

Chemistry Worksheet Class 7 on Chapter 6 Physical and Chemical Changes with Answers Set 1

Q1. Rusting of iron is a _____.

- (a) Physical change
- (b) Chemical change
- (c) Both (a) and (b)
- (d) Neither (a) nor (b)

Answer: (b) Rusting of iron is a chemical change.

Q2. What happens when sulphur is heated with iron fillings?

- (a) Fast change
- (b) Physical change
- (c) Periodic change
- (d) None of the above

Answer: (d) None of the above. A chemical change occurs when sulphur is heated with iron fillings.

Q3. What is the chemical formula of rust?

- (a) Iron sulphide
- (b) Iron oxide
- (c) Iron hydroxide
- (d) None of the above

Answer: (b) The chemical formula of rust is iron oxide.

Q4. Souring of milk is an example of _____.

- (a) Physical change
- (b) Chemical change
- (c) Natural change
- (d) None of the above

Answer: (b) Souring milk is an example of chemical change.

Q5. Growth of plants is _____.

- (a) Physical change
- (b) Chemical change
- (c) Natural change
- (d) None of the above

Answer: (b) Growth of plants is a chemical change.

Q6. The reddish-brown layer deposited on the surface of iron objects is called _____.

Answer: The reddish-brown layer deposited on the surface of iron objects is called **rust**.

Q7. A _____ change is also known as a chemical reaction.

Answer: A **chemical** change is also known as a chemical reaction.

Q8. The chemical formula of magnesium oxide is _____.

Answer: The chemical formula of magnesium oxide is **MgO**.

Q9. State true or false.

Cutting a log of wood is a chemical change.

Answer: False, Cutting of log of wood is a physical change.

Q10. State true or false.

The formation of manure from leaves is a physical change.

Answer: False, Formation of manure from leaves is a chemical change.

Q11. What are the constituents of stainless steel?

Answer: Stainless Steel is an alloy of carbon, manganese, nickel, chromium, and iron.

Q12. What is a chemical change?

Answer: A chemical change occurs when two substances interact to produce one or more new substances with different properties.

Q13. What is rusting?

Answer: Rusting refers to the process of depositing reddish brown material on the iron articles. The formation damages or destroys the iron material.

Q14. What is galvanisation?

Answer: Galvanisation refers to the process of depositing zinc on iron articles.

Q15. What is crystallisation?

Answer: Crystallisation refers to the process by which an impure compound is converted into a crystal.

Q16. Distinguish between a physical and chemical change.

Answer:

S. No.	Physical Change	Chemical Change
1.	When a substance undergoes a physical change, its composition remains the same despite rearranging its molecules.	When a substance undergoes a chemical change, its molecular composition is changed entirely. Thus, chemical changes involve the formation of new substances.

2.	Physical change is a temporary change.	A chemical change is a permanent change.
3.	A Physical change affects only physical properties, i.e., shape, size, etc.	Chemical change both physical and chemical properties of the substance, including its composition.
4.	A physical change involves very little to no absorption of energy.	During a chemical reaction, absorption and evolution of energy take place.
5.	Some examples of physical change are freezing of water, melting of wax, boiling of water, etc.	A few examples of chemical change are food digestion, burning coal, rusting, etc.
6.	Generally, physical changes do not involve the production of energy.	Chemical changes usually involve the production of energy (which can be in the form of heat, light, sound, etc.)
7.	In a physical change, no new substance is formed.	A chemical change is always accompanied by one or more new substance(s).
8.	Physical change is easily reversible, i.e., we can recover the original substance.	Chemical changes are irreversible, i.e., we can not recover the original substance.

Q17. State any three ways of preventing rusting of iron.

Answer: We can prevent rusting of iron in the following ways.

(1) Painting, oiling, greasing, or varnishing its surface.

(2) Galvanisation is another method of protecting iron from rusting by coating iron with a thin layer of zinc.

(3) Iron Corrosion is prevented by coating iron with non-corrosive substances like carbon. This process is termed as alloying.

Q18. What is a physical change? State any four characteristics of physical change with examples.

Answer: Physical changes are changes affecting the form of a chemical substance, but not its chemical composition.

Characteristics of Physical change

(i) During a physical change, no new substances are formed. In a physical change, the chemical properties of a substance do not change.

For example, when an ice cube melts, water is formed. There is no new substance in this change, but water is identical to ice and water.

(ii) A physical change is usually temporary and reversible in nature.

For example, when water is heated, water vapours are formed. Once water vapours are cooled, we can obtain water again.

(iii) In a physical change, the chemical properties of a substance do not change.

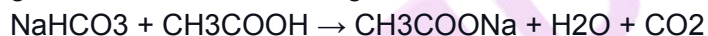
For example, when a piece of gold is melted, its chemical composition remains the same in solid and liquid forms.

(iv) In a physical change, the physical properties such as a substance's colour, shape, and size may change.

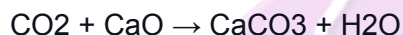
For example, cutting vegetables and inflating a balloon are some physical changes in which the size and shape of a substance change.

Q19. What happens if the gas produced by the reaction between vinegar and baking soda is passed through limewater? Justify your answer.

Answer: The reaction between baking soda (sodium bicarbonate) and vinegar (dilute acetic acid) generates carbon dioxide gas and sodium acetate.



When carbon dioxide is passed into the lime water, calcium carbonate is formed, which imparts white colour.

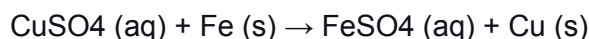


Thus, the milkiness of water is due to the formation of calcium carbonate.

Q20. Why do you observe a change in colour of the solutions of copper sulphate when an iron nail is dropped in it? Why does the shining iron nail become dull?

Answer: When an iron nail is immersed in copper sulphate, iron displaces copper from the solution of copper sulphate because iron is more reactive than copper. Therefore copper sulphate solution colour changes from blue to pale green.

Reaction



In this reaction following two processes take place:

$\text{Cu}^{2+} + 2\text{e} = \text{Cu}^0$ (reduction process, Cu^{2+} is the oxidizing agent)

$\text{Fe}^0 - 2\text{e} = \text{Fe}^{2+}$ (oxidation process, Fe^0 is the reducing agent)

The reaction can be a double displacement reaction as well as a redox reaction (oxidation and reduction both take place simultaneously).

Explanation

When an iron nail is dipped in copper sulphate solution, a brown coating of copper is formed on the iron surface, and the copper sulfate solution's color changes from blue to pale green. The iron passes into the solution as Fe (II), forming the ferrous sulphate solution. The reaction shows iron is more reactive than copper because it displaces copper from the copper sulphate solution.

The shining iron nail becomes dull due to the formation of ferrous sulphate.

