PARAGON CONVENT SCHOOL

SECTOR : 24B, CHANDIGARH

LESSON - 6

CHANGES AROUND US

Summary:

- Changes can be fast or slow. Burning of fuel is a fast change but rusting of iron is a slow change.
- A change that can be reversed is called a reversible change, e.g., melting of ice.
- A change that cannot be reversed is called an irreversible change, e.g., cooking of food.
- A change in which no new substance is formed is called a physical change, e.g., tearing of paper.
- A change which leads to formation of a new substance is called a chemical change, e.g., burning of paper.
- Substances expand on heating. Solids show minimum expansion whereas gases show maximum expansion.
- A change which is beneficial is a desirable change.
- A change which is harmful is an undesirable change.

Multiple Choice Questions (Page No. 70)

1. (d) 2. (c) 3. (c) 4. (a) 5. (d)

Multiple Choice Questions (Page No. 73)

1. (a) 2. (d) 3. (d) 4. (b) 5. (a)

SECTION A

Oral questions

Q1.- Name any five natural and five human made changes around us.

Ans.- Natural changes : (i) Change of seasons (ii) Formation of clouds

(iii) Weathering of rocks (iv) Formation of glaciers (v) Beating of heart

(vi) Flowering of plants (vii) Ripening of fruits

(viii) Occurrence of day and night

Human-made changes: (i) Cooking of food (ii) Burning of fossil fuels

(iii) Weaving of cloth (iv) Production of food grains

(v) Dissolving sugar in water (vi) Making of idlis from a batter

(vii) Boiling of raw eggs

Q2.- What happens to the size of a material when it is: a) heated b) cooled?

Ans.- (a) Size increases or expands on heating.

(b) Size decreases or contracts on cooling

Q3.- Give two examples of irreversible changes that take place due to heating.

Ans.- Burning of paper and burning of crackers / Boiling of milk / Formation of curd / Cooking of food / Raw egg to boiled egg.

Science quiz

Q1.- Is the grinding of grains into flour, a reversible or irreversible change?

Ans.- Irreversible change

Q2.- Name one metal which expands on heating and contracts on cooling.

Ans.- Iron, aluminium, silver

Q3.- Name two brittle substances.

Ans.- Glass, biscuits, coal

Q4.- Name the type of change in which new substances are formed.

Ans.- Chemical change

WORKSHEET

Tick (√) the correct options.

1. (b) 2. (b) 3. (c) 4. (d) 5. (a)

Circle the odd ones. Give reasons for your choice

1. Burning of paper, Ageing of humans, Cooking of food, Boiling of water

Ans.- Boiling water → It is a reversible change whereas others are irreversible changes.

2. Change of seasons, Formation of glaciers, Hammering of metals, Beating of heart

Ans.- Hammering of metals → It is a human made change, whereas others are natural changes.

3. Digestion of food, Burning of coal, Rusting of iron, Tearing of paper

Ans.- Tearing of paper → It is a physical change, whereas others are chemical changes.

Fill in the blanks

1. reversible 2. irreversible/natural/chemical

2. physical/reversible 4. Heating

SECTION B

Multiple Choice Questions

1. (a) 2. (d) 3. (a)

Very Short Answer Questions

Q1.- What kind of change is burning of paper?

Ans.- Chemical change

Q2.- What happens when an aluminium rod is heated?

Ans.- On heating, aluminium rod expands.

Q3.- What happens on cooling of steam?

Ans.- On cooling, steam changes into water.

Q4.- What type of change is melting of wax?

Ans.- Physical change/reversible change

Q5.- Is the formation of day and night, a natural or human made change?

Ans.- Formation of day and night is a natural change.

Q6.- What changes do you observe on applying pressure on brittle substances?

Ans.- On applying pressure, a brittle object breaks. It is an irreversible change.

Short Answer Questions

Q1.- What are reversible changes?

Ans.- The changes that can be reversed easily by reversing the conditions to obtain a substance in its original form are called reversible changes. E.g., stretching of a rubber band.

Q2.- What are irreversible changes?

Ans.- The changes that cannot be reversed even by changing the conditions to obtain a substance back in its original form are called irreversible changes. E.g., burning of wood, crackers, ageing of living beings.

Q3.- Neha’s mother is sick. Neha makes vegetable soup for her and serves it to her.

a) Can we get the vegetable back from the soup? What type of change does it represent?

b) What value does Neha’s action show?

Ans.- (a) No, we cannot get the vegetables back from the soup. It represents an irreversible change.

(b) It is our duty to take care of our parents. Neha's action shows concern and affection for her mother.

Q4.- What are the different ways to bring about changes?

Ans.- The ways to bring about changes are heating, cooling, applying pressure

and mixing of substances.

Q5.- What change do you observe on keeping milk in refrigerator?

Ans.- The milk kept in refrigerator becomes cold after some time. If milk is kept in the freezer of the refrigerator, then it is converted into frozen milk (solid). In both the cases, the changes are physical. In both the cases, the change occurs due to change in temperature. In second case, the change in temperature changes the state of matter i.e. changes liquid milk into solid milk (frozen).

Q6.- Classify the following as reversible or irreversible changes:

Burning of coal, freezing of water, digestion of food, ironing of a shirt, baking of a chapatti, knitting of a sweater, folding of paper and rusting of iron.

Ans.- Burning of coal, digestion of food, baking of a chapati and rusting of iron are irreversible changes.

Freezing of water, ironing of a shirt, knitting of a sweater and folding of paper are reversible changes.

Long Answer Questions

Q1.- Explain how heating and cooling of water brings changes in the state of matter.

Ans.- Heating and cooling of water brings change in its states. On heating, water changes to steam i.e., water changes to gaseous state. This process is called evaporation. On heating, the kinetic energy of water molecules increases. Due to increase in kinetic energy, the particles start moving with greater speed. As the temperature is further increased, the energy supplied in form of heat overcomes the force of attraction between the particles. At this stage, the particles leave their original position and start moving fast and thus, water changes into water vapour.

On cooling, water changes into ice, i.e., water changes to solid state. This process is called freezing. On cooling, the kinetic energy of water molecules decreases. Due to decrease in the kinetic energy, the water molecules start moving slowly. As the temperature is further lowered, the force of attraction pulls the particles close together and water changes into ice.

Q2.- Explain how a metal rim is fixed around the wooden wheel of a cart.

Ans.- A metal rim is fixed around the wooden wheel in the following way-

The iron rim is made slightly smaller in size than the wooden wheel. The ironsmith heats this iron rim uniformly over fire. On heating, the iron rim expands and becomes somewhat bigger in size. This hot iron rim is now easily put around the wooden wheel. Water is then poured over the hot iron rim to cool it. On cooling, the hot iron rim contracts and fits tightly around the wooden wheel.

Q3.- How are physical changes different from chemical changes?

Ans.-

Physical changes	Chemical changes
1. A change in which no new substance is formed is called a physical change.	1. A change in which new substance is formed is called a chemical change.
2. In physical change the state, size, shape of a substance change. The properties of the substance remains the same.	2. The properties of new substance formed in chemical changes are entirely different from those of original substances.
3. Most of the physical changes are temporary and reversible.	3. Most of the chemical changes are permanent and irreversible.
4. Melting of ice and tearing of paper are physical changes.	4. Burning of paper and ripening of fruits are chemical changes.

Q4.- Is the burning of a candle, a chemical or physical change? Explain with reasons.

Ans.- Burning of candle is a chemical change. On burning a candle, wax burns to produce wax vapours and carbon dioxide. It produces heat and light. Candle becomes smaller on burning. New substances are formed and energy is released during the burning of the candle. It cannot be reversed. It is a permanent change. Thus, burning of a candle is a chemical change.