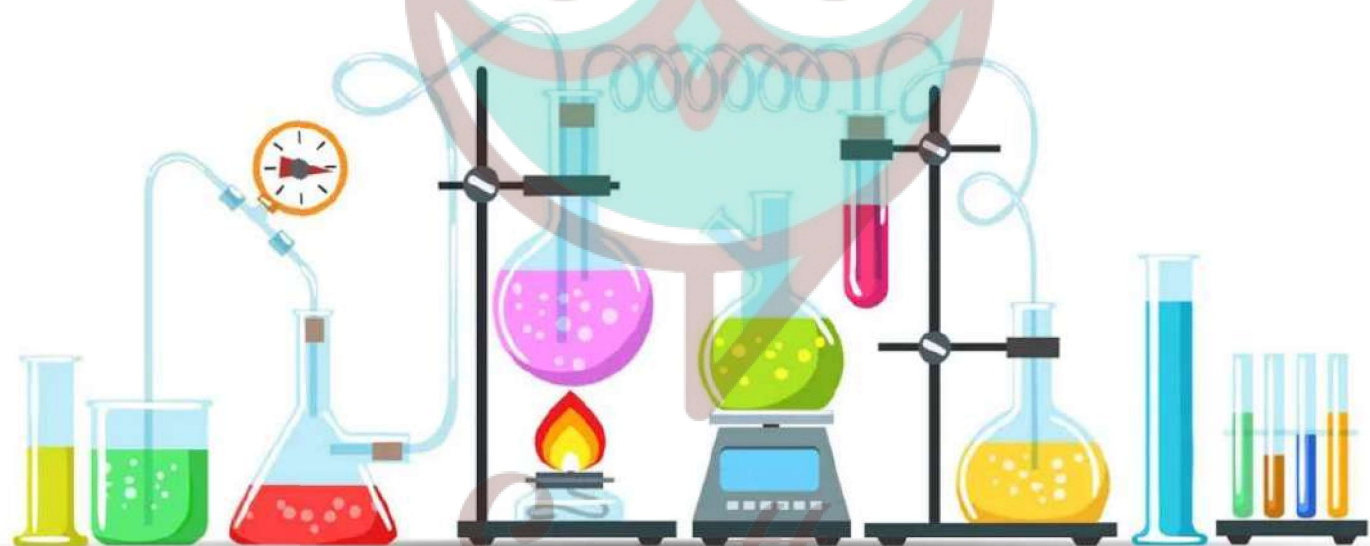


SCIENCE

CHAPTER 6: PHYSICAL AND CHEMICAL CHANGES



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➤ Multiple Choice Questions:

Question 1. Which of the following statement is incorrect for a chemical reaction?

- (a) Heat may be given out but never absorbed
- (b) Sound may be produced
- (c) A colour change may take place
- (d) A gas may be evolved

Question 2. Properties like size, shape, colour, state of a substance are

- (a) chemical properties
- (b) mental properties
- (c) physical properties
- (d) physico-chemical properties

Question 3. A physical change is generally

- (a) reversible
- (b) irreversible
- (c) considerable
- (d) all of these

Question 4. During a physical change, a substance undergoes a change in its

- (a) physical properties
- (b) chemical properties
- (c) both (a) and (b)
- (d) none of these

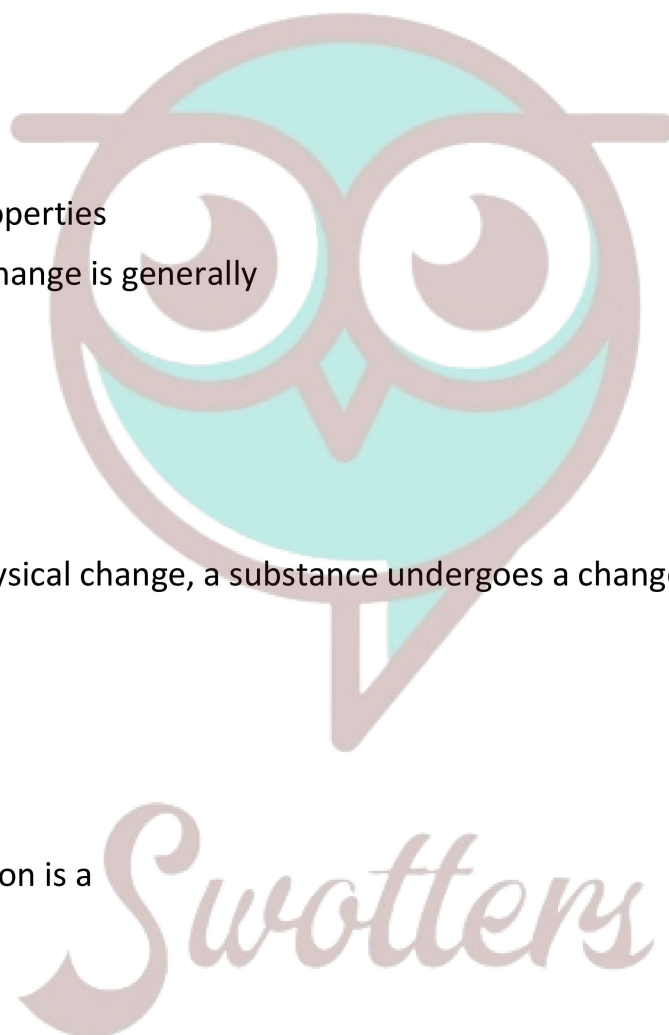
Question 5. Rusting of iron is a

- (a) physical change
- (b) chemical change
- (c) both (a) and (b)
- (d) all of these

Question 6. Rusting occurs when iron is exposed to

- (a) oxygen and water
- (b) soil and rain
- (c) breeze and sunlight
- (d) salt water and clouds

Question 7. When carbon dioxide is passed through lime water, the substance formed is



- (a) calcium oxide
- (b) calcium carbonate
- (c) both (a) and (b)
- (d) none of these

Question 8. A chemical change is also called a

- (a) chemical reaction
- (b) rusting
- (c) both (a) and (b)
- (d) all of these

Question 9. Burning of any substance is a/an

- (a) physical change
- (b) chemical change
- (c) irreversible change
- (d) both (b) and (c)

Question 10. The process of depositing a layer of zinc over iron is known as

- (a) aluminisation
- (b) galvanisation
- (c) fertilisation
- (d) ironing

Question 11. Two drops of dilute sulphuric acid were added to 1 g of copper sulphate powder and then small amount of hot water was added to dissolve it (step I). On cooling, beautiful blue-coloured crystals got separated (step II). Step I and step II are

- (a) physical and chemical changes respectively.
- (b) chemical and physical changes respectively.
- (c) both physical change
- (d) both chemical change

Question 12. Which among the following is a physical change?

- (a) Burning of wood
- (b) Ripening of fruit
- (c) Cutting a log of wood in small pieces
- (d) Cooking of food

Question 13. Which of the following is a chemical change?

- (a) Germination of seeds
- (b) Cutting a piece of paper
- (c) Bursting of fire crackers
- (d) Both (a) and (c)

Question 14. A chemical change may bring

- (a) evolution of gas
- (b) change in colour
- (c) change in taste
- (d) all of these

Question 15. Which is the formula of ozone?

- (a) Fe_2O_3
- (b) Fe_3O_2
- (c) O_2
- (d) O_3

➤ **Fill In the Blanks:**

1. Setting curd from milk is a _____ change.
2. Broadly, changes are of two types, _____ and _____.
3. Physical properties of a substance consists of _____, _____, _____ and state.
4. No new substance is formed in a _____ change.
5. Calcium carbonate is decomposed to form _____ and _____.
6. Magnesium on burning produces _____.

➤ **True or False:**

1. Stainless steel is made by mixing aluminium with carbon.
2. Burning of any substance is a chemical change.
3. Stretching of rubber band is a physical change.
4. We must use concentrated sulphuric acid for crystallisation of copper sulphate.
5. Changes are broadly classified as physical and chemical changes.
6. Galvanizing is a physical change.

➤ **Very Short Question:**

1. What is rust?
2. What type of change in rust?

3. What type of change is photosynthesis?
4. What is a chemical change?
5. Write the chemical formula of blue vitriol.
6. State the two important conditions for rusting.
7. What is freezing point of water?
8. What is freezing of water?
9. What is melting?
10. Name the process by which water molecules continuously change to vapour.

➤ **Short Questions:**

1. Explain physical reaction along with examples.
2. Explain chemical reaction along with examples.
3. State the condition necessary for the occurrence of any reactant.
4. State rate of chemical reaction.
5. Why new products are formed in a chemical reaction?
6. Explain the process of rusting.
7. How can we prevent rusting?
8. Setting of curd is regarded as a chemical change, explain why?

➤ **Long Questions:**

1. Which one is better technique to obtain sugar from sugar solution- crystallization or evaporation to dryness?
2. Explain the changes occurring in burning of candle.
3. Explain why burning of wood and cutting it into small pieces are considered as two different types of changes.
4. Explain the formation of crystal of copper sulphate.
5. A part from new products, many other things accompany a chemical change, what are those things?

✓ **Answer Key-**

➤ **Multiple Choice Answers:**

1. (a) Heat may be given out but never absorbed
2. (c) physical properties
3. (a) reversible
4. (a) physical properties

- (b) chemical change
- (a) oxygen and water
- (b) calcium carbonate
- (a) chemical reaction
- (d) both (b) and (c)
- (b) galvanisation
- (c) both physical change
- (c) Cutting a log of wood in small pieces
- (d) Both (a) and (c)
- (d) all of these
- (d) O₃

➤ **Fill In the Blanks:**

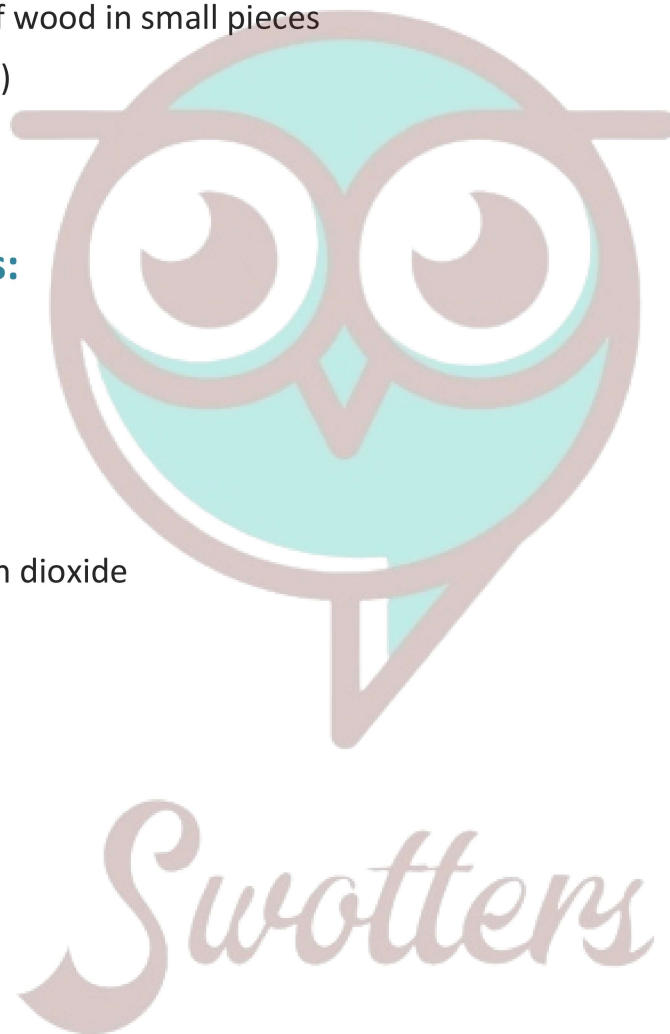
- chemical
- physical, chemical
- shape, size, colour
- physical
- calcium oxide, carbon dioxide
- magnesium oxide

➤ **True or False:**

- False
- True
- True
- False
- True
- True

➤ **Very Short Answers:**

- Answer: When iron oxide is hydrated, it is known as Rust (Fe₂O₃. xH₂O)
- Answer: Chemical change
- Answer: Chemical change
- Answer: A change, in which a new substance with different properties is formed, is known as a chemical change.
- Answer: Crystals of copper sulphate pent hydrate (CuSO₄.5H₂O) are blue in colour. So, it is



commonly known as blue vitriol.

6. Answer: Presence of water and presence of oxygen
7. Answer: The freezing point is 0°C at which water freezes.
8. Answer: Freezing is the process in which water turns to ice when cold enough (below 0°C temperature).
9. Answer: Melting is the process of turning a solid to a liquid.
10. Answer: Evaporation.

➤ Short Answer:

1. Answer: A change in which a substance undergoes a change in its physical properties is called a physical change. For example; melting of ice.
2. Answer: A change in which one or more new substances are formed is called a chemical reaction. For example; rusting of iron.
3. Answer: For the occurrence of any reaction, the molecules or atoms of the reactants must collide with one another, in order to break old bonds and form new bonds.
4. Answer: The reaction rate or rate of reaction is the speed at which reactants are converted into products.
5. Answer: In a chemical reaction the old bonds of the reactants are broken down and fresh bonds are formed, resulting in formation of new products with different properties of that of earlier products.
6. Answer: When an iron object is left in damp air (or water) for a considerable time, it gets covered with a red-brown flaky substance called rust. This is called rusting of iron. During the rusting of iron, iron metal combines with the oxygen (of air) in the presence of water (moisture) to form a compound iron oxide.
7. Answer: Whenever you get iron, water and oxygen together, you get rust. So the best way to prevent it is to keep them apart; that's what paint does, or the spray-on wax and oil coatings that the car protection companies sell. Keep your tools dry; wipe down your bike after a ride; keep the water away and it can't rust.
8. Answer: Setting of curd is a chemical change because we cannot get the original substance (milk) back. The new substance, i.e. curd is different from the milk in taste, smell and chemical properties.

➤ Long Answer:

1. Answer: Crystallization is better because,
 - It occurs on the entire surface.
 - We get solid in the pure crystallized form.
 - The soluble impurities get removed in this process.

- It doesn't require very high temperature conditions.
2. Answer: When a candle burns, both physical and chemical changes take place. On a burning candle, the wax melts but can be solidified again on cooling. This shows that melting of wax is a physical change. Burning of candles also produces light and some gases like carbon dioxide. Hence, burning the wick of the candle is a chemical change.
 3. Answer: Burning of wood produces ash and smoke. Hence the properties of wood are changed, and new substances are formed. So, it is a chemical reaction. When a log of wood is cut into small pieces, there is no new substance formed. Each small piece bears the properties of wood. So, its a physical change. Obviously, burning and cutting of wood are two different types of changes.
 4. Answer: A cup of water taken in a beaker and a few drops of dilute Sulphuric acid are added into it. The water is heated. When it starts boiling copper sulphate powder is added slowly while stirring continuously till no more powder can be dissolved. The solution is filtered and allowed to cool down. Crystals of copper sulphate slowly form at the bottom of the beaker.
 5. Answer: Part from new products, many other things accompany a chemical change, those things are:
 - Heat, light or any other radiation may be given off or absorbed.
 - Change in smell may take place.
 - Sound may be produced.
 - Change in colour may take place.
 - A gas may be formed



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