

INTERNATIONAL INDIAN SCHOOL BURAIDAH

Worksheet

Class 7 Ch#6 Physical and Chemical Changes

I.VERY SHORT ANSWER (1M):

1) List the physical properties of a substance. [The properties such as state, size, shape and colour

of a substance are the physical properties of a substance.]

2) Define the following terms:

a) Galvanisation [The process of depositing a thin layer of zinc metal on iron objects.]

b) Crystallisation [The process of obtaining a substance in its pure crystal form from its saturated solution]

3) What is meant by the process of rusting?

[Hint- Process in which iron develops a reddish-brown layer in the presence of oxygen and moisture]

4) Mention the different ways by which rusting or iron can be prevented. [By oiling, painting, greasing the iron objects, Galvanisation, Chromium plating, Alloying]

5) Why formation of manure from leaves is a chemical change? [Hint: Formation of manure from

leaves is a chemical change because manure formed has a different composition from leaves.]

6) Is cloud formation a chemical or physical change? Explain. [Hint: Physical change. Clouds

are formed by the condensation of water vapours present in the atmosphere. When rainwater

goes back to the earth, no new substance is formed.]

7) “Chemical changes are very important in our life.” Give any two examples to support it.

[Hint- extraction of metal from ore, production of medicine]

For question numbers 8 to 10, two statements are given- one labelled Assertion (A) and the other labelled Reason (R).

Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below

- i) Both A and R are true and R is correct explanation of the assertion.
- ii) Both A and R are true but R is not the correct explanation of the assertion
- iii) A is true but R is false.
- iv) A is false but R is true

8. Assertion (A) - Tearing of paper into small pieces is a chemical change.

Reason(R) - It is not possible to rejoin small paper bits to get back the original paper.

Ans: iv) A is false but R is true

9. Assertion (A) - Taps and bicycle handles are usually chromium plated.

Reason(R) - Coating a layer of chromium prevents rusting of iron articles.

Ans: i) Both A and R are true and R is the correct explanation of the assertion.

10. Assertion (A) - Change of water from liquid to steam is a physical change.

Reason(R)-When water change from liquid to gaseous state the chemical composition of water changes.

Ans: iii) A is true but R is false.

II. CASE STUDY BASED QUESTIONS

1. In a bowl of ripe fruits a few fresh fruits were placed. The next day it was observed that the

fresh fruits had ripened, and ripe fruits had rotted. What kind of change occurred within the

fresh fruits?

- i) Physical change as the appearance of the fruit alone changes
- ii) Physical change as the color of fruit changes
- iii) Chemical change as the shape of the fruit changes.

iv) Chemical change as the change cannot be reversed.

2. A student collects wax from a burning candle. He melts it and then adds a new wick to it and

leaves it to cool. Can a new and functional candle be created by this process? Why or why not?

i) Yes; it is a reversible physical change in state of wax.

ii) No; it is a physical change that cannot be reversed.

iii) No; it is an irreversible chemical change with the formation of a new substance.

iv) Yes; it is a chemical change causing the wax to change from one state to another.

3. A woman mixes flour, milk, eggs and water to create a batter, for baking a cake. The steps in

The process is:

Step 1: Mix flour, water, eggs, sugar and milk in a bowl.

Step 2: Place the batter in a baking tray and bake a cake in the oven.

Which types of changes do each of these steps represent?

i) Step 1: Physical change, Step 2: Chemical change

ii) Step 1: Physical change, Step 2: Physical change

iii) Step 1: Chemical change Step 2: Chemical change

iv) Step 1: Chemical change, Step 2: Physical change

III. PASSAGE BASED QUESTIONS:

Read the passage given below and answer the following questions:

A chemical change is one in which changes take place on the molecular level. It produces a new

substance whereas a physical change does not produce any new substance. To understand how a

physical change occurs, take some sugar crystals and dissolve them in water. The water

becomes sweet to taste, which shows that molecules of sugar are present in water.

Evaporate the

sugar solution in a china dish over a Bunsen burner or a spirit lamp. A white residue is obtained

in the china dish. All the properties of this residue are identical to sugar, which was earlier dissolved in water. Thus, we find that in this case no new substance is formed. Hence dissolving

of sugar in water is a physical change. Change in state or phase are physical changes such as

melting, freezing, vapourisation, condensation and sublimation. A chemical change results in

substance that was not there before.

i. In which of the following ,changes take place at the molecular level?

a. Cutting of wood b. Chopping of wood

c. Burning of wood d. None of these

ii. Vapourisation is an example of:

a. Physical change b. Chemical change

c. Both of these d. None of these

iii. Evaporation of sugar solution to obtain sugar is an example of a:

a. Physical change b. Chemical change

c. Both of these d. None of these

iv. Identify the physical change /changes from the following:

a. Melting b. Freezing

c. Condensation d. All of these

IV.a) SHORT ANSWER TYPE QUESTIONS (2 M):

1 Give two examples for each of the following cases:

(a) Physical changes which are reversible. [Blowing a balloon, Folding of paper]

(b) Physical changes which are not reversible. [Chopping of vegetables, breaking of a glass tumbler]

2) A sheet of paper was torn into pieces and then burned. What changes does this sheet of paper undergoes? Explain. [When the paper is torn into pieces, it undergoes a physical change as only the size of the paper changes and no new substance is formed. Whereas when a paper is burned, a new substance ash is formed, hence it is a chemical change]

3) Justify the following statement- Photosynthesis and digestion of food are chemical changes.

[Hint: During Photosynthesis, plants use carbon dioxide and water in the presence of sunlight and chlorophyll to form new substances- glucose and oxygen.

During digestion, various food materials are breaking down to form new substances which can be absorbed by the body.]

4) How ozone layer acts as a protective shield?

[Hint: Ozone layer protects us from ultraviolet radiation which come from the sun. Ozone absorbs ultraviolet radiation and breaks down to form oxygen. In this way ozone layer absorbs harmful ultraviolet radiations.]

IV.b) SHORT ANSWER TYPE QUESTIONS (3 M):

1. (a) A change in colour is observed. [Browning of an apple]

(b) A gas is evolved. [During a reaction between vinegar and baking soda, carbon dioxide gas is evolved]

(c) Sound is produced. [Bursting of fire crackers]

(d) A change in smell. [Spoilage of food]

(e) Heat is given out. [Bursting of fire crackers]

3) Write three differences between physical and chemical changes.

[Hint: Physical- no new substance is formed, usually temporary and mostly reversible in nature, heat or light is generally not involved. Chemical- one or more new substances are formed, usually permanent and irreversible in nature, heat or light is absorbed or released.]

4) Same iron wires are kept in following different places a) On the moon. b) In Delhi. c) Near beach in Mumbai.

Compare the degree of rust formation in the three places.

[Hint- a) The moon has no air. In the absence of air, no rust will form. b) Delhi is far away from sea coast. The amount of water vapour in the air is less. Thus, rusting process will be slow. c) Mumbai is a coastal region which has more water vapour in air and rusting will occur faster.]

V. LONG ANSWER TYPE QUESTIONS (5 M):

1. Classify the following changes as physical or chemical change and give reason for it.

| Sl.No. | Activity | Kind of change | Reason |
|--------|----------|----------------|--------|
|--------|----------|----------------|--------|

i Rotting of eggs Chemical change Change in composition takes place, is an irreversible process. The smell of the rotten eggs is different from the fresh eggs.

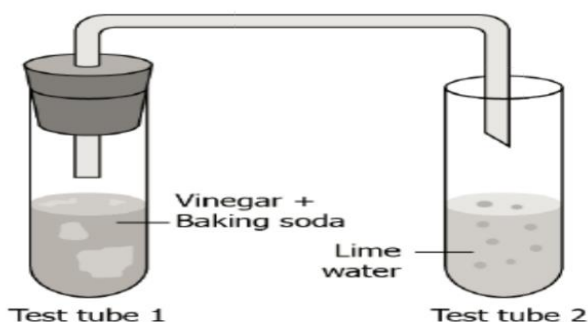
ii Burning of coal Chemical change When coal is burnt, a new substance carbon dioxide is formed.

iii Evaporation of sea water Physical change When water evaporates, it changes from the liquid state to the gaseous state, but it is still water; it has not changed into any other substance.

iv. Neutralisation reaction Chemical change When an acid react with a base, new substances salt and water is formed.

v. Crystallisation Physical change In forming a crystal no change occurs in the chemical properties of the substance only the shape changes.

2) Observe the given activity and answer the questions-



- Name the acid used in the activity. [Acetic acid]
- Which gas is produced when baking soda reacts with vinegar? [Carbon dioxide]
- What change will you observe in lime water and why? [Lime water turns milky on passing carbon dioxide gas through it due to the formation of calcium carbonate]
- Write word equations for both chemical changes. [Carbon dioxide gas is given off in the reaction between vinegar (acetic acid) and baking soda (sodium hydrogen carbonate).

Acetic acid + sodium hydrogen carbonate → carbon dioxide + other substances

When carbon dioxide gas is passed through lime water (Calcium hydroxide), it turns milky due to the formation of calcium carbonate.

Calcium hydroxide + carbon dioxide → calcium carbonate + water]

MOTION AND TIME

CH#13

OBJECTIVE-TYPE QUESTIONS

- Which among the following is an incorrect statement?
 - Increase or decrease in the length of the string will increase or decrease the time period respectively.
 - The metallic bob is free to swing on the rigid stand.
 - The pendulum is at rest in its extreme position.**

d) The pendulum of a given length takes always the same time to complete one oscillation.

2) The simple pendulum is an example of :

a) Periodic motion

b) Oscillatory motion

c) Circular

d) Both a and b

3) Time period is :

a) Total time taken/No: of oscillations

b) No: of oscillations/Time taken

c) Distance/Time

d) Distance/No: of oscillations

4) One oscillation is completed when the bob of the pendulum moves from

a) One extreme to the other

b) One extreme to the other and back to first extreme position

c) The mean position to one extreme and the other extreme.

d) The extreme to its mean position

5. Which of these motions explains a periodic motion?

a) That follows a curve path

b) That occurs in a straight path

c) That is associated with calculating time

d) That repeats in an equal interval of time

For the following questions, two statements are given- one labelled Assertion (A) and the

other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii),

(iii), and (iv) as given below

(i) Both A and R are true and R is the correct explanation of the assertion.

(ii) Both A and R are true but R is not the correct explanation of the assertion.

(iii) A is true but R is false.

(iv) A is false but R is true.

7. Assertion (A): When a pendulum moves to and fro from its fixed position it is said to complete one oscillation.

Reason (R): Time period is the time taken by a pendulum to complete one oscillation.

Ans (ii) Both A and R are true but R is not the correct explanation of the assertion.

8 . Assertion (A): The revolution of the earth around the sun is a periodic motion.

Reason (R): The type of motion where an object repeats its motion after equal intervals

of time is called periodic motion.

Ans. (i) Both A and R are true and R is the correct explanation of the assertion.

9. Assertion (A): A faster-moving object covers more distance in less time.

Reason (R): The speed of a faster-moving object is less.

Ans. (iii) A is true but R is false.

10. Assertion (A): The speedometer records the speed of the vehicle generally in km/h.

Reason (R): Odometer measures the distance moved by the vehicle in one hour.

Ans. (iii) A is true but R is false.

VERY SHORT QUESTIONS (2M):

1. a) What do you mean by the average speed of an object? How can you find it?

[Hint-The average speed of an object is the total distance travelled by the object divided by the total time taken to cover that distance.

Average speed = Total distance covered/Total time taken

b) A car covers 20 km in the 1st hour of its journey, 40 km in the next hour and 30 km in 3rd hour. Calculate the average speed.

**[Hint: Average speed = Total distance covered/Total time taken
= $90/3 = 30$ km/h]**

2. What devices are used in vehicles to record speed and distance?

[Hint: The speedometer is used to record the speed of the vehicle in km/h and the odometer is used to record the distance covered in km.]

3.a) Define motion.

[Hint: A body is said to be in motion if it changes its position with respect to its surroundings in a given time.]

b)What do you mean by an oscillatory motion? Give an example.

[Hint: The to and fro motion of a body about its fixed position is called an oscillatory motion. Example - Motion of a simple pendulum.]

c) Classify the following as rectilinear, circular or oscillatory motion.

i. Motion of a child in a merry-go-round. ii. Bullock cart moving on a straight road.

[Hint: i. Motion of a child in a merry-go-round-circular motion.

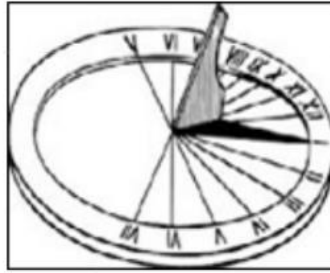
ii. Bullock cart moving on the straight road- rectilinear motion.]

4. What are quartz clocks? Write its advantage.

[Hint- A quartz clock is a special type of clock or watch which uses the vibration of a quartz crystal and has an electric circuit with one or more cells. It gives more accurate time.]

5. a)Identify the time-measuring device given below. What was the principle

behind working of the device?



[Hint: The given time measuring device is a sundial. It works on the principle that as the position of the sun in the sky changes, the position and length of the shadow cast by the object changes.]

b) Name any two time-measuring devices used in ancient times.

[Hint: Sundial and Sand clock.]

6. a) A simple pendulum takes 35s to complete 20 oscillations. What is the time period of the pendulum?

[Hint-Time period=Total time taken/No: of oscillations

$$35/20 = 1.75s]$$

b) What is meant by the time period of a simple pendulum?

[Hint: The time taken by the pendulum to complete one oscillation is called its time period.]

7. a) Define speed. What is its basic unit?

[Hint: The distance covered by an object in unit time is called speed.

Its basic unit is metres per second (m/s).]

b) Write the formula for calculating speed.

[Hint- Speed = Distance/Time

c)Mention the standard units of distance and time.

[Hint-metre (m) and second (s)]

d) How can we say that the speed of an object is faster than the other?

[Hint: An object can be said to have a faster speed if it covers a longer distance than the other, during a given period of time.]

III. SHORT ANSWER TYPE QUESTIONS: (3M)

1. Distinguish between uniform and non-uniform motion with examples.

[Hint-If a body covers equal distances in equal intervals of time, then the motion is said to be uniform. Example-Hands of a clock. If a body covers unequal distances in equal intervals of time, then its motion is called non-uniform motion. Example -Motion of a car in city traffic]

2. a) Draw a neat diagram of a simple pendulum showing its mean and extreme positions.

b) What is called the bob of the pendulum?

[Hint: The metallic ball of a simple pendulum suspended from a rigid stand by a thread.]

3. Differentiate circular and rotational motion with examples.

[Hint: A type of motion in which objects move along a circular path is known as circulatory motion. Example-Movement of the earth around the sun. The type of circular motion where an object spins on its own axis is called rotational motion. Example - Rotation of earth on its axis.]

4. Write down the definitions for a day, a month and a year in the ancient period.

[Hint: Day – Time between two sunrises. Month - The time interval between one new moon and the next. Year - Time taken by the earth to complete one revolution around the sun.]

5. a) A train is running at a speed of 45 km/h. How long will it take to reach Lucknow from Delhi when the distance between the two stations is 315 km?

[Hint: Speed of the train = 45 km/h.

Distance to be covered = 315 km.

Time taken = Distance/Speed

$$= 315/45 = 7 \text{ h}]$$

b) The distance between the two stations is 240 km. A train takes 4 hours to cover this distance. Calculate the speed of the train.

Ans. Distance between two stations = 240 km

Time taken to cover these distance = 4 hour

Speed = Distance/Time

$$= 240 / 4$$

$$= 60 \text{ km/h}$$

6. A bus travels a distance of 480 km in 8 hours and a train covers a distance of 1200 km in 10 hours. Which one of the two travels faster- a car or a train?

[Hint: Speed of the bus = $480/8 = 60 \text{ km/h}$.

Speed of the train = $1200/10 = 120 \text{ km/h}$.

The speed of the car is 60km/h whereas the speed of the train is 120km/h. So, the train travels faster.]

7. a) A spaceship travels 36,000 km in one hour. Express its speed in m/s.

[Hint: $36,000 \times 5/18 = 10,000 \text{ m/s}$.]

b) A rocket travels at a speed of 15,000 m/s. Express this speed in km/h.

Ans. Speed of rocket in m/s = 15,000

Speed of rocket in km/h = $15,000 \times 18/5$

$$= 3,000 \times 18$$

$$= 54,000 \text{ km/h}$$

c) A train moves at a speed of 162 km/h. Express this speed in m/s.

Ans. Speed of train in km/h = 162

Speed of train in m/s = $162 \times 5/18$

$$= 9 \times 5$$

$$= 45 \text{ m/s}$$

8. A truck moves at the speed of 25 km/h for 10 hours. Calculate the distance covered.

[Hint: Speed of the truck = 25 km/h.

Time taken = 10 h.

Distance covered = Speed x Time

$$= 25 \times 10 = 250 \text{ km.}]$$

IV. LONG ANSWER TYPE QUESTIONS. (5M)

1. Explain different types of motion with examples.

[Hint: i) The type of motion in which objects move along a straight line is known as rectilinear motion. Example- Soldiers in a march past.

ii) The type of motion in which objects move along a circular path is known as circular motion. Example- Pedal of a bicycle in motion.

iii) The type of circular motion where an object spins on its own axis is called rotational motion. Example- Rotation of earth on its axis.

iv) The type of motion where the object repeats its motion after a fixed interval of time is called periodic motion. Example- Revolution of the moon around the earth.

v) The to and fro motion of the body about its fixed position is called oscillatory motion. Example – Pendulum of a clock.