

GENERAL SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

Symptoms are high grade fever, headache, Stomach pain, weakness, Dizziness and loss of Hunger.

19. What are precautions and diagnostic test for Typhoid?

Ans: Precautions are vaccination. Wash hands properly after using toilet and before handling food. Eat freshly prepared and properly cooked food drink boiled bottled water.

Diagnostic Test: Blood culture test for presence of typhoid Bacteria.

E. Project Work

Run a campaign to give awareness about diseases in your surroundings.

Ans: practical work

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4

PHYSICAL AND CHEMICAL CHANGES

Questions and Activities

A. MCQs (Choose the correct option).

1. Which of the following is an example of physical change.

- a. Mixing baking soda and vinegar
- b. Chopping of log
- c. Burning a paper with a lighter
- d. Baking a birthday cake for your mother.

Ans: b. Chopping of log

2. Which of the following is an example of chemical change?

- a. Filling up a balloon with air.
- b. Freezing of water.
- c. Photosynthesis.
- d. Boiling of water

Ans: c. Photosynthesis.

3. Which change can be easily reversed?

- a. Chemical Change
- b. Physical Change
- c. Both physical and chemical changes
- d. Neither a physical nor chemical change

Ans: b. Physical Change

4. When a new substance is formed with properties different from the ones it was formed

- a. chemical change.
- b. physical change.
- c. freezing
- d. boiling

Ans: a. chemical change.

5. If the chemical properties of a substance remain unchanged and only the state change it is called a

- a. chemical change.
- b. physical change.
- c. both physical and chemical change
- d. neither physical nor chemical change

Ans: b. physical change.

6. Which of the following is an example of a physical change?

- a. Metal rusting
- b. Silver tarnishing

GENERAL SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

c. Boiling of water

d. Burning of a paper

Ans: c. Boiling of water

7. What best describes a physical change?

a. Composition change

b. Composition stays the same

c. State stays the same

d. Mass is lost

Ans: b. Composition stays the same

8. Which of the following is an example of chemical change?

a. Water freezes

b. Wood is cut

c. Bread is baked

d. Wire is bent

Ans: c. Bread is baked

9. Rusting can be prevented by

a. scratching b. painting

c. washing d. cleaning

Ans: b. painting.

10. Milk turns sour, this is a

a. physical change.

b. chemical change.

c. physical property.

d. chemical property.

Ans: b. chemical change.

B. Short questions

1. Why is boiling of egg a chemical change and boiling of water is a physical change?

Ans: Boiling of egg is chemical change, when egg is boiled nature of egg change. Boiling of water is a physical change since only the physical the physical state of water changes.

2. What is a chemical property?

Ans: A chemical property is a characteristic of a substance that

may be observe when it participates in a chemical change. chemical properties included flammability, rusting etc.

3. Define the chemical property.

Ans: Rusting is an iron oxide, a usually, brown oxide formed by the reaction of iron and oxygen in the catalytic presence of water or air moisture.

4. What is flammability? Identify examples of flammable matter.

Ans: Flammability is defined as how easily can a substance burn. When matter burns. It combines with oxygen and changes to different substance.

Example are burning of woods, chemical, likes gasoline, acetone, diethyl other perfumes and sprays etc.

5. Why silver gets tarnished after some time.

Ans: Silver objects get a black coating over time when they are exposed to air. This is due to tracer of 8 hydrogen sulphide (H₂S) in the air, which react with a silver (Ag) to form black silver sulphide (Ag₂S)

C. Long questions

1. Distinguish between physical and chemical change. State with at least two examples from daily life.

Ans:

Physical Change	Chemical Changes
1. No new substances are formed.	New substances are formed

GENERAL SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

2. The composition of substances remains same.	The composition of substances entirely different.
3. It is reversible change	It is reversible change.
4. New products are not formed.	New products are formed.
5. Some changes occur when heating or cooling is done.	Changes always involve absorption or release of energy.
6. Changes have no effect on the chemical bonds of molecules of a substances.	Have a direct effect on chemical bonds of molecules in a substances.
7. Example are breaking glass, Melting ice, Boiling water etc.	Example are Burning, Rusting of iron, photosynthesis etc.

2. Describe combustion with the help of word equation? Explain the harmful effects of combustion on the environment.

Ans: A chemical process where fuel (wood / petrol / oil) reacts with air (oxygen) to give heat and light energy.

Word equation

Fuel + oxygen → Carbon dioxide + Water + Energy
(heat and light)

Effect of Combustion On The Environment

There are various effects of combustion on the environment

1. It releases carbon dioxide which causes Global warming.

2. Unburnt carbon particles causes Asthma Respiratory disease.

3. Sulphur dioxide cause acid rain.

4. It release carbon monoxide, it is a poisonous gas that can kill people.

3. What is rusting? Suggest any three ways to prevent the rusting of iron.

Ans: Rusting is defined as the chemical process in which there is a formation of red or orange coat on the surface of the metals. Rusting is part of corrosion. Ways to Prevent the rusting of iron.

i. Protect and do not allow iron to be left in open.

ii. Apply a coating of another metal that does not get rusted easily. There is also called galvanizing's.

iii. Paint the exposed part of the metal object.

iv. Apply oil

v. apply a dry coating

vi. Store properly

vii. Blueing

viii. powder coating.

D Structure questions

1. Why is the pan made of metal and handle of a plastic.

Ans: Because metal is a good conductor of heat so, the handle of pen made up of plastic. Plastic is the bad conductor of heat.

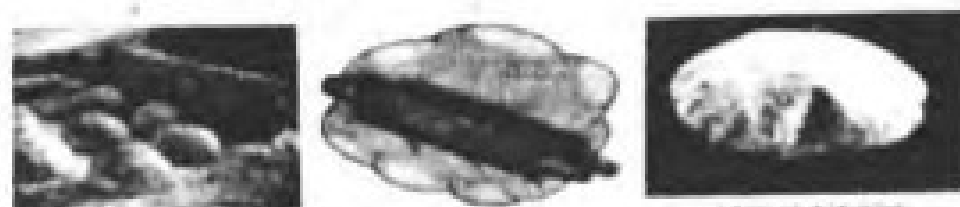


GENERAL SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

2. In the process of making chapatti, there are 3 steps from A to B to C

Which stage is a physical and chemical change? Give your reasons also.

Ans: Stages A and B are physical change but stage C is a chemical change.



3. Complete the following flow chart

Ans:



4. When a candle is burned both Physical and chemical changes take place.

- a. Identify and explain the changes.

Ans: On heating, candle wax gets melted. Since it again turns into solid wax on cooling. So, the melting of wax and evaporation of melted are physical changes. The wax near flame burns and gives new substances like carbon dioxide carbon soot, water vapour, heat and light is called chemical change.

- b. Give another similar example where both physical and chemical changes take place.

Ans: Food digestion is considered a chemical change because enzyme in the stomach and intestines break down large macro molecules into simpler molecules so that the body can more easily absorb the food. In physical digestion, your body mechanically breaks down food, grinding or smashing it into smaller pieces.

5. During the process of digestion, proteins are broken down into amino acids and molecules (you must have read it in the chapter on digestion in grade 6)

- a. Is digestion a chemical change? How do you know?

Ans: Mechanical digestion occurs in the mouth, stomach, and small intestine. Food is chemically changed in digestion when new, smaller substances are formed. These chemical changes are examples of chemical digestion. Chemical digestion begins in the mouth when enzymes in saliva begin to break down carbohydrates.

- B Identify the process in plants where a chemical change takes place, Justify your answer.

Ans: Photosynthesis It is a process that is mainly used by plants to convert light energy into chemical energy. It is a chemical

GENERAL SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

process that occurs in plants. In this process, plants convert water and carbon dioxide into sugars and oxygen.

6. **Combustion takes place in the internal combustion engine of a car. What burns in the engine to release energy for the car to move? Can it burn without air or oxygen?**

Ans: An internal combustion engine burns fuel internally, or inside the engine in an internal combustion engine a mixture of fuel and air is burned in a closed cylinder, forcing a piston to move up and down. In a car, the moving piston rotates a crankshaft, which turns a driveshaft.

7. **Melting of butter is a change where a substance changes from a solid to a liquid state? Write a few more examples.**

Ans: Melting of ice, Melting of candle, Melting of ice cream, Melting of sugar, Melting of iron, Melting of plastic, Rocks to lava, Melting to molten liquid.

Activities

Activity 1

Observe a chemical change

Materials Needed:

- A bottle • Vinegar
- Baking soda
- a balloon
- a funnel

Procedure

1. Place a small amount of baking soda in the balloon using the funnel.

2. Then pour vinegar into the bottle so it is about half full.

3. Carefully stretch the balloon around the top of the bottle.

4. Allow the baking soda to drop into the bottle.

Make sure to hold the top of the balloon so that it doesn't come off.

• **What type of change occurred?**

Ans: A chemical change occurred.

• **How do you know?**

Ans: When baking soda is mixed with vinegar, something new is formed. The Mixture quickly foams up with carbon dioxide gas.

Activity 2

Effect of Combustion

Have a class discussion and talk about the effect of combustion on the environment. Also suggest ways to avoid combustion.

Ans: Teacher: Who tell me about the combustion?

Hamad: Combustion is a chemical change in which new matter is formed. Combustion meaning burning.

Ali: It is a chemical process where fuel (wood/oil Petrol) react with air (oxygen) to give heat and light energy.

Ayesha: There are two types of combustion Complete combustion (complete burning) and incomplete combustion (burning).

Ayan: Both types of combustion have harmful effect on the

GENERAL SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

environment. In complete burning releases carbon monoxide it is a poisonous Gas that can Kill People.

Afifa: Complete combustion release unburnt carbon Particle, they causes Asthma. It is a respiratory disease.

Talha: Complete burning release carbon dioxide which causes Global warming. And it is release Sulphur dioxide which causes Acid Rain.

A few ways to avoid combustion

1. Never leave your stove unattended while cooking.
2. Get rid of any dust in saw dust as quickly as possible to prevent fire.
3. Keep my flammable items away from sources of heat, including radiator and windows.
4. Keep sparks and open flames away from combustible and flammable materials.
5. Build the factories away from the city.

Activity 3

Thermal Conduction

- Take three spoons of different material: metals, plastic and wood.
- Scoop butter in all three spoons.
- Immerse the spoons in glasses with boiling water.
- Record your observation

Q: Where did you see the butter melt first? Why do you think this happened?

Ans: Metals spoon butter melt first because the metal are the good

conductor of heat, while spoons of plastic and wood are not the good conductor of heat.

E. Project work

Make a poster to show comparison of physical chemical change.

Ans: Practical Work

A. MCQs (Choose the correct option)

1. There are _____ types of changes occurs in matter.

- a. one
- b. two
- c. three
- d. none of there

Ans: b. two

2. Which one of the following is physical change.

- a. Cooking an egg
- b. Fire works
- c. Burning
- d. Cutting Cutting

Ans: d. Cutting Cutting

3. Who is the father of chemistry?

- a. Abdul Haitam
- b. Abdul Qadeer
- c. Antoine Lavoisier
- d. Musa bin Naseer

Ans: c. Antoine Lavoister

4. Which one of the correct word equation for the combustion?

- a. Fuel + Oxygen → Carbon dioxide + water + Energy
- b. Fuel + Nitrogen → carbon dioxide + oil + Energy
- c. Carbon dioxide + water → Energy + Oxygen + Fuel
- d. Water + Fuel + Oxygen → Carbon dioxide + Energy

Ans: a. Fuel + Oxygen → Carbon dioxide + water + Energy

GENERAL SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

5. In complete combustion the carbon dioxide caused?:

- a. Asthma
- b. Global Warming
- c. Acid Rain
- d. lungs disease

Ans: b. Global Warming

6. _____ is reddish – brown and has rough edges?

- a. Nitrogen b. Aluminum
- c. Iron oxide d. Carbon dioxide

Ans: c. Iron oxide

7. Ag is the symbol of :

- a. Aluminum b. Gold
- c. Silver d. Bronze

Ans: c. Silver

8. Silver objects get a black coating over time when They are expose in:

- a. soil b. water
- c. dust d. air

Ans: d. air

9. Which of the following is an example of chemical property?

- a. Toxicity b. Density
- c. colour d. ductility

Ans: a. Toxicity

10. It is the ability of a substance to conduct heat.

- a. Melting point
- b. Thermal conductivity
- c. Boiling point
- d. Solubility

Ans: b. Thermal conductivity

11. _____ making it difficult for water to freeze on the road.

- a. sugar b. Vinegar
- c. salt d. soil

Ans: c. salt

12. _____ is the good conductor of heat.

- a. copper b. silver
- c. gold d. iron

Ans: a. Copper

13. Flammability is the ability to catch _____ easily.

- a. fire b. water
- c. air d. smell

Ans: a. fire

14. Burning is the also known as:

- a. reactivity
- b. toxicity
- c. ability to oxidize
- d. combustion

Ans: d. combustion

♦ Short questions.

1. Is everything made up of matter in the universe?

Ans: yes, everything is made up of matter in the Universe.

2. How many types of changes are exist in matter?

Ans: There exist two types of changes in matter

i) Physical changes

ii) Chemical changes

3. Define Physical change?

Ans: No new substances is formed in physical change, and be easily reversed. Matter changes its forms but not the composition of a material e.g boiling water, melting ice etc.

4. What do you mean by chemical change?

Ans: Chemical changes take place only when material changes to became an entirely different kind of matter. It cannot be reversed.

GENERAL SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

Composition of material changes
e.g. Formation of yogurt,
photosynthesis etc.

5. Define the law of conservation of mass?

Ans: This law states that, in a chemical reaction, the matter is neither destroyed nor created but it may be changed from one form to another.

6. Write down the scientific definition of combustion.

Ans: A chemical process where fuel (wood/Petrol/oil) with air(oxygen) to give heat and light energy. It is used in cars, rocket engines and many other types of machinery.

7. Write the word equation for combustion?

Ans: Fuel + Oxygen → Carbon dioxide + water + Energy (heat & light)

8. Write a paragraph to judge the value and impact of combustion on the environment.

Ans: There are various impacts of combustion on the environment these impacts can be caused by Gas leaks, oil spillage, noise and air pollution. Incomplete combustion of hydrocarbons also results in carbon monoxide can be harmful to both environment and to people.

9. Why is energy Conservation important?

Ans: Energy conservation is incredibly important for several reasons. Along with

reducing our reliance on non-renewable energy resources (like fossil fuels), it also helps save you money on energy costs, including utility bills and other energy bills.

10. What do think why copper is used for making wire and gold is use for making Jewellery?

Ans: Copper can be used for making wires because they are ductile in nature. Gold also a metal it is malleable and ductile and also have a shiny luster which makes them appropriate for making jewellery.

11. Define melting point, boiling point and solubility?

Ans: Melting point is the temperature at which solid changes into liquid.

Boiling point is the temperature at which a liquid boils convert into vapours.

Solubility is the maximum amount of solute that can be dissolved in a certain quantity of solvent at a particular temperature.

12. Why a salt solution spray in places where heavy snowing takes place?

Ans: A salt solution sprayed on the road where heavy snowing takes place because salt lowers the freezing point. Therefore, making it difficult for water to freeze on the roads.

13. Why do apples turn brown?

Ans: When an apple is cut oxygen is introduced into the injured plant

GENERAL SCIENCE NOTES FOR 7TH CLASS (FOR ISLAMABAD)

tissue. When oxygen is present in cells, polyphenol oxides (PPO) enzymes in the chloroplast rapidly oxidize phenolic compounds naturally present in the apple tissue to o-quinones, colorless precursors to brown-coloured secondary products.

14. How you define flammability?

Ans: Flammability is defined as how easily can a substance burn. When matter burns, it combine with oxygen and changed to different substance. Wood is an example of flammable matter.

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5

STRUCTURE OF AN ATOM

Questions and Activities

A. MCQs (Choose the correct option)

1. Neutrons carry
 - a. no electric charge
 - b. positive charge.
 - c. negative charge.
 - d. unit charge.

Ans: no electric charge

2. The smallest particle of an element is:

- a. Molecule
- b. Atom
- c. Cell
- d. DNA

Ans: Atom

3. Carbon has a mass number of 12. It has protons and neutrons:

- a. 6,6
- b. 12,6
- c. 12,12
- d. 6,12

Ans: 6,6

4. The nucleus of an atom contains:

- a. Protons, electrons and neutrons
- b. Electrons and protons
- c. Protons and electrons
- d. Protons and neutrons

Ans: Protons and neutrons

5. Protons carry:

- a. Positive charge
- b. Negative charge
- c. No charge
- d. Zero charge

Ans: Positive charge

6. The atomic number of an element tells the number of:

- a. Electrons and neutrons
- b. Protons only
- c. Protons and neutrons
- d. Neutrons only

Ans: Protons only

7. If the atomic mass of nitrogen is 14, and it has 7 neutrons, how many electrons does a nitrogen atom have?

- a. 8
- b. 6
- c. 14
- d. 7

Ans: 7

8. The mass number of an atom is represented by

- a. A
- b. B
- c. Z
- d. M

Ans: A

9. Nitrogen is an element with the symbol N and the atomic