

CBSE
Class VII Science
Sample Paper – 5 Solution
Term II

SECTION A

1. **(c)**
Urethra is the muscular tube which eliminates the urine out of the body.
2. **(d)**
A scraper is used to remove organic waste from sludge.
3. **(a)**
Hairy seeds of grass get blown off with the wind to far off places.
4. **(b)**
When trees of different sizes are grown together in a forest, the branches of tall trees look like a roof over the short plants.
5. **(c)**
In some states, like Rajasthan, people suffer from drought when there is shortage of water because of sparse rainfall.
6. **(c)**
Transpiration keeps plants cool.
7. **(a)**
In a physical change, the chemical properties of the substances do not change.
The properties such as size, shape, state and colour of a substance are called its physical properties. So, we can say that a change in which a substance undergoes a change in its physical properties is called a physical change.
8. **(a)**
Magnesium burns in oxygen to form magnesium oxide with the release of heat and light.
9. **(d)**
In a chemical change, new substances are formed. The burning of gasoline results in the formation of new products with completely different properties.

10.(d)

Formation of manure from leaves is a chemical change because it involves the formation of new products with different properties.

11.(a)

Slow oxidation of iron to form hydrated iron (III) oxide is called rusting.

On being left in damp air (or water) for a considerable time, iron objects get covered with a red flaky substance called rust. This process is called rusting of iron.

12.(a)

Rusting of tools and machine parts can be prevented by applying a coat of grease or oil on it. This will prevent the contact of the articles with oxygen and moisture present in the air.

13.(c)

In a chemical change, new substances are formed. During the process of baking, baking soda (sodium hydrogen carbonate) gets heated and chemically reacts to give sodium carbonate and water with the release of carbon dioxide gas, making the cake spongy.

14.(b)

This is the symbol of an electric bulb.

15.(b)

When electric current passes through the filament of a bulb, it gives heat and light.

16.(b)

When current is passed through the wire wound on the nail, the nail behaves as an electromagnet and attracts the pins. As soon as the supply of current is cut off, the nail no longer behaves as an electromagnet and the pins are no longer attracted by it.

17.(d)

Power of a lens is measured in dioptre.

18.(b)

A concave mirror can form real and virtual images.

19.(b)

The branch of Physics which deals with the study of the nature and properties of light is called optics.

20.(a)

Reflection at a surface which is not smooth is called diffuse reflection.

SECTION B**21.**

- i. Forests provide us with oxygen.
- ii. They protect soil and provide a habitat to a large number of animals.
- iii. Forests help in bringing good rainfall to neighbouring areas.
- iv. They are a source of medicinal plants, timber and many other useful products.

22.

- (a) The sludge is transferred to a separate tank where it is decomposed by anaerobic bacteria.
- (b) Biogas produced in the process can be used as fuel or can be used to produce electricity.

23.

- (a) The activity of collecting rainwater directly or recharging it into the ground to improve groundwater storage in the aquifer is called rainwater harvesting.
- (b)
 - i. Turning off taps while brushing.
 - ii. Mopping the floor instead of washing.
 - iii. Reducing flow of tap water while washing utensils.(Any two)

24. When our cells perform various functions, certain waste products are released. These are toxic and hence need to be removed from the body by the process of excretion.

25. Explosion of a cracker is a chemical change because the explosive reactants are transformed into gaseous products along with the release of heat and the formation of light and sound which cannot be reversed. Hence, it is a chemical change.

26.

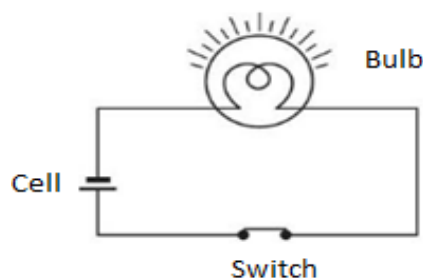
- The picture represents the reaction between baking soda and vinegar. It is a chemical change.
- On mixing baking soda with vinegar, a chemical change takes place to form three new substances—sodium acetate, carbon dioxide gas and water.
- Carbon dioxide gas passed through freshly prepared lime water (calcium hydroxide solution) turns the limewater milky and gives a new substance, calcium carbonate.

27. Formation of clouds is a physical change as it is a phase transformation of water from liquid to gas during the water cycle and then again from gas to liquid. Hence, the physical property of water undergoes change during the formation of clouds.

28. Fuse wire should have low melting point and high resistance.

29. A virtual image formed by a convex lens is always magnified but that formed by a concave lens is always diminished.

30.



SECTION C

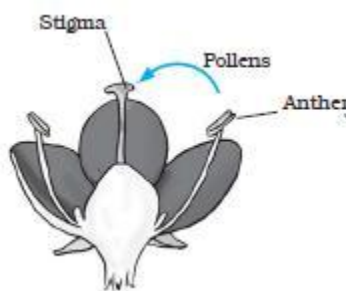
31.

(a) Haemoglobin, the red pigment of blood, binds with oxygen and transports it to all the parts of the body and ultimately to all the cells.

It is present in the red blood cells.

(b) An artery carries oxygen-rich blood, but the pulmonary artery carries carbon dioxide-rich blood to the lungs.

32. The transfer of pollen from the anther of a flower to the stigma of the same flower is called self-pollination.



Self-pollination

33.

(a)

i. Food is synthesised in the leaves of plants. This food is transported through the vascular tissue called phloem to all the other parts of the plant.

ii. Time of the day, temperature, humidity, wind and light are responsible for transpiration.

(b) The root hair increases the surface area of the root for the absorption of water and mineral nutrients dissolved in water.

34.

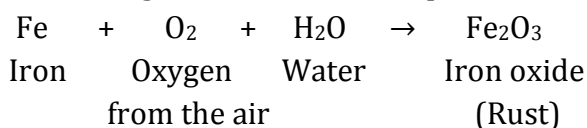
- (a) The process of reproduction shown above is spore formation (in fungus). Each spore is covered by a hard protective coat to withstand unfavourable conditions such as high temperature and low humidity. So, they can survive for a long time. Under favourable conditions, a spore germinates and develops into a new individual. Plants such as moss and ferns can reproduce by spores.
- (b) In vegetative propagation, new plants are produced from roots, stems, leaves and buds. Because asexual reproduction is through the vegetative parts of the plant, it is known as vegetative propagation.

35.

- (a) If we leave a piece of iron exposed to the atmosphere for some time, it acquires a coating of a red flaky substance. This substance is called rust, and the process of its formation is called rusting.

This is the only change which effects iron articles and slowly destroys them. Iron is used in making bridges, ships, cars, trucks and other vehicles. Rusting weakens the structures of iron objects and cuts short their life.

The following is the chemical equation to show the process of rusting of iron:



- (b) Rust is a chemical substance formed by the chemical action of moist air on iron. It is an oxidation reaction. Rusting of an iron is considered a chemical change because a new substance iron oxide is formed in this process.

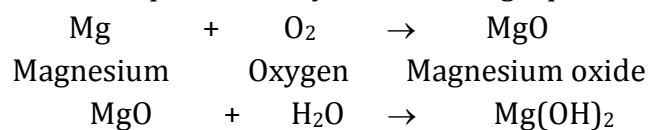
36.

Physical Change	Chemical Change
i. Steam condenses to form water.	i. A log of wood burns to form ash.
ii. Water is absorbed by a paper towel.	ii. A bicycle chain rusts.
iii. Dissolving sugar in water.	iii. A piece of a mango rots on the ground.
iv. Stretching metals to form wires.	iv. Eggs turn into an omelette.

- 37.** Burning of a magnesium ribbon is a chemical change. When magnesium ribbon is held over the flame of the burner, it burns with a dazzling white light to give a new substance, magnesium oxide.

The magnesium oxide obtained on dissolving in water also forms a new substance, magnesium hydroxide, which turns red litmus paper blue, indicating that it is basic. So, the dissolving of magnesium oxide in water is a chemical change.

It can be represented by the following equation:

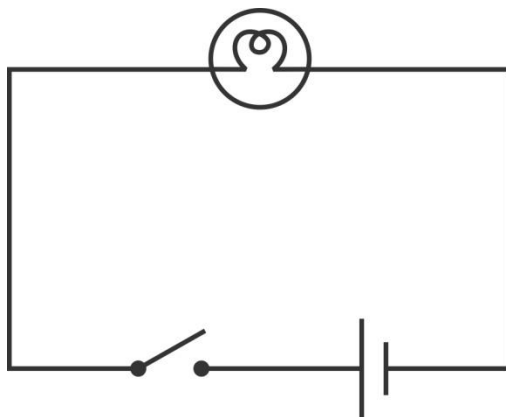


Magnesium oxide Water Magnesium hydroxide

Test magnesium oxide solution with blue and red litmus papers, respectively. Take a strip of blue litmus paper and put a drop of magnesium oxide solution on it. The blue colour of the litmus paper will not change to red; hence, magnesium oxide solution is not acidic. Now, take a strip of red litmus paper and put a drop of magnesium oxide solution on it. The red colour of the litmus paper will change to blue showing that magnesium oxide solution is basic.

38.

- (a) The circuit diagram is shown below:



- (b) Some electrical appliances have elements in them. When they are switched on after connecting to the electric supply, their elements become red hot and give out heat.

39.

- (a) Similarity: Both plane and convex mirrors form a virtual and erect image of an object.

Difference: The image is of the same size as the object in a plane mirror, but it is always smaller than the object in a convex mirror.

- (b) A concave lens is called a diverging lens because it diverges or bends outward the light falling on it.

40.

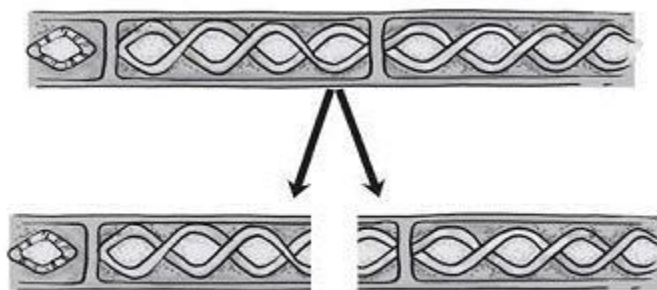
- (a) This is because of the fact that the fine tungsten filament has a very high resistance, whereas copper connecting wires have very low resistance.
- (b) Two uses of electromagnets are
- Electromagnets are used in the construction of a large number of devices such as electric bells, loudspeakers, electric motors and electric fans.
 - Electromagnets are used by doctors to remove tiny iron pieces from the eyes of a person (which may have fallen into the eyes accidentally).

SECTION D

41.

- (a) Algae reproduce asexually by fragmentation.

When water and nutrients are available, algae grow and multiply rapidly by fragmentation. An alga breaks up into two or more fragments. These fragments or pieces grow into new individuals. This process continues, and the algae cover a large area in a short period of time.



Fragmentation in an alga (Spirogyra)

(b)

- Rose and Champa
- Sweet potato and Dahlia

42.

- Take a large potato. Peel off its outer skin, and cut one of its ends to make the base flat.
- Now, make a deep and hollow cavity on the opposite side.
- Fill half of the cavity with sugar solution and mark the level by inserting a pin in the wall of the potato.
- Put the potato into a dish containing a small amount of water. Make sure that the level of water is below the level of the pin.
- Allow the apparatus to stand for few hours.
- We would observe an increase in the level of sugar solution. This is because water moves from one cell to another.
- In this way, water reaches the xylem vessels of the root from the soil.

43.

- (a) A cut apple slice kept in air acquires a brown colour because of the formation of new substances by the action of air. Hence, it is a chemical change.
- (b) Some of the examples to show the importance of chemical changes are
- Medicines are prepared by carrying out a chain of chemical reactions (chemical changes).
 - Metals are extracted from their naturally occurring compounds called 'ores' by a number of chemical changes.
 - Materials such as soaps, detergents, plastics, polymers, salts and synthetic fibres are made by carrying out various types of chemical reactions (chemical changes).
 - New chemicals and materials are discovered by studying different types of chemical changes.

44.

- (a)
- Take a lighted candle and place it on a table.
 - Look at it through a straight pipe and then through a bent pipe.
 - You will find that the light can be observed through a straight pipe. This shows that light travels in a straight line.
- (b) No. An image formed by a convex mirror cannot be taken on a screen because a convex mirror forms a virtual image which cannot be observed on a screen.