + Lemon Juice \rightarrow Carbon dioxide + Other substances

Since, there is formation of a new substance in this reaction, it is a chemical change.

Question 5

When a candle burns, both physical and chemical changes take place. Identify these changes. Give another example of a familiar process in which both the chemical and physical changes take place.

Answer

When a candle burns, both physical and chemical changes take place. The melting of wax is physical change as there is no formation of new product.

The burning of wax is chemical change as light is lit up by consuming the energy from wax.

Another example would be eating of food which is both physical and chemical because food get digested which is a chemical change and the larger food particles is converted into smaller food particles which is a physical change.

Question 6

How would you show that setting of curd is a chemical change?

Answer

The curd is formed from milk. Both curd and milk have different properties. Also, once the curd is formed it cannot be reversed back into milk. So, there is formation of new substance with different properties and also an irreversible process, setting of curd is a chemical change.

Question 7

Explain why burning of wood and cutting it into small pieces are considered as two different types of changes.

Answer

When we burn wood, it turns into ashes which is a new substance and process is irreversible one, hence is a chemical change. While cutting the wood into small pieces, we get no new substance, hence is a physical change.

Question 8

Describe how crystals of copper sulphate are prepared.

Answer

Crystals of copper sulphate are prepared by the method of crystallization. The procedure followed is given below

- 1) A cupful of water in a beaker is taken.
- 2) Few drops of dilute sulphuric acid is added to it.

3) Water is heated and when it starts boiling copper sulphate powder is added slowly while stirring till no more copper sulphate powder dissolved in it i.e., it becomes saturated

4) Solution is filtered into china dish and allowed to cool without disturbance. After some time, the crystals of copper can be observed in it.

Question 9

Explain how painting of an iron gate prevents it from rusting.

Answer

Painting of an iron gate prevents it from rusting because it prevents the direct contact of iron from the environment and hence there is no further exposure of iron to oxygen in moisture which causes rusting.

Question 10

Explain why rusting of iron objects is faster in coastal areas than in deserts.

Answer

Iron objects get rusted because of the reaction with oxygen present in moist air. In coastal areas, the presence of moisture is more because of sea or ocean while in deserts the air is dry and hot. Therefore, rusting of iron objects is faster in coastal areas than in deserts due to presence of moisture.

Question 11

The gas we use in the kitchen is called liquefied petroleum gas (LPG). In the cylinder it exists as a liquid. When it comes out from the cylinder it becomes a gas (Change-A) then it burns (Change-B). The following statements pertain to these changes. Choose the correct one.

- (i) Process – A is a chemical change.
- (ii) Process – B is a chemical change.
- (iii) Both processes A and B are chemical changes.
- (iv) None of these processes is a chemical change.

Answer

(ii) Process – B is a chemical change.

Question 12

Anaerobic bacteria digest animal waste and produce biogas (Change –A). The biogas is then burnt as fuel (Change –B). The following statements pertain to these changes. Choose the correct one.

- (i) Process – A is a chemical change.
- (ii) Process – B is a chemical change.
- (iii) Both processes A and B are chemical changes.
- (iv) None of these processes is a chemical change.

Answer

(iii) Both processes A and B are chemical changes.