

**Chemistry, Class 6**

**A. Name the following.**

1. A change that is useful to us and we think should take place.

Desirable change

2. A change that can be altered by reversing the conditions that brought about the change.

Reversible change

3. A change in which the chemical composition of a substance remains the same

Physical change

4. A change in which energy is released in the form of heat

Exothermic change

5. A change in which energy is absorbed in the form of heat

Endothermic change

**B. Give technical terms for the following.**

1. The process by which a liquid changes into gas at any temperature

Evaporation

2. The process by which a substance changes from a liquid state to a gaseous state at a fixed temperature

Boiling

3. The process by which a substance changes from a gaseous state to a liquid state on cooling

Condensation

4. The process by which a substance changes from a liquid state to a solid state on cooling

Freezing

5. The process by which a substance changes from a solid state directly to a gaseous state without forming the liquid state

Sublimation



[Pick the date]

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### C. Choose the correct option.

1. A change may alter

- a. the physical properties of a substance
- b. the chemical properties of a substance
- c. none of these
- d. the physical or chemical properties of a substance

d. the physical or chemical properties of a substance

2. Growth in plants and animals is a

- a. slow change
- b. fast change
- c. chemical change
- d. slow and chemical change

d. slow and chemical change

3. A new substance is formed in a

- a. chemical change
- b. physical change
- c. in both physical and chemical change
- d. none of these

a. chemical change

4. The rate of evaporation depends on

- a. temperature
- b. humidity
- c. movement of air
- d. all of these

d. all of these

5. The process by which a liquid is separated and changed to a soft semi-solid substance is called

- a. sublimation
- b. evaporation
- c. curdling
- d. freezing

c. curdling

### D. Write T for True and F for False. Correct the False statements.

[Pick the date]

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1. The melting of wax is a physical change.

T

2. The burning of a candle is a chemical change.

T

3. Burning is a physical change in which no heat or light is released.

F. Burning is a chemical change in which heat or light or both is released.

4. The melting of ice is an irreversible, desirable, and physical change.

F. Melting of ice is reversible and may be undesirable change.

5. Digestion is a slow, irreversible, desirable, and chemical change.

T

6. The change from day to night is a reversible change.

F. The change from day to night is a periodic change.

7. The rotting of fruits is a desirable change.

F. The rotting of fruits is an undesirable change.

8. The bursting of firecrackers is a fast change.

T

9. The folding and cutting of paper is a chemical change.

F. The folding and cutting of paper is a physical change.

10. The burning of wood is an endothermic change.

F. Exothermic

**E. Choose the correct option to fill in the blank.**

1. The cooking of food is a/an \_\_\_\_\_ (reversible/irreversible) change.

irreversible

2. Volcanic eruption is a \_\_\_\_\_ (periodic/non-periodic) change.



[Pick the date]

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non-periodic

3. . When the air moves fast, the rate of evaporation \_\_\_\_\_ (increases/decreases).

increases

4. Condensation of steam is a/an \_\_\_\_\_ (exothermic/endothermic) change.

exothermic

5. The curdling of milk for making cheese is a \_\_\_\_\_ (desirable/undesirable) change.

desirable

### F. Circle the odd one.

1. Change of seasons, Formation of cloud, Construction of dam

(Hint: Natural changes; circle the one that is not a natural change.)

Construction of dam

2. Ripening of fruits, Rotting of fruits, Curdling of milk for making cheese

(Hint: Desirable changes)

Rotting of fruits

3. Melting of ice, Evaporation, Cooking of food

(Hint: Reversible changes)

Cooking of food

4. Rusting of iron, Burning of paper, Sublimation

(Hint: Fast changes)

Sublimation

5. Melting of wax, Burning of candle, Curdling of milk

(Hint: Chemical changes)

Melting of wax

### G. Give reasons for the following.

1. Curdling of milk can be desirable or undesirable

Curdling of milk is a desirable change when it is for making cheese and it is an undesirable change when the milk is meant for drinking.

2. The melting of ice is considered a physical change while the cooking of an egg is a chemical change.

Melting of ice is considered a physical change as no new substance is formed and the change is reversible whereas cooking of egg is a chemical change as new substance is formed and the change is irreversible.

3. Clothes take time to dry in winter.

Clothes take time to dry in winter as the air in winters is saturated with water vapour (moisture/humid air) and Evaporation decreases with the increase in moisture (humidity) in the air.

4. The melting of wax is considered a physical change while the burning of a candle is a chemical change.

Melting of wax is considered a physical change as no new substance is formed and the change is reversible, whereas burning of candle is a chemical change because some of the wax on burning changes to gas, heat, and light and the change is irreversible.

**H. Explain the following terms with the help of examples.**

1. Periodic change

**Periodic change** A change that is repeated after a regular interval of time Example: day and night.

2. Desirable change

**Desirable change** A change that is useful to us and we want it to take place. Example: growth of a child.

3. Physical change

**Physical change** A change in which the chemical composition of a substance remains the same. Example: melting of wax.

4. Chemical change

**Chemical change** A change in which the chemical composition of a substance changes. Example: burning of a candle.

5. Exothermic change

**Exothermic** A change in which energy is released in the form of heat. Example burning of fuel, LPG, petrol etc

6. Endothermic change



**Endothermic** A change in which energy is absorbed in the form of heat Example melting of ice in to water and cooking of food.

### 7. Sublimation

**Sublimation** The process by which a substance changes from solid state to gaseous state directly, without forming the liquid state. Example naphthalene balls, camphor, iodine

### 8. Fermentation

**Fermentation** The process by which a substance is broken down by the action of microorganisms with the release of heat and carbon dioxide in the form of bubbles Example fruit juice on fermentation forms beverages such as wine, rum, and beer.

## I. Distinguish between the following.

### 1. Natural and man-made change

Natural and man-made change

Natural	Man made
The changes which occur naturally and are not under our control are natural changes.	The changes which are useful and are under our control are man made changes.
The change taking place naturally are natural.	The change taking place as per the need of the man.
E.g Day and night, change of seasons, weathering of rocks, ripening of fruit, heartbeat, winking of eyes, formation of cloud, formation of glaciers etc.	E.g cooking of food, washing of clothes, utensils, weaving of clothes, construction of house, bridge, dam, dress designing, textile designing, our studies etc.

### 2. Slow and fast change

Slow and fast change

SLOW CHANGE	FAST CHANGE
The changes that take place in long time are slow changes.	The changes that take place in little time are fast changes.
E.g growth of small seedling to big tree, small baby to man, rusting of iron, formation of cloud, rock, soil, glaciers, petroleum, diamond etc are slow changes	Eg Earthquake, burning of paper, fuel, landslide, bursting of crackers



## 3. Reversible and irreversible change

Reversible and irreversible change

Reversible change	Irreversible change
The changes that can be reversed easily, i.e the substance undergo change and can be easily obtained in its original state is called reversible change	The changes that cannot be reversed back to its original state is called irreversible changes
eg. Stretching of spring, melting of ice, steam to water, sugar in water, salt in water, magnet and iron.	e.g. burning of fuel, cooking of food, milk to curd, greying of hairs, ageing, small baby to big boy, changing of date, time, etc.

## 4. Physical and chemical change

Physical and chemical change

S No.	Physical change	Chemical change
1.	It is a temporary change	It is a chemical change
2.	Most of the changes are reversible	Most of the reactions are irreversible
3.	The chemical composition remains same	The chemical composition changes
4.	No new substance is formed	A new substance is formed
5.	There is only change in the physical properties like colour, state, smell, melting point, density, boiling point etc.	There is change in the chemical formula hence the chemical properties changes
6.	Heat may or may not be involved	Heat is always involved
7.	Cannot be represented symbolically	Can be represented symbolically in form of a chemical equation.
8.	Examples: sugar in water, melting of wax, switching on or off of a light,	Examples: burning of wood, conversion of food into glucose, photosynthesis, sugar with acid, etc.

## 5. Exothermic and endothermic change

Exothermic and endothermic change

Exothermic change	Endothermic change
In this process heat is evolved	In this process heat is absorbed
e.g freezing of water solidification of salt condensation of water vapour combustion of hydrogen burning of fuel respiration	e.g melting of ice melting of salts evaporation of water cooking of egg baking of bread dissolving of glucose in water dissolving of ammonium chloride in water photosynthesis

**J. Short answer questions.**

1. What are physical and chemical changes? Give examples.

The changes in which only physical properties such as colour, odour (smell), state, melting point, boiling point, density, viscosity of any substance change but the composition remains same is referred as physical change which is temporary . e.g melting of wax, folding of paper is a physical change. The changes in which the chemical composition of the substance change and new substance is formed is known as chemical change which is permanent. e.g cooking of food, digestion, burning of fuels are chemical changes.

2. Define boiling. What type of change is it?

**Boiling:** It is manmade as well as natural, desirable, reversible, fast and physical change. The change of liquid state to gas state at a fixed temperature is called **boiling**. The water on heating at temperature 100°C boils and changes to vapour state. The vapours on cooling changes back to water. Hence boiling is a physical process. Anything that boils, boils due to heat provided but does not form any new substance. Hence it is referred as physical change.

3. Define sublimation. What type of change is it?

The process by which a substance changes from solid state to gaseous state directly, without forming the liquid state is called **sublimation**. It is a physical change that is desirable, reversible, fast, and man-made or natural.

4. Define condensation. What type of change is it?

**Condensation :** It is man-made as well as natural, desirable, reversible, fast and physical change. The process of converting gaseous state to liquid state on cooling is called **condensation**. In this process the vapours when come in to the contact of low temperature changes back to liquid state. It is also referred as precipitation. The process is fast and reversible and the change is also temporary hence it is classified as physical change.

5. Define rusting. What type of change is it?

**RUSTING OF IRON:** This can be categorized under undesirable, natural, non- periodic , irreversible, permanent and chemical change. The surface of iron in the presence of air and moisture changes into hydrated ferric oxide, which is brown in colour and is referred to as 'rust'. The process of formation of rust is known as rusting. The formation of rust is a slow process where the upper layer of iron reacts. The rust cannot be converted back into the iron hence the process is permanent and chemical change.



**K. Long answer questions.**

1. List different types of changes. Give an example of each.

**a. Natural and man made changes e.g** weathering of rocks, ripening of fruit etc as natural changes, and construction of house, bridge, dam etc as man made changes.

**b. Desirable and undesirables changes e.g** Cooking of food, ripening of fruit, rain, day, night, seasons etc as desirable changes and flood, draught, tsunami, cyclones, storms, landslides, earthquake, volcano, forest fire etc as undesirable changes.

**c. Reversible and irreversible changes e.g** Stretching of spring, melting of ice, steam to water, sugar in water, salt in water etc as reversible changes and burning of fuel, cooking of food, milk to curd, greying of hairs, ageing, small baby to big boy etc as irreversible changes.

**d. Slow and fast changes e.g** Growth of small seedling to big tree, small baby to man, rusting of iron, formation of cloud, rock, soil, glaciers, petroleum, diamond etc are slow changes and Earthquakes, burning of paper, fuel, landslide, bursting of crackers etc are fast changes.

**e. Periodic and non-periodic changes e.g** Day and night, phases of moon, change of seasons etc are periodic changes and tidal wave, earthquake, thundering and lightening, volcanic eruptions etc are non- periodic change.

**f. Physical and chemical changes e.g** Melting of ice, expansion of metal, melting of wax, cutting of paper etc are physical changes and burning of fuel, paper, candle, wax, raw rice to boiled rice, milk to curd, cooking of food, growing of a living being etc are chemical changes.

2. Give four examples of physical change. Also name the other types of changes involved in each

1. Evaporation	Natural, desirable and reversible
2. Boiling	Reversible, desirable, man- made or natural
3. Condensation	Natural or Man-made, desirable and reversible
4. Melting	Natural, undesirable and reversible
5. Sublimation	Man-made or natural, desirable and reversible

3. What is evaporation? What are the factors on which the rate of evaporation depends?

**Evaporation:** It is man-made as well as natural, desirable, reversible, fast and physical change. The process of converting liquid to gas at any temperature is known as evaporation. In evaporation the liquid evaporates to vapour. For example water from rivers evaporates to form water vapour. These vapours collect in the atmosphere and form cloud.

**Factors affecting evaporation:**

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- a. Temperature: Evaporation increases with the increase in temperature. Therefore in summers clothes dry fast.
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- b. Humidity or moisture: The humidity in the air decreases the rate of evaporation. Hence in rainy season the clothes take time in drying as already there is moisture in the air.
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- c. Surface area: The larger the surface area is, the higher is the evaporation.
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- d. Rate of flow of air or wind: If air is moving fast the evaporation rate increases.
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- Pressure: In low pressure areas, the evaporation rate is fast.

4. Give four examples of chemical change. Also name the other types of changes involved in each.

1. Cooking of food	Desirable, irreversible and man made
2. Curdling of milk	Undesirable if meant for drinking and desirable if mean for making cheese, irreversible and natural or man made
3. Fermentation	Undesirable, irreversible and natural
4. Digestion	Desirable, irreversible and
5. Burning	Desirable, irreversible and natural or man made
6. Rusting of iron	Undesirable, irreversible and natural

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5. Explain why the curdling of milk is a chemical change.

The curdling of milk is a chemical change and is categorized under natural, desirable, irreversible and slow change. If we take warm milk and add a small sample of fresh curd, stir and keep it aside undisturbed for few minutes the milk gets converted into a new compound curd and the milk cannot be recovered back as it was before. The change is permanent and involves energy. Hence the curdling of milk is a chemical change.