



Me 'n' MineTM



Answer Book
Pullout Worksheets
Science



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CHAPTER - 1 (NUTRITION IN PLANTS)

WORKSHEET - 1

MCQs

- | | | | |
|---------|---------|---------|---------|
| 1. (a) | 2. (b) | 3. (a) | 4. (d) |
| 5. (b) | 6. (b) | 7. (b) | 8. (b) |
| 9. (b) | 10. (c) | 11. (b) | 12. (c) |
| 13. (c) | 14. (b) | 15. (b) | |

WORKSHEET - 2

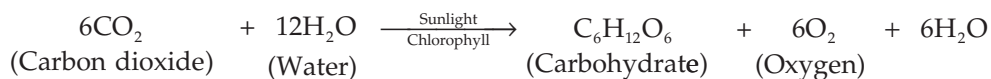
VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

- All organisms need to take food for getting energy for the growth and maintenance of their bodies.
- Nutrition is the mode of taking food by an organism and its utilisation by the body.
- Solar energy is stored by the leaves with the help of chlorophyll.
- Green patches in ponds are generally formed by the growth of organism like algae.
- The mode of nutrition in which organisms take in nutrients in solution from dead and decaying matter is called saprotrophic nutrition.
- Green pigment called chlorophyll helps leaves to capture the energy of the sunlight.
- The mode of nutrition in which organisms make food themselves from simpler substances is called autotrophic nutrition.
- The bacterium named *Rhizobium* can take atmospheric nitrogen and convert it into a soluble form.
- A distinct, centrally located spherical structure present in most of the cells is called nucleus.
- Plants having no chlorophyll, use the heterotrophic mode of nutrition to get food.
- Crops require usually a lot of nitrogen to make proteins.
- Most of the pulses (*dals*) are obtained from leguminous plants.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

- (a) *Cuscuta*
(b) Pitcher plant.
- (a) Chlorophyll is known as the 'kitchen of the cell'.

Equation of photosynthesis is given below:



- In the absence of photosynthesis, there would not be any plants. All living organisms depend upon the plants for their food directly or indirectly. Oxygen, *i.e.*, survival of all living organisms, is also produced during photosynthesis. Finally, life would be impossible on the earth without photosynthesis.
- The process of obtaining food and shelter from the other living organism (host) is called parasitic nutrition. Parasites absorb the food from living organism, *e.g.*, *Cuscuta*.

- Autotrophs, *i.e.*, green plants, make their food by using raw materials CO_2 , obtained from water or air and water from soil. The food is made in the presence of sunlight during the process of photosynthesis.
- Carbon dioxide from air is taken in through the tiny pores present on the surface of the leaves. These pores are surrounded by 'guard cells', known as stomata.
- Water and minerals are transported to the leaves by the vessels which run throughout the root, the stem, the branches and the leaves. They form a continuous path or passage for the nutrients to reach the leaf.

WORKSHEET – 3

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

- (a) Water and minerals present in the soil get absorbed by roots.

(b) Nutrients like carbohydrates, fats, proteins, vitamins and minerals are important components of food which are necessary for our body.
- (a) As we know, leaves are food factories of plants. The synthesis of food in plants occurs in leaves. Therefore, all the raw materials must reach there.

(b) Animals are heterotrophs.

WORKSHEET – 4

ANSWER THE FOLLOWING

- | | | |
|-------------------|-------------|-----------------|
| 1. (a) Autotrophs | (b) Fruits | (c) Chlorophyll |
| 2. (a) — (v) | (b) — (i) | |
| (c) — (vi) | (d) — (ii) | |
| (e) — (iv) | (f) — (iii) | |

WORKSHEET – 5

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

- Its roots are called haustoria which pierce the host's body to obtain nutrition.
- The mode of nutrition in which two different organisms of different species live together and both are benefited from each other.
- Photosynthesis is affected by light intensity, availability of carbon dioxide and water.
- (a) Chlorophyll

(c) Xylem

(b) Symbiosis

(d) Saprophytes

ANSWER THE FOLLOWING

- | | | |
|--------------|-------------|-----------|
| 1. (a) — (v) | (b) — (iv) | (c) — (i) |
| (d) — (ii) | (e) — (iii) | |
| 2. (a) False | (b) True | (c) False |
| (d) True | (e) True | |

WORKSHEET – 6

DO AS DIRECTED

- | | | |
|--------|-----------|------------------|
| 1. Sun | 2. Starch | 3. Carbohydrates |
| 4. T | 5. F | 6. T |

ANALOGY TYPE QUESTIONS

- | | | |
|------------------|-------------------|------------|
| 1. Oxygen | 2. Photosynthesis | 3. Stomata |
| 4. Pitcher plant | 5. <i>Cuscuta</i> | |

ANSWER THE FOLLOWING

- | | | |
|----------------|-------------------------|---------------|
| 1. (a) True | (b) False | (c) True |
| (d) True | (e) True | |
| 2. (a) Stomata | (b) Parasitic plant | (c) Symbiotic |
| (d) Cells | (e) Insectivorous plant | |

CHAPTER – 2 (NUTRITION IN ANIMALS)

WORKSHEET – 8

MCQs

- | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|
| 1. (b) | 2. (c) | 3. (c) | 4. (c) | 5. (c) | 6. (d) | 7. (a) | 8. (c) |
| 9. (c) | 10. (c) | 11. (c) | 12. (d) | 13. (c) | 14. (d) | 15. (b) | 16. (c) |
| 17. (d) | | | | | | | |

WORKSHEET – 9

VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

1. Starfish feeds on animals covered by hard cells of calcium carbonate.
2. The first set of teeth which grow during infancy and fall off at the age between six to eight years, are called milk teeth.
3. The second set of teeth that replace milk teeth, are called the permanent teeth.
4. Inner lining of the stomach secretes mucus, hydrochloric acid and digestive juices.
5. The digestive juices breakdown the proteins into simpler substances.
6. The patient should be given plenty of boiled and cooled water with a pinch of salt and sugar dissolved in it.
7. Bees and humming - birds suck the nectar of plants, infants of human and many other animals feed on mother's milk.
8. The buccal cavity, foodpipe or oesophagus, stomach, small intestine, large intestine ending in the rectum and the anus are the various compartments of the alimentary canal.

9. The inner walls of the stomach, the small intestine and the various glands such as salivary gland, the liver and the pancreas secrete digestive juices.
10. The process by which absorbed substances are transported to different organs of the body via the blood vessels, used to build the complex substances, *i.e.*, proteins, is called assimilation.
11. When grass-eating animals quickly swallow the grass and store it in a separate part of the stomach, it is called rumen.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. During assimilation of food in man, glucose breaks down with the help of oxygen into carbon dioxide and water, and energy is released. The undigested and unabsorbed food then enters the large intestine.
2. Glucose is the simplest form of carbohydrate which is soluble in water and can be easily absorbed by the blood. It can be broken down easily to get energy. Therefore, it is called instant energiser.
3. (a) The liver is a reddish-brown gland situated in the upper part of the abdomen on the right side. It is the largest gland in the body.
(b) Liver secretes bile juice that is stored in a sac called the gall bladder.
4. There is a change in colour in test tubes because iodine solution when comes in contact with starch turns blue-black.
5. *Amoeba* ingests its food with the help of its false feet or pseudopodia. The food is digested in the food vacuole.
6. The well-labelled diagram of *Amoeba* will be made by student.
7. Bile is produced in the liver and stored in the gall bladder. It digests fat, *i.e.*, components of food, and converts it into globules, called emulsification process.
8. The tongue called flesh muscular organ attached at the back of the floor of the buccal cavity is used for talking, mixes saliva with the food during chewing and helps in swallowing food. We also taste food with our tongue.

WORKSHEET – 10

ANSWER THE FOLLOWING

1. (a) — (F)
Digestion of starch starts in the buccal cavity.
(b) — (T), (c) — (T), (d) — (T)
2. (a) — (iii) (b) — (iv) (c) — (j)
(d) — (ii) (e) — (v) (f) — (vi)

WORKSHEET – 12

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. The main steps involved in the process of nutrition are ingestion, digestion, absorption, assimilation and egestion.

- We should brush our teeth to remove plaque otherwise this plaque produces acid which dissolves the tooth enamel which causes pain, discomfort, and in severe cases, the tooth may have to be removed.
- Assimilation:** The process by which the absorbed food is used for producing energy required for growth is called assimilation.
Rumination: A ruminant is a plant-eating animal that brings back swallowed food into the mouth to chew it again. This process is called rumination.
- Teeth help us in breaking down the food into smaller pieces.
- The oesophagus leads into the stomach which has four chambers: rumen, reticulum, omasum and abomasum.

ANSWER THE FOLLOWING

- (a) — F (b) — F (c) — F (d) — T (e) — T
- (a) Ingestion → digestion → absorption → assimilation → egestion
(b) liver (c) gastric (d) villi (e) food vacuole
- (a) — (iii) (b) — (iv) (c) — (iv)
(d) — (ii) (e) — (i)

WORKSHEET -13

DO AS DIRECTED

- Villi
- Rumen
- Diarrhoea
- T
- T
- F

DOUBLE MATCHING

(A) — (c) — (i), (B) — (a) — (ii), (C) — (b) — (iii)

ONE WORDS SUBSTITUTION

- Digestion
- Ingestion
- Absorption
- Egestion
- Digestive system

CHAPTER - 3 (FIBRE TO FABRIC)

WORKSHEET - 15

MCQs

- (b)
- (d)
- (b)
- (d)
- (a)
- (b)
- (c)
- (a)
- (c)
- (c)
- (b)
- (d)
- (c)
- (c)
- (d)

WORKSHEET - 16

VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

- The process of selecting parents for obtaining special characters in their offspring, such as soft underhair in sheep, is termed 'selective breeding'.

- Lohi, the breed of good quality of wool is found in Rajasthan and Punjab.
- Sorter's disease is caused by a bacterium, anthrax.
- Caterpillar secretes fibre made of a protein which hardens on exposure to air and becomes silk fibre.
- The traders and travellers introduced silk to other countries and the route they travelled is still called the 'silk route'.
- As we know, silk comes from silkworms and wool from sheep, goat and yak. Hence, silk and wool are called animal fibres.
- The most common silk moth is the mulberry silk moth.
- Silk fibres are used for weaving silk cloth.
- A pile of cocoons is used for obtaining silk fibres.
- The three types of silk are *tassar* silk, *eri* silk and *mooga* silk.
- Sheep are herbivores, *i.e.*, eating grass and leaves, and rearers also feed them on a mixture of pulses, corn, jowar, oil cakes and minerals.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

- Two animal fibres are wool and silk, respectively. Wool comes from sheep, goat, yak and some other animals. These wool-yielding animals bear hair on their body. Silk fibres are also obtained from animal, *i.e.*, caterpillar.
- Hair trap a lot of air. As we know, air is a poor conductor of heat. Due to this, hair keeps wool-giving animals warm.
- The sheared skin with hair is thoroughly washed in tanks to remove grease, dust and dirt present in it. This is called scouring which is done by machines nowadays.
- Woollen sweater contains air trapped between them. Air, being a bad conductor of heat, does not allow the heat of the body to flow outward. On the other hand, cotton garment does not contain air trapped between them, so it cannot keep us as warm as woollen sweater can.
- The female silk moth lays eggs, from which hatch larvae which are called caterpillars or silkworms. They grow in size and the caterpillar is ready to enter the next stage of its life history called pupa.
- (i) In black sheep, the wool is obtained from under fur.
(ii) White fleece of the lamb is the thin hair from which wool is obtained.

WORKSHEET – 17

ANSWER THE FOLLOWING

- (a) Reeling the silk
(c) Silkworm or caterpillar
- (b) Caterpillars
(d) Protein
- (a) — (T)
(b) — (F) The scouring is a process in which sheared skin with hair of the sheep is washed in tank.
(c) — (F) Angora wool is obtained from angora goat.
(d) — (F) The rearing of silkworms for obtaining silk is called sericulture.
- (a) — (v)
(c) — (ii)
- (b) — (iii)
(d) — (i)

WORKSHEET – 19

ANSWER THE FOLLOWING

- (a) Silk
(b) South America
(c) Shearing
(d) Fleece
(e) Coarse wool
- (a) — (v)
(b) — (i)
(c) — (ii)
(d) — (iii)
(e) — (iv)
- (a) Camel, Sheep
(b) Fleece, Silk
(c) Polyester, Acrylic
(d) Cotton, Jute
(e) Tussar silk, Kosa silk
- (a) **Shearing**—the process of removal of fleece from the animals.
(b) **Reeling**—the process of extracting silk fibres from cocoons.
(c) **Carding**—the process of passing woollen fibres through metal teeth in order to straighten and remove dirt from them.
(d) **Fibroin**—the sticky fluid secreted by the salivary glands of caterpillar.
(e) **Scouring**—the process of removing dirt, dust and grease from the sheared hair.
- (a) Wool is a dead tissue just like our hair, so shearing (removal of fleece) does not hurt sheep.
(b) To remove dirt, dust and grease from the sheared hair, scouring is necessary.
(c) Because of the crimp, woollen fibres have greater bulk.
(d) Wool fibre is highly porous and traps air in it. The trapped air acts as an insulator and does not allow the body heat to escape to the surroundings. Thus, woollen clothes keep us warm and are worn in winters.
(e) When a pupa changes into a moth, it bursts the silken cell and leaves an indelible stain on the silk cocoon. For this reason, silk farmers allow only a small percentage of pupae to develop into the moths.
- Scabies:** Due to dipping hands on boiling water to boil the cocoons and check if the threads have loosened or not, blisters and wounds are caused on the skin of the workers. This leads to scabies or other such diseases.

Respiratory disease: Asthma, bronchitis and other breathing problems are caused when the workers inhale vapours that are released due to the boiling of cocoons or due to the release of diesel fumes from machines.

Loss of hearing: Due to the noise, made by spinning and winding machines and looms, workers suffer from hearing disorders.

Backache and other problems: The workers have to stand continuously for 12-16 hours in a day to separate cocoons and reel the silk threads which leads to backaches and spinal cord problems.

7. **Shearing:** The removal of fleece from a sheep's body is called shearing. The fleece is removed as one layer using large scissors and electric shaving machines. Sheep are usually sheared once a year but sometimes they can be sheared twice a year too. Shearing is done, in early summer so that they do not feel the summer heat. By the time winter arrives, they again grow a thick coat of hair. After shearing is done, the sheep is dipped in an antiseptic solution to prevent skin infection. Just as haircut does not hurt us, shearing does not hurt the sheep. Removing the heavy woollen coat actually helps them as they do not require this in summer.

Scouring: The sheared hair is thoroughly washed in soap and water in tanks to remove dirt, dust and grease. This process of removing dirt, dust and grease from the sheared hair is called scouring. It can be done manually or by machines. The scoured hair is then dried.

Sorting or grading: The hair of different textures are sorted out on the basis of length, colour, feature and ease with which it can be dyed. The small fluffy hair, called burr, are picked out and sent for reprocessing.

Carding: The process in which the selected curly wool fibres are straightened by passing them through rollers is called carding.

Dyeing: The woollen fibers of white or light colours can be dyed in different colours of choice.

Drying: Containers of wool are put through rollers to squeeze out as much water as possible then the wool is weighed and packed into bales. The bales are transported to the mills where they are processed further.

Spinning and weaving: Two to four strands of wool are spun together form thick threads called yarn. The yarn can be rolled into balls of wool. The long fibres are either knitted or woven into sweaters and other woollen clothes.

WORKSHEET – 20

DO AS DIRECTED

- | | | |
|-------------|------------------|------------|
| 1. 5 months | 2. Sheep station | 3. Protein |
| 4. Protein | 5. Shearing | 6. Mohair |
| 7. Yarn | 8. Merino | 9. T |
| 10. T | 11. F | |

ANALOGY TYPE QUESTIONS

- | | | |
|------------|---------------------|----------------------|
| 1. Hosiery | 2. Tibet and Ladakh | 3. Jammu and Kashmir |
| 4. Camel | 5. Goat | |

ANSWER THE FOLLOWING

- | | | |
|------------|-------------------|----------------------|
| (a) Fleece | (b) Fuzz or burrs | (c) Sorter's disease |
| (d) Pupa | | |

CHAPTER - 4 (HEAT)

WORKSHEET – 22

MCQs

1. (b)
2. (c)
3. (d)
4. (a)
5. (d)
6. (a)
7. (a)
8. (c)
9. (a)
10. (d)
11. (b)
12. (d)
13. (b)
14. (b)
15. (d)

WORKSHEET – 23

VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

1. When we heat water, heat travels through water with the help of convection method.
2. Radiation is the fastest mode of transfer of heat.
3. A black body with rough surface is a good absorber and good radiator of heat.
4. Gold (Au) is the most malleable metal.
5. Silver (Ag) is the best conductor of heat.
6. Cooling coils at the back of the refrigerators are made of copper because they can readily conduct heat.
7. The maximum and minimum temperatures of the previous day, reported in weather reports are measured by maximum-minimum thermometer.
8. Dark-coloured object is better absorber of heat.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. The handles of most utensils are made of wood and plastic, because both wood and plastic are poor conductors of heat. Even when utensils are hot, we can hold the handle with bare hands and remove them easily from the flame.
2. Two thin woollen blankets are warmer than a thick woollen blanket because there is air trapped between the blankets which acts as an insulator. So, it does not allow the heat from our body to pass out.
3. In a clinical thermometer, there is a long, narrow and uniform glass tube having a bulb at one end that contains mercury. Outside the bulb, a small shining thread of mercury can be seen. That is why mercury is used as an indicator.
4. The heat energy which is transferred from a hot body to a cold body without any medium and without being absorbed by space between the hot and cold bodies is called radiation.
5. Dark-coloured clothes absorb more heat and, therefore, we prefer to wear dark-coloured clothes in winters, whereas light-coloured clothes reflect most of the heat that falls on them. Therefore, we prefer to wear light-coloured clothes in summer.
6. (a) Solar cooker and solar water heater are painted black from inside because black surface is a good absorber of heat.
(b) Liquid and gases are commonly known as fluids.

7. **Two examples of conductors of heat:** Aluminium and copper.

Two examples of insulators of heat: Glass and ebonite.

8. White colour reflects most of the heat radiations from the sun and keeps the walls of houses cool. Hence, it is advised that the outer walls of houses should be painted white in hot climate.

WORKSHEET – 24

ANSWER THE FOLLOWING

- (a) — (iv) (b) — (iii)
(c) — (ii) (d) — (i)
- (a) Clinical thermometer (b) Celsius
(c) Radiation (d) Conduction
- (a) False. Paper is bad conductor of heat. (b) True (c) True

WORKSHEET – 26

ANSWER THE FOLLOWING

- (a) Radiation (b) Radiation
(c) Mercury (d) Conductors, insulators
(e) Black
- (a) — (iv) (b) — (i)
(c) — (v) (d) — (iii)
(e) — (ii)
- (a) **Convection:** The transfer of heat by the circulation or movement of the heated molecules of a liquid or a gas.
(b) **Radiation:** The complete process in which energy is emitted by one body and transmitted through an intervening medium or space.
(c) **Conduction:** The transfer of heat between two objects, caused by a temperature difference between the parts.
(d) **Conductors:** Substances that conduct heat easily.
(e) **Insulator:** Substances that do not conduct heat very well.
- (a) **Convection:** Convection is a mode of heat transfer in which the heat energy is transferred from one part to another by the actual movement of the molecules of the medium.
Radiation: The mode of transmitting heat that requires no medium is known as radiation. It is transmitted in the form of electromagnetic waves.
(b) **Conduction:** Conduction is the mode of heat transfer from a region of lower temperature within a body, or when two bodies are in contact, and it takes place by collisions between neighbouring atoms and molecules of the body.
Convection: Convection is a mode of heat transfer in which the heat energy is transferred from one part to another by the actual movement of the molecules of the medium.

(c) **Sea breeze:** The pressure of air on the land decreases in comparison to the seawater. Thus, air from the sea blows towards the land and causes sea breeze.

Land breeze: The cold air that is heavier, starts blowing from the land towards the sea, giving rise to the land breeze.

(d) **Clinical thermometer:** A medical thermometer used for measuring the human body temperature.

Laboratory thermometer: The thermometer that is used in laboratory is called the laboratory thermometer.

(e) **Conductors:** Materials which allow heat to be conducted through them easily are known as conductors of heat. For example, metals such as iron, copper, silver and aluminium are good conductors of heat.

Insulators: Materials which do not allow heat to flow through them are called non-conductors or insulators of heat. For example, wood, paper, glass, asbestos and bakelite are non-conductors of heat.

5. (a) This is because light-coloured clothes absorb lesser heat and keep us cool in summer.
(b) Warm air being lighter rises up and leaves the room through ventilators provided near ceilings.
(c) Iron and aluminium are metals and metals are good conductors of heat.
(d) Warm air is lighter and rises up. Therefore, hot air balloon rises up in the air.
(e) Bottom of some cooking utensils is painted black because black colour absorbs most of the heat.
6. Some instructions to use the mercury-based clinical thermometer are as follows.
(a) Wash the thermometer using an antiseptic solution before and after using it.
(b) Before using it, ensure that the mercury level is below 35°C.
(c) Read the thermometer by keeping the level of mercury along the line of sight.
(d) Handle the thermometer with care. If it hits a hard object, it can break. Remember, mercury is a toxic substance.
(e) Do not hold the thermometer by its bulb while reading.
7. In solids, the molecules are very closely packed and they cannot move around freely. They can, however, move or vibrate about their mean position only. While in gases, the molecules are very loosely packed and they can move around freely. Therefore, gases expand more.

WORKSHEET – 27

DO AS DIRECTED

- | | | |
|----------------|----------|----------|
| 1. Land breeze | 2. Black | 3. White |
| 4. T | 5. F | 6. T |

ONE WORDS SUBSTITUTION

- | | | |
|---------------------------|---------------|----------------|
| 1. Laboratory thermometer | 2. Sea breeze | 3. Temperature |
| 4. Conductor | 5. Insulator | |

ANALOGY TYPE QUESTIONS

- | | |
|---------------------------|------------------|
| 1. Laboratory thermometer | 2. Conduction |
| 3. Reflector | 4. 273 K – 373 K |
| 5. Rises, falls | |

CHAPTER - 5 (ACIDS, BASES AND SALTS)

WORKSHEET - 29

1. (b) 2. (c) 3. (c) 4. (a) 5. (c) 6. (c) 7. (d) 8. (d)
9. (b) 10. (a) 11. (a) 12. (b) 13. (a)

WORKSHEET - 30

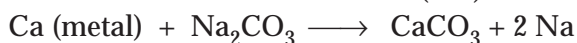
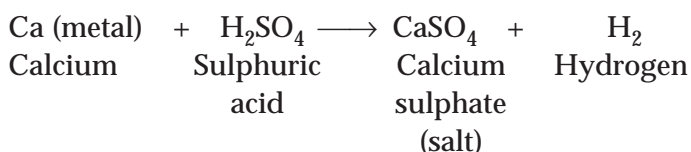
VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

1. The solutions which do not change the colour of either red or blue litmus, are known as neutral solutions.
2. Salts are formed by the neutralisation of an acid with a base.
3. In basic solution, the indicator named methyl orange changes pink colour to yellow.
4. The salts which have a property of absorbing moisture from air and change into liquid, are known as deliquescent liquids, *e.g.*, magnesium chloride.
5. Calcium hydroxide (slaked lime) is used for white-washing.
6. Tartaric acid and citric acid are used for manufacturing of baking powder.
7. Proteins, *i.e.*, builder of our cells, are made of amino acids.
8. Each cell in our body contains an acid named deoxyribonucleic acid (DNA).
9. Indigestion is caused by the presence of excessive acid in the stomach.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. (a) Zinc carbonate (ZnCO_3)
(b) Calcium oxide (CaO)
(c) Magnesium hydroxide [$\text{Mg}(\text{OH})_2$]
(d) Sodium carbonate (Na_2CO_3)
2. (a) Lactic acid
(b) Tartaric acid
(c) Oxalic acid
(d) Citric acid
3. (a) Two characteristics of bases are given below:
(i) Bases are bitter to taste.
(ii) Bases combine with acids to form salt and water in neutralisation reaction. The formed salt is neutral.
(b) The salt which is formed after the loss of water of crystallisation, is known as anhydrous salt.
4. (a) Its nature is basic.
(b) Litmus solution is obtained from lichen. It acts as an indicator to identify the acidic or basic nature of a substance.

5. Mostly factory wastes contain acid which when comes in contact with water bodies, makes it acidic and becomes cause of death of aquatic animals. So, the wastes should be first treated and then allowed to pass into water bodies.
6. As we know, citrus fruits contain citric acid which reacts with metals to form poisonous substances. Therefore, acids are usually stored in vessels made of glass or ceramics instead of metals.
7. (a) A base which dissolves in water, is called alkali.
(b) The chemical name of table salt is sodium chloride and its molecular formula is NaCl.
8. (a) When acids react with metal, hydrogen gas is formed and when react with metal carbonates, CO₂ gas is obtained.



- (b) A chemical reaction which takes place rapidly with evolution of gas in large amounts, is known as effervescence.
9. The rain becomes acidic because carbon dioxide, sulphur dioxide and nitrogen dioxide dissolve in rain drops to form carbonic acid, sulphuric acid and nitric acid, respectively. Acid rain can cause damage to buildings, historical monuments, plants and animals.
10. The distilled water is neutral in nature. When the litmus solution of any colour is dropped into it, the colour of litmus solution does not change the colour of the solution. This experiment shows that distilled water is neutral in nature.

WORKSHEET – 33

ANSWER THE FOLLOWING

1. (a) Sulphuric acid
(c) Calcium hydroxide
(e) Concentrated acid
(b) Formic acid
(d) Magnesium hydroxide
2. (a) — (v)
(c) — (i)
(e) — (iii)
(b) — (iv)
(d) — (ii)
3. (a) Acids which are derived from minerals or chemicals are called mineral acids. For example, H₂SO₄.
(b) Natural indicators are obtained from brightly coloured plant parts such as petals, roots or leaves.
(c) Most of the salt crystals contain some molecules of water. This is called water of crystallisation.
(d) The acids which are derived from animal and plant materials are called organic acids.
(e) Bases which are soluble in water are called alkalis.
4. (a) Before discharging the industrial waste into drains or rivers, it must be checked and neutralised to protect the aquatic animals from the adverse effects. Too much of acidic waste can be treated with quicklime or slaked lime. Too much of basic waste can be treated with an acid or acidic waste discharged from some other industry.

- (b) Calamine solution contains zinc carbonate which is a weak base and also helps to reduce the pain.
- (c) In case of acidity, more acid is produced in the stomach which causes irritation. To counter this irritation, an antacid tablet or liquid is taken which contains aluminium hydroxide or magnesium hydroxide. They are weakly basic in nature, therefore, neutralising the excess acid present in the stomach.
- (d) Acids react with metals to form hydrogen gas, therefore acids are not kept in metal container.
5. The solution is acidic in nature.
6. The reaction between an acid and a base (or an alkali) to form salt and water is called neutralisation reaction. Heat is evolved in this process. The salt formed may form acidic, basic or neutral solution with water.



7. (a) It is used as a cleaning agent. It is used for making fertilisers.
- (b) It is used for cleaning sinks and sanitaryware. It is also used for cleaning iron sheets before galvanisation.
- (c) It is also called Milk of Magnesia. It helps to neutralise excess of acidity in the stomach. It is used as an antacid or a laxative.
- (d) Goldsmith use it for cleaning gold and silver ornaments. It is also used for manufacturing explosive (TNT), fertilizers, dyes and drugs.
- (e) It is used in the manufacture of soaps and detergents. It is also used in the manufacture of paper.

WORKSHEET – 34

DO AS DIRECTED

1. Basic
2. Curing excess acidity or Indigestion
3. Soapy
4. T
5. T
6. F

DOUBLE MATCHING

(A) — (c) – (ii), (B) – (e) – (iv), (C) – (d) – (v), (D) – (a) – (iii), (E) – (b) – (i)

ANSWER THE FOLLOWING

- | | | |
|------------------|--------------------|-------------|
| 1. (a) Indicator | (b) Neutralization | (c) Neutral |
| (d) Acidic | (e) Soaps | |
| 2. (a) False | (b) False | (c) True |
| (d) True | (e) False | |

CHAPTER – 6 (PHYSICAL AND CHEMICAL CHANGES)

WORKSHEET – 36

MCQs

1. (d) 2. (c) 3. (d) 4. (b) 5. (b) 6. (c) 7. (a) 8. (a)
9. (b) 10. (b) 11. (d) 12. (c) 13. (c)

WORKSHEET – 37

VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

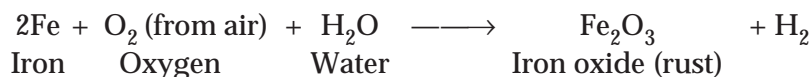
1. The content of moisture in air is high so, when it is more humid, rusting becomes faster.
2. Ozone acts as a protective shield to protect us from the harmful ultraviolet radiation.
3. Yes, burning of coal is a chemical change.
4. When carbon dioxide is passed through limewater, calcium carbonate is formed.
$$\begin{array}{ccccccc} \text{CO}_2 & + & \text{Ca(OH)}_2 & \longrightarrow & \text{CaCO}_3 & + & \text{H}_2\text{O} \\ \text{Carbon} & & \text{Limewater} & & \text{Calcium} & & \text{Water} \\ \text{dioxide} & & & & \text{carbonate} & & \end{array}$$
5. New substances are formed in chemical change.
6. Digestion of food is chemical change.
7. Physical properties pertain to shape, size, colour and state of a substance.
8. Physical change is related with boiling water.
9. Souring of milk is chemical change.
10. The blue colour of copper sulphate changes to green colour due to the formation of iron sulphate, a new substance.
11. Rust is not iron. It is different from iron on which it gets deposited.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. We know that ships are made of iron and some parts of them remain underwater. The water of the sea contains ample salts. The salt water makes the process of rust faster. Therefore, ships suffer a lot of damage from rusting in spite of being painted.
2. When iron gate comes in contact with moist air, it gets rusted. So, to prevent it from rusting, it should be coated with grease, paint, oil, chrome plating or galvanisation.
3. The atmospheric air of coastal areas is rich in moisture. So, iron object gets rusted quickly there, while in deserted area, the atmospheric air is dry or without moisture. So, the rusting occurs at slow rate there.
4. When baking soda is mixed with lemon juice, bubbles come out due to the evolution of a gas which is carbon dioxide. It is a chemical change. Baking soda is a base and lemon juice is an acid. So, when these two react with each other, salt and water are formed.
5. A piece of iron which when it is left in the open for sometime, acquires a film of brownish substance. This substance is called rust and the process is called rusting.
6. Explosion of firework is a chemical change. Such an explosion produces heat, light, sound and unpleasant gases that pollute the atmosphere. That is why we are advised not to play with fireworks.

7. (a) Chemical change is associated with burning of any substance.

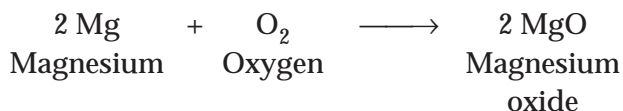
(b) The equation of process of rusting can be written as:



WORKSHEET – 38

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

- (a) Chemical change (b) Physical change
(c) Physical change (d) Physical change
- (a) — (ii)
(b) — (iii)
- When magnesium ribbon is completely burnt with a brilliant white light, it leaves behind a powdery ash.



WORKSHEET – 39

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

- (a) False (b) False (c) True
- The formation of curd from milk takes place due to the lactic acid formation by bacteria *Lactobacillus*. It changes the taste and other properties of milk. It is impossible to get milk back from curd.
- (a) — (v), (b) — (iv) (c) — (iii) (d) — (i) (e) — (ii) (f) — (vi)
- (a) Chemical change (b) Chemical change
(c) Physical change (d) Physical change
(e) Chemical change (f) Physical change

WORKSHEET – 40

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

- (a) — (iv), (b) — (iii) (c) — (i) (d) — (v) (e) — (ii)
- (a) True (b) False (c) False
(d) True (e) False
- (a) Chemical reaction is a process of changing one or more chemical substance (element/compound) into some other chemical substance with release or absorption of energy.
(b) The process of changing iron into rust in presence of oxygen and humidity is known as rusting.
(c) The change in which no new substance is formed.
(d) Galvanisation—The process of applying a protective zinc coating on iron to protect from rusting.

- (e) The method used for obtaining a substance in a pure and solid crystals form from its impure compound is called crystallisation.
4. (a) **Physical change:** The change in which no new substance is formed is called a physical change. A change in the physical properties of a substance such as shape, size, colour and state of the matter is a physical change. Examples of physical changes are melting of ice, boiling of water, freezing of water, condensation, crystallisation and heating of metals till they become red hot, etc.
- Chemical change:** A chemical change occurs when two or more substances undergo a chemical reaction and are converted into one or more new substances with different sets of properties. For example, formation of rust on iron objects which are kept in the open for a long time, digestion of food.
- (b) **Rusting:** It is a process of changing iron into rust in presence of oxygen and humidity.
Galvanization: The process of applying a protective zink coating on iron to protect it from rusting.

WORKSHEET – 41

DO AS DIRECTED

- | | | | |
|------------------------------|----------------------------|------------------|----------------------|
| 1. Magnesium oxide | 2. Energy | 3. Galvanisation | 4. Calcium carbonate |
| 5. Sodium hydrogen carbonate | 6. Galvanization, painting | | 7. Physical |
| 8. Chemical changes | 9. T | 10. F | 11. T |

CHAPTER – 7 (WEATHER, CLIMATE AND ADAPTATIONS OF ANIMALS TO CLIMATE)

WORKSHEET – 43

MCQs

- | | | | | | | | |
|--------|---------|---------|---------|---------|---------|---------|--------|
| 1. (c) | 2. (c) | 3. (a) | 4. (d) | 5. (d) | 6. (c) | 7. (d) | 8. (d) |
| 9. (a) | 10. (a) | 11. (b) | 12. (c) | 13. (c) | 14. (d) | 15. (c) | |

WORKSHEET – 44

VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

- The average weather pattern taken over a long time, say 25 years, is called the climate of the place.
- All changes in the weather are caused by the sun.
- The tropical region has generally a hot climate because of its location around the equator.
- Red-eyed frog and a new world monkey are the two animals, living in tropical rainforests.
- The adjustment of an organism to its surrounding for better survival, is called adaptation.
- The sun does not set at the pole for six months and does not rise for six months in polar regions.
- Animals in the tropical rainforests are adapted because they eat different kinds of food to overcome the competition for food and shelter.

8. Humidity is a measure of the moisture of air.
9. Tropical rainforests are found in Western Ghats and Assam in India.
10. The bodies of polar bears and penguins are streamlined and their feet have webs which make them good swimmers.
11. Elephant tusks are modified teeth by which it can tear the bark of trees that elephant loves to eat.
12. If heavy rainfall occurs in the same place oftenly throughout the year, then we can say that the climate of that place is hot and wet.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. (a) The function of sticky pads in red-eyed frog is to help it climb trees on which it lives.
(b) Tropical rainforests support wide variety of plants and animals because of continuous warmth and rain.
2. (a) The birds which migrate at another place from previous place as seasons change, are known as migratory birds.
(b) The minimum temperatures can be 15°C and 40°C , respectively of the coldest month and hot summers in tropical rainforests.
3. (a) The tropical and the polar regions of the earth have severe climatic conditions.
(b) Animals are adapted to survive in the conditions in which they live.
4. (a) The major types of animals living in the rainforests are monkeys, apes, gorillas, lions, tigers, elephants, leopards, lizards, snakes, birds and insects.
(b) Paws of polar bears are wide and large which help them in swimming and walking with ease in the snow.
5. (a) The function of a thick skin and a lot of fat of penguins is to protect them from cold.
(b) White fur that polar bears have, protects them from their predators. Due to the presence of white fur, they are not easily visible in snowy white background.
6. The north-eastern India receives rain for a major part of the year. Therefore, we can say that the climate of the north-east is wet.

WORKSHEET – 45

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. (a) The day-to-day condition of the atmosphere at a place with respect to the temperature, humidity, rainfall, wind-speed etc., is called the weather at that place.
(b) The temperature can be as low as -37°C in winters in polar regions.
2. (a) Moderately hot and wet
(b) Hot and wet
(c) Hot and dry
(d) Wet
3. (a) If the temperature at a place is high most of the time, we can say that the climate of the individual place is hot.
(b) The function of two thick layers of fur of polar bears is to protect them from extreme cold.

4. Countries like Canada, Greenland, Iceland, Norway, Sweden, Finland, Alaska in U.S.A. and siberian region of Russia belong to the polar regions.

Countries like India, Malaysia, Brazil, Indonesia, Republic of Congo, Kenya, Uganda and Nigeria belong to the tropical rainforest regions.

5. **Polar region**—Musk oxen, reindeer, seal, Siberian Crane.

Tropical region—Foxes, toucan, whale, elephant, new world monkey, lion-tailed macaque.

WORKSHEET – 48

ANSWER THE FOLLOWING

- (a) — (ii), (b) — (iv), (c) — (iii), (d) — (i), (e) — (v)
- (a) **Adaptation:** Special features in an animal's body which help it to survive in its habitat.

(b) **Humidity:** It is the measurement moisture in air.

(c) **Camouflage:** It is the ability of an animal to merge with its surrounding.

(d) **Hibernation:** Long sleep of some animals during winter through which they remain inactive to pass the harsh winter conditions.

(e) **Migration:** Movement of animals and birds from one place to another for shelter and food.
- (a) Their body is streamlined to reduce the drag in water.

(b) They migrate to avoid unfavourable conditions of food availability and temperatures.

(c) Tropical rainforests have the maximum variety of animals and plants as these areas have favourable temperature and plenty of water.

(d) Camels can live in desert conditions because of their adaptations according to the desert conditions while human beings find it difficult to adapt to desert life.

(e) Feathers up to feet keep body of ptarmigan warm.
- (a) **Weather:** The state of the atmospheric conditions such as humidity, rainfall, snow, temperature, cloud and wind at a given place and time is called the weather of the place at that time.

Climate: Climate is the long-term pattern of weather in a particular area, long enough to yield meaningful averages.

(b) **Temporary adaptations:** These are short-term adaptations and are not inherited by other generation. For example, the colour of the skin gets tanned on exposure to sunlight for a long time.

Permanent adaptation: It leads to permanent changes in the individual. It is inherited from one generation to another. For example, camel is well adapted for living in desert areas.

(c) **Polar region:** It has the coldest climate and the temperatures are always below the freezing point. The area is usually covered with snow which melts only during summer season which lasts for a very short time.

Tropical zone: This is the warmest region with average high temperature and receives the maximum amount of rainfall.

(d) **Humidity:** The amount of water vapour present in the air determines humidity.

Precipitation: The amount of water vapour that falls as rain.

(e) Maximum temperature during day and minimum temperature during night are called maximum-minimum temperature. These are measured by maximum-minimum thermometer.

5. The massive size of the elephants protects it from predators.

- In elephants, the trunk is an extremely useful organ. It helps them to eat food which is present at a higher level in trees. It also allows them to get food and water from the ground, which they otherwise would not be able to access.
- Elephants are mainly poached for their ivory. Their tusks which are the modified teeth, can also help them to survive through dry spells, as they use them to bore down into the earth and find water in dry riverbeds. They also use their tusks to extract the softwood of the trees which they can eat.
- Elephants live in hot conditions and need to cool themselves down. Since they are unable to sweat, they flap their large ears to blow air which cools the blood in their capillaries which then distribute the cooled blood in their body thus cooling the body. Asian elephants have smaller ears than their African counterparts.

WORKSHEET – 49

DO AS DIRECTED

- | | | | |
|----------------|--|----------|-------------|
| 1. Polar bear | 2. Penguin | 3. One | 4. Rotation |
| 5. Forecasting | 6. Industrialization and deforestation | 7. 23.5° | |
| 8. Climate | 9. F | 10. T | 11. F |
| 12. F | 13. T | 14. T | 15. T |
| 16. T | | | |

ANALOGY TYPE QUESTIONS

- | | | |
|------------------|--------------------|-------------|
| 1. Early morning | 2. Sahara | 3. Ethiopia |
| 4. Jaisalmer | 5. Tropical region | |

CHAPTER – 8 (WINDS, STORMS AND CYCLONES)

WORKSHEET – 51

MCQs

- | | | | | | | | |
|--------|---------|---------|---------|---------|---------|---------|--------|
| 1. (a) | 2. (d) | 3. (a) | 4. (b) | 5. (d) | 6. (c) | 7. (c) | 8. (d) |
| 9. (b) | 10. (c) | 11. (d) | 12. (a) | 13. (c) | 14. (d) | 15. (c) | |

WORKSHEET – 52

VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

1. The word monsoon is derived from the Arabic word '*mausam*', which means 'season'.
2. Orissa was hit by a cyclone with wind-speed of 200 km/h on 18 Oct, 1999.
3. When wind-speed is increased, then air pressure is reduced.
4. Thunderstorms develop very frequently in hot and humid tropical areas.
5. When air gets heated, it expands and when air gets cooled, it contracts.

6. The swift movement of falling water droplets along with the rising air creates lightning and sound, is called thunderstorm.
7. The warm air is lighter than cold air.
8. When there is greater difference in pressure, the air moves faster.
9. Air moves from the region where the air pressure is high to the region where the pressure is low.
10. Regions close to the equator get maximum heat from the sun.
11. A change in wind's direction is caused by the rotation of the earth.
12. Wind-speed, wind direction, temperature and humidity are the factors, which contribute to the development of cyclones.

ANSWER THE FOLLOWING

1. (a) — (iii), (b) — (iv), (c) — (ii), (d) — (i)
2. (a) Moving (b) Uneven, (c) Hot, cool, (d) High, low

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. Thunderstorm occurs frequently in hot and humid tropical areas like India. The rising temperatures produce strong upward rising winds. These winds carry water droplets upward in freezing and falling water droplets along with the rising air create lightning and sound. This results in thunderstorms.
2. (a) The moving air is called wind.
(b) Air exerts pressure around us.
3. The two precautions are given below:
(i) Don't drink contaminated water. Always store drinking water for emergencies.
(ii) Don't touch switches and fallen power lines with wet hands.
4. (a) The west coast of India is less vulnerable to cyclonic storms—both in terms of intensity and frequency of the cyclones.
(b) The wind-speed of second Orissa cyclone was 260 km/h which occurred on 29 October, 1999.

WORKSHEET – 53

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. Hanging banners move along with the directions of the air. If the air is moving fast, the banner will stretch and can break. So, the holes are made in banner by which fast moving air may not harm it. The same case is with hoardings.
2. On approaching of the cyclone, we should contact the government agencies like police, fire brigade, medical centre and other rescue operation agencies, etc. We should help our neighbours and friends in shifting their important household goods, cattle and vehicles to safer places.
3. A *Kachcha* house is made of thatches, dung and mud. All these things are poor conductor of heat while bricks, stone and steel present in *Pucca* house, are good conductor of heat. So, in summer season, *Kachcha* house remains cooler than *Pucca* house.

WORKSHEET – 55

ANSWER THE FOLLOWING

- (a) Typhoon (b) Cyclone (c) Tropical storm
(d) Extra tropical cyclone (e) Eye
- (a) — (v), (b) — (iv), (c) — (ii), (d) — (iii), (e) — (i)
- (a) **Thunderstorm:** The movement of falling water along with the rising warm air produces heavy rain, lightning, and strong wind. It is called a thunderstorm.
Cyclone: It is a small low-pressure system with very high speed winds revolving around it.
(b) **Storm:** Storms are severe atmosphere disturbances accompanied by strong winds blowing at a very high speed.
Wind: Movement of air (usually in a horizontal direction) is called wind. Wind is caused due to the difference in temperatures between the different regions on the earth.
- (a) The rain-bearing winds are called monsoon wind.
(b) Storms are severe atmosphere disturbances accompanied by strong winds blowing at a very high speed.
(c) In North America, severe atmosphere disturbances accompanied by strong winds blowing at a very high speed are called hurricanes.
(d) A severe storm that causes massive destruction of life and property is called typhoon in eastern Asia.
(e) A cyclone is a small low-pressure system with very high speed winds revolving around it.

WORKSHEET – 56

DO AS DIRECTED

- | | | | |
|-----------------------|----------------------------|----------|------------|
| 1. Storms | 2. Atmospheric temperature | 3. Storm | 4. Air |
| 5. upwards, downwards | 6. Hot, Cold | 7. Earth | 8. Heating |
| 10. T | 11. F | 12. T | 13. T |
| 15. F | 16. T | 14. F | |

ANALOGY TYPE QUESTIONS

- | | | |
|----------------------|----------------------|---------------------|
| 1. Direction of wind | 2. Natural phenomena | 3. Air pressure low |
| 4. Typhoon | 5. Contracts | |

CHAPTER – 9 (SOIL)

WORKSHEET – 58

MCQs

- | | | | | | | | |
|--------|---------|---------|---------|---------|--------|--------|--------|
| 1. (c) | 2. (b) | 3. (b) | 4. (b) | 5. (d) | 6. (d) | 7. (c) | 8. (c) |
| 9. (d) | 10. (c) | 11. (d) | 12. (c) | 13. (a) | | | |

WORKSHEET – 59

VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

1. The earthy fragrance of soil after the first rain is always refreshing.
2. Soil is formed by the breaking down of rocks, by the action of wind, water and climate, called weathering.
3. Humus makes the soil fertile and provides nutrients for growing plants.
4. Soil is affected by wind, rainfall, temperature, light and humidity.
5. The removal of land surface by water, wind or ice is known as erosion.
6. Clayey soil having organic matter and a good capacity to retain water are ideal sources for growing paddy.
7. The C-horizon, *i.e.*, third layer, is made up of small lumps of rocks with cracks and crevices.
8. Sandy soil contains greater proportion of big particles.
9. The A-horizon is dark in colour as it is rich in humus and minerals.
10. Clayey soil contains greater proportion of fine particles.
11. The middle layer called B-horizon contains lesser proportion of humus and more of minerals.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. Polythene bags and plastics kill the organisms living in the soil and also pollute the soil. That is why, there is a demand to ban the polythene bags and plastics.
2. Pesticides along with waste products and chemicals pollute the soil. As a result, soil becomes unfertile. Hence, the use of pesticides should be minimised.
3. (a) A vertical section through different layers of soil is called the soil profile.
(b) The relative amount of sand and clay depends upon the rock from which the particles were formed, called parent rock.
4. Clayey soil has much power of retaining water. It is rich in clay, organic matter and also in humus. So, it is very fertile.

5.
$$\text{Rate of percolation} = \frac{\text{Amount of water (ml)}}{\text{Percolation time (min)}}$$

Quantity of percolated water = 200 ml

Time taken in percolation = 40 min

$$\therefore \text{Rate of percolation} = \frac{200}{40} = 5 \text{ ml/min.}$$

6. (a) The moisture of soil in which water is held, is known as soil moisture.
(b) Clayey soil is used to make pots, toys and statues.

WORKSHEET – 60

ANSWER THE FOLLOWING

1. (a) Sandy soil
(c) Humus
2. (a) Weathering of rocks
(c) Proportion
- (b) Clayey soil
(d) Loamy soil
- (b) Rock particles
(d) Topsoil or A-horizon

3. Water in sandy soil filters rapidly, therefore, it takes less time to be percolated. That is why, percolation rate of water is the highest in sandy soil.

WORKSHEET – 63

ANSWER THE FOLLOWING

1. (a) F (b) F
(c) T (d) T
(e) F
2. (a) C horizon (b) Soil
(c) Cotton (d) Deforestation
(e) Prevention of soil erosion
3. (a) It retains moisture and becomes wet. When it dries up, it becomes hard and forms deep cracks. Therefore, it is used in pottery.
(b) It is made up of large particles for easy circulation of water. It has large spaces.
(c) Formation of soil is an extremely slow process. It takes 500 years to produce just under an inch of topsoil, which is the most productive layer of soil, therefore, it is a non-renewable resource.
(d) Plastic and metal do not get decomposed, therefore, these should not be thrown in the soil.
(e) Vegetation binds the particles of soil, therefore, soil not covered by vegetation gets eroded easily.
4. (a) Some characteristics of soil form the basis for its classification into various types. It also determines the types of crops that are grown in it. These properties are as follows.
- Absorption of water
 - Moisture in the soil
 - Percolation rate of water in soil

Clayey soil has small size and less spaces between particles with less rate of percolation of water. Sandy soil has large size and large spaces between particles with high rate of percolation of water.

- (b) **A horizon:** This layer is also called the topsoil. It consists of fine soil particles obtained from parent material along with the organic matter. This layer supports the growth of plants and other organisms. It is rich in humus and therefore dark in colour. It is soft, porous and can hold water.

B horizon: It is also called the subsoil. This layer is rich in minerals that move down with water. It contains compactly packed fine particles of soil. Farmers often mix horizon A and horizon B when ploughing their fields.

- (c) **Soil erosion:** The washing or blowing away of the top layer of the soil by running water or wind is called soil erosion.

Soil conservation: The practice of preventing the soil from getting eroded.

Clay: Clayey soil is used to cultivate different types of crops like wheat gram and paddy. It is also used to make pots, toys and statues.

- (d) **Humus:** Dead and decaying remains of animals and plants which are present as thin layer on the top layer of soil.

- (e) **Loamy soil:** It is a combination of sandy and clayey soil. It is porous and holds water. It is best for cultivation of crops.

Sandy soil: It is made up of large particles for easy circulation of water. This soil is good for drainage, as it dries up easily and does not retain water. It is used to grow fruits and vegetables.

5. Soil helps in the growth of plants.

- Soil maintains the balance in atmosphere by emitting and absorbing gases and dust.
- Soil provides habitat for animals such as mice and organisms such as bacteria and fungi.
- Soil absorbs, holds, releases, alters and purifies water in terrestrial ecosystems.
- Soil absorbs recycled nutrients, including carbon, so that living things can use them again.
- Soil is also used for making houses, buildings and bricks. They were also used to make ancient artefacts.
- Soil acts as a natural filter to clean water before it moves into an aquifer.

6. Soil is formed by the process of weathering of rocks. **Weathering** is the mechanical or chemical process by which rocks on the earth's surface are broken down into smaller pieces due to natural forces such as wind, water, frost and roots of plants.

Weathering is of two types:

Physical or mechanical weathering: It involves the breakdown of rocks due to atmospheric conditions such as heat, water, ice, pressure exerted by animals and movement of plant roots. The chemical constituents of the soil do not change in this process.

Chemical weathering: It involves the breaking down of minerals to form new chemicals. Chemical weathering is caused mainly by water. The rate of chemical weathering increases by 2-3 times when the temperature increases by 10°C.

WORKSHEET – 64

DO AS DIRECTED

- | | | | |
|---------------|----------|---------------|-----------------|
| 1. Topsoil | 2. Humus | 3. Weathering | 4. A, B |
| 5. Weathering | 6. Rocks | 7. Bedrock | 8. Soil horizon |
| 9. F | 10. T | 11. T | |

DOUBLE MATCHING

(A) – (b) – (iii), (B) – (a) – (i), (C) – (c) – (ii)

ONE WORDS SUBSTITUTION

- | | | |
|----------|---------------|---------------|
| 1. Wheat | 2. Loamy soil | 3. Sandy soil |
|----------|---------------|---------------|

CHAPTER – 10 (RESPIRATION IN ORGANISMS)

WORKSHEET – 66

MCQs

- | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|
| 1. (a) | 2. (b) | 3. (d) | 4. (a) | 5. (b) | 6. (d) | 7. (c) | 8. (c) |
| 9. (c) | 10. (b) | 11. (b) | 12. (b) | 13. (d) | 14. (a) | 15. (c) | 16. (c) |
| 17. (a) | | | | | | | |

WORKSHEET – 67

VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

1. The smallest structural and functional unit of an organism is called a cell.
2. To perform the functions, *i.e.*, nutrition, transport, excretion and reproduction, of each cell of an organism, the cell needs energy.
3. Cellular respiration takes place in the cells of all organisms.
4. Ribs move down and inwards whereas diaphragm moves up to its former position during exhalation in breathing.
5. We get alcohol, carbon dioxide and released energy as important products after breaking down of glucose in the absence of oxygen (air).
6. The number of times a person breathes in a minute is termed as the breathing rate.
7. Ribs move up and outwards and diaphragm moves down during inhalation.
8. We should cover our nose while sneezing to prevent the foreign particles to get inhaled by other persons.
9. The percentages of oxygen and carbon dioxide in exhaled air are 16.4% and 4.4% , respectively.
10. The skin of an earthworm seems to be moist and slimy on touching.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. (a) Test-tube A which contains a snail in water, would have the highest concentration of CO₂.
(b) Mountaineers carry oxygen cylinder because when they go higher oxygen decreases, so they feel problem in breathing.
2. (a) The animals like cow, buffalo, dog and cat having the respiratory organs and process of breathing, are similar to those in humans. (b) The exchange of gases takes place through gills in fishes
3. An athlete breathes faster and deeper after finishing the race in order to compensate the extra amount of oxygen and energy needed by him. This extra amount of energy is received by oxidation of extra food.
4. The oxygen in air we breathe in, is transported to all parts of the body and ultimately to each cell, where oxygen in air present in the cells helps in breaking down of food.
5. Yeast along with some organisms, can survive in the absence of air because they get energy through anaerobic respiration. In the absence of oxygen, glucose breaks down into alcohol and carbon dioxide.

WORKSHEET – 68

ANSWER THE FOLLOWING

1. (a) Slow down (b) 25 (c) Respiration

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. Yeasts are single-celled organisms. They respire anaerobically resulting in the formation of alcohol. They are, therefore, used for making wine and beer.
2. Taking in of air rich in oxygen into the body is called inhalation whereas giving out of air rich in carbon dioxide is known as exhalation.
3. (a) The exchange of gases takes place through the moist skin in earthworm and exchange of gases takes place through the tracheae in insects.
(b) All living organisms need to respire to get the energy needed for their survival.
4. Like all other living cells of the plants, the root cells also need oxygen to generate energy. Hence, root cells absorb air from the air spaces present between the soil particles.

WORKSHEET – 71

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. Breathing rate is the number of times a person breathes in one minute. When our body works hard, it requires more energy. To get more energy, more amount of food needs to be broken down. Therefore, more amount of oxygen is required which increases the breathing rate.
2. While running, the muscle cells do not get a regular supply of oxygen at a particular time, thus forced to respire anaerobically. The glucose stored in the muscle cells gets converted into lactic acid and energy is released. The lactic acid accumulates in muscles and causes muscle cramps. Massage gives relief from cramps as it improves blood circulation. This supplies oxygen to the muscle cells which breaks down lactic acid into carbon dioxide and water.
3. Breathing is the process of the intake of air rich in oxygen (inhalation or breathing in) and giving out air rich in carbon dioxide (exhalation or breathing out). So no chemical change takes place. Therefore, breathing is a physical process.

ANSWER THE FOLLOWING

1. (a) Exhalation or expiration (b) Breathing rate (c) Aerobic respiration
(d) Lactic acid (e) Cellular respiration
2. (a) — (iv), (b) — (i), (c) — (v), (d) — (iii), (e) — (ii)
3. (a) **Aerobic respiration:** Respiration taking place in the presence of oxygen.
(b) **Anaerobic respiration:** Respiration taking place in the absence of oxygen.
(c) **Inhalation:** Breathing in air rich in oxygen.
(d) **Diaphragm:** It is a dome-shaped muscular partition separating the thorax from the abdomen in mammals.
(e) **Exhalation:** Breathing out air rich in carbon dioxide.
4. (a) False (b) True (c) False
(d) False (e) True
5. (a) **Aerobic respiration:** It occurs in the presence of oxygen in which glucose is completely converted to release carbon dioxide, water and energy.
Anaerobic respiration: It occurs in absence of oxygen in which glucose is incompletely converted to release alcohol, carbon dioxide, water and less amount of energy.
(b) **Respiration:** Respiration is the process of releasing energy from the breakdown of food.
Breathing: Breathing involves intake of air rich in oxygen (inhalation or breathing in) and giving out air rich in carbon dioxide (exhalation or breathing out.).

WORKSHEET – 72

DO AS DIRECTED

- | | | | | | |
|------------|---------|---------|-------|-------|------|
| 1. General | 2. Skin | 3. Tiny | 4. T | 5. F | 6. F |
| 7. F | 8. F | 9. T | 10. F | 11. T | |

ANALOGY TYPE QUESTIONS

- | | | | | |
|---------------|--------------|---------|---------|--------------|
| 1. Body cells | 2. Breathing | 3. Stem | 4. Skin | 5. Air tubes |
|---------------|--------------|---------|---------|--------------|

DOUBLE MATCHING

- (A) – (d) – (iv), (B) – (c) – (iii), (C) – (b) – (j), (D) – (a) – (ii)

CHAPTER - 11 (TRANSPORTATION IN ANIMALS AND PLANTS)

WORKSHEET - 74

MCQs

1. (c) 2. (b) 3. (a) 4. (d) 5. (c) 6. (b) 7. (d) 8. (c).
9. (c) 10. (c) 11. (b) 12. (d) 13. (c) 14. (d) 15. (d)

WORKSHEET - 75

1. Clot is formed due to the presence of another type of cells in the blood, known as platelets.
2. Water and mineral nutrients are absorbed by roots from the soil.
3. A tissue is a group of cells that perform specialised function in an organism.
4. The functions of kidneys are to remove waste products present in the blood which is done by blood capillaries present in the kidneys.
5. The functions of veins are to carry carbon dioxide-rich blood from all parts of the body thereafter back to the heart.
6. Pulse occurs due to the blood flowing in the arteries.
7. The functions of arteries are to carry oxygen-rich blood from the heart to all parts of the body.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. (a) The process of removing of wastes produced in the cells of the living organisms is called excretion.
(b) Vascular tissues are responsible for is transportation of food, water and gases in organisms.
2. (a) The major excretory product in humans is urea.
(b) Sweat keeps our body cool.
3. Arteries carry oxygen-rich blood from the heart to all parts of the body. Since the blood flow is rapid and at a high pressure, the arteries have thick elastic walls.
4. (a) The heart is located in the chest cavity with its lower tip slightly tilted towards the left.
(b) Red pigment, *i.e.*, haemoglobin, is necessary to provide oxygen efficiently to all the cells of the body.
5. The main function of platelet is to make a clot on the wound to check the bleeding. So, in the absence of platelet, bleeding from the cut of the wound will not stop.
6. In plants and animals, every cell requires energy which is obtained by the decomposition of food in the presence of oxygen. That is why, transport of materials is necessary.
7. Stomata are the tiny holes on the surface of leaf lamina which is guarded by two cells.
Functions of stomata: (i) Stomata exchange the gase. (ii) Stomata transpire the extra amount of water from the plant body.

WORKSHEET - 76

ANSWER THE FOLLOWING

1. (a) — (ii), (b) — (iv), (c) — (i), (d) — (iii)
2. During metabolic activities, waste and harmful substances are produced. They disturb the other vital functions of different parts of the body and also damage them. Hence, it is necessary to excrete waste products from the body.

WORKSHEET – 79

ANSWER THE FOLLOWING

- (a) F, Red blood cells help to transport oxygen.
(b) F, Liquid part of the blood is called plasma.
(c) T
(d) F, Own heart rate decreases while we are resting or sleeping.
(e) T
- (a) Veins (b) Transpiration (c) Phloem
(d) Transpiration (e) Haemoglobin
- (a) — (iv), (b) — (iii), (c) — (ii), (d) — (v), (e) — (i)
- (a) **Arteries:** The blood vessels which carry blood away from the heart.
(b) **Capillaries:** Thin vessels that connect arteries with veins.
(c) **Nephron:** The filtering unit in kidneys which filters blood and produces urine.
(d) **Plasma:** The colourless fluid component of the blood.
(e) **Pulse:** The throbbing of an artery which is felt due to the rhythmic flow of blood under pressure.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

- Nephrons
- Due to transpiration, plants remove excess amount of water in the form of water vapour which helps in transporting minerals through the plant.
- If a person's kidneys get damaged, doctors remove the body waste by means of a medical procedure called dialysis or kidney transplantation. The dialysis machine is also called an artificial kidney. In this process, blood from the artery of an arm is allowed to pass through the dialysis machine through tubes. It is then filtered to remove excess of salts and urea. The filtered blood is then transferred back to the body through a vein.
- Water evaporates from the leaves by the process of transpiration and generates a low pressure and a pulling force that causes water to move up. In this way, water and minerals are transported from the roots to different parts of the plant.

WORKSHEET – 80

DO AS DIRECTED

- | | | | |
|------------------|--------------|----------|------------------|
| 1. Blood vessels | 2. Removal | 3. Sweat | 4. Arteries |
| 5. Capillaries | 6. Heartbeat | 7. Urea | 8. Transpiration |
| 9. T | 10. F | 11. T | |

ANALOGY TYPE QUESTIONS

- | | | |
|---------|---------|----------|
| 1. Blue | 2. RBCs | 3. Heart |
| 4. Frog | 5. 5 | |

CHAPTER - 12 (REPRODUCTION IN PLANTS)

WORKSHEET - 82

MCQs

1. (c)
2. (b)
3. (c)
4. (b)
5. (a)
6. (a)
7. (c)
8. (c).
9. (a)
10. (d)
11. (b)
12. (a)
13. (b)
14. (c)
15. (a)
16. (a)
17. (a)

WORKSHEET - 83

VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

1. When a leaf of *Bryophyllum* falls on a moist soil, each bud can give rise to a new plant.
2. Pollination takes place in plants with the help of wind, water and insects.
3. Pollen grains have a tough protective coat by which it prevents ourselves from drying up.
4. The stamens are identified as the male reproductive part whereas pistil is identified as the female reproductive part.
5. Slimy green patches in ponds, or in other stagnant water bodies are called algae.
6. Fungi are grown on a bread piece from spores which are present in the air.
7. Pollen grains can be carried by wind or water because they are light in weight.
8. Plants like moss and ferns reproduce by means of spores.
9. Zygote is formed by fusion of a male gamete and a female gamete in sexual reproduction.
10. Seeds and fruits of plants are carried away by wind, water and animals.
11. Same kind of plants grow at different places because seeds are dispersed to different places.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. When parts of cacti get detached from the main plant body, then each detached part produces new plant. That is why, cacti produce new plants.
2. (a) The small bulb-like projection coming out from the yeast cell is known as bud.
(b) Plants produced by vegetative propagation take less time to grow and bear flowers and fruits.
3. The spores are asexual reproductive bodies. 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.
4. (a) Algae grow and multiply rapidly in the absence of water and nutrients by fragmentation process.
(b) Anther contains pollen grains that produce male gametes.
5. When the pollen lands on the stigma of the same flower, it is called self-pollination.
When the pollen of a flower lands on the stigma of another flower of the same plant, it is called cross-pollination.
6. If all seeds of a plant were to fall at the same place and grow there, there would be severe competition for sunlight, water, minerals and space. As a result, the seeds would not grow into healthy plants.

7. Through seed dispersal, plants are prevented from competition between the plant and its own seedlings for sunlight, water and minerals. It also enables the plants to invade new habitats for wider distribution.

WORKSHEET – 84

ANSWER THE FOLLOWING

- (a) — (iii), (b) — (iv), (c) — (ii), (d) — (i)
- (a) Yeast is reproduced by budding.
(b) The vegetative buds can also give rise to new plants.

WORKSHEET – 87

ANSWER THE FOLLOWING

- (a) — (iv), (b) — (i), (c) — (v), (d) — (ii), (e) — (iii)
- (a) **Unisexual:** They flowers consist of only one type of reproductive organ, that is, either male gamete or female gamete. For example, papaya.
Bisexual flowers: They consist of both male and female reproductive cells called gametes. For example, china rose, sunflower and rose.
(b) **Wind pollination:** The transfer of pollen grains takes place by wind. It occurs in those flowers which are not brightly coloured and do not produce nectar. In the absence of large petal, the anthers are exposed to the wind. This type of pollination takes place in grasses, corn and wheat.
Water pollination: The flowers of aquatic plants release pollen grains from their anthers in water. The pollen grains reach the stigma of another flower by means of water currents. This type of pollination takes place in water lily, *Vallisneria* and *Hydrilla*.
(c) The ovary is the swollen portion of the flower which contains the female gametes called ovules.
(d) **Fission:** It is the process by which a mature cell gives rise to two or more daughter cells. It takes place during favourable conditions, that is, when there is abundant food supply. During this process, the nucleus divides first followed by the division of cytoplasm. It takes place in organisms such as *Amoeba* and *Paramecium*.
Budding: In budding, reproduction takes place by the formation of a small bud-like projection or protuberance from the body. The nucleus of the parent body divides into two and one of the nuclei moves into the bud. When the bud matures, it detaches from the parent and can exist independently. For example, *Hydra* and yeast reproduce by budding.
(e) **Self-pollination:** When the pollen grains of one flower are transferred to the stigma of the same flower, it is called self-pollination.
Cross-pollination: When the pollen grains of one flower are transferred to the stigma of another flower of the same species, it is called cross-pollination.
- (a) **Fertilisation:** The fusion of male and female gametes.
(b) **Budding:** Formation of small bulb-like projections that develop to form new cells.

(c) **Bisexual flowers:** Flowers that have both male and female sex organs.

(d) **Zygote:** The cell formed by the union of a female gamete with a male gamete.

(e) **Fragmentation:** Breaking up of an algae's body into two or more pieces to produce new individuals.

4. (a) True (b) False
(c) False (d) True
(d) True (e) False
(f) True (g) False
(h) False

5. Advantages of Vegetative Propagation

- The plants produced by vegetative methods grow or mature quickly than the plants produced from seeds, as the seeds sometimes may not germinate due to unfavourable conditions. This process of growing plants is quite economical.
- Seedless fruits are obtained through this process. Such fruits are usually preferred by us as we can eat them without removing the seeds.
- New plants are identical to the parent plants which contain the desirable characteristics of the parent plant.
- Desirable qualities of two varieties of plants can be combined through the process of grafting.
- The fruits obtained through these methods are of uniform quality, size and taste.

Disadvantages of Vegetative Propagation

- There is no genetic variation, hence the plants are less adaptive to the changing environment.
- Neither can the new characters be introduced nor the undesirable characters can be eliminated.

WORKSHEET – 88

DO AS DIRECTED

- | | | |
|-------------------------|------------------------|------------------|
| 1. Embryo | 2. Bisexual | 3. Ovule |
| 4. Asexual reproduction | 5. Fission and budding | 6. Fragmentation |
| 7. Asexual reproduction | 8. Potato | 9. F |
| 10. T | 11. T | |

ONE WORDS SUBSTITUTION

- | | | |
|----------------------|-----------|------------------|
| 1. Self-pollination | 2. Zygote | 3. Fertilisation |
| 4. Unisexual flowers | 5. Pistil | |

ANALOGY TYPE QUESTIONS

- | | | |
|-------------------------|-------------------|-----------------|
| 1. Sexual reproduction | 2. Female gametes | 3. Shoot system |
| 4. Asexual reproduction | 5. Fruit | |

CHAPTER - 13 (MOTION AND TIME)

WORKSHEET - 90

MCQs

1. (a) 2. (b) 3. (a) 4. (a) 5. (a) 6. (d) 7. (c) 8. (b, d, e)
9. (b) 10. (a) 11. (a) 12. (d) 13. (d) 14. (b)

WORKSHEET - 91

VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

1. The movement of the earth about its axis is uniform motion.
2. When speed of an object is in non-uniform motion, then average speed is used.
3. Displacement defines the distance travelled by object between initial position to final position.
4. Speed is a scalar quantity as it has only magnitude. It does not have direction.
5. Displacement has both magnitude and direction. Hence, it is called vector quantity.
6. The three types of motion are straight line motion, circular motion and periodic motion.
7. Bullock cart moving on a straight road is a kind of circular motion.
8. 50 kilometres per hour mean 50 km distance travelled by an object in one hour.
9. Straight line motion defines soldiers in a march past.
10. Shadow of an object is the longest during sunrise or sunset and shortest at noon.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. Distance between two stations = 240 km

$$\text{Time taken} = 4 \text{ hrs.}$$

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{240}{4} = 60 \text{ km/h.}$$

2. Speed = 2 m/s, Time = 15 min = $15 \times 60 = 900$ s

$$\begin{aligned} \text{Distance} &= \text{Speed} \times \text{time} \\ &= 2 \times 900 = 1800 \text{ m.} \end{aligned}$$

3. We know that

$$\text{Average speed} = \frac{\text{Total distance covered}}{\text{Total time}}$$

$$\frac{60 + 40}{2} = \frac{\text{Total distance covered}}{\frac{15}{60} + \frac{15}{60}}$$

$$50 = \frac{\text{Total distance}}{\frac{1}{2}}$$

$$\text{Total distance} = \frac{50}{2} = 25 \text{ km.}$$

4. (a) Odometer is used for measuring the distance moved by the vehicle.
 (b) One microsecond is one millionth of a second and a nanosecond is one billionth of a second.
5. (a) The distance travelled by an object per unit time is known as speed. The SI unit of speed is m/s.
 (b) The metallic ball is called the bob of the pendulum.
6. No. of oscillations = 20
 Total time taken = 32 s

$$\begin{aligned} \text{Time-period} &= \frac{\text{Total time taken}}{\text{No. of oscillations}} \\ &= \frac{32}{20} = 1.6 \text{ s.} \end{aligned}$$

WORKSHEET – 92

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. (a) Periodic motion (b) Circular motion
 (c) Periodic motion (d) Periodic motion
2. (a) To calculate total distance covered, average speed is multiplied by total time taken.
 (b) $320 \text{ km/h} = 320 \times \frac{5}{18} = \frac{1600}{18} = 88.89 \text{ m/s.}$
3. When a body covers equal distances in equal intervals of time, it is said to be having in uniform motion.
 When a body covers unequal distances in equal intervals of time, the body is said to be having in non-uniform motion.

WORKSHEET – 95

ANSWER THE FOLLOWING

1. (a) False. Second is standard unit for measuring time.
 (b) True
 (c) False. A sundial is used to record time.
 (d) True
 (e) True
2. (a) – (iii), (b) – (iv), (c) – (v), (d) – (iv), (e) – (i)
3. (a) Periodic motion: The motion that repeats itself in equal intervals.
 (b) Speedometer: The instrument used to measure the speed of a vehicle.
 (c) Uniform motion: A motion by which an object covers equal distance in equal amount of time.
 (d) Time period: The time required by a pendulum to complete one oscillation.
 (e) Oscillation: The motion of a simple pendulum from its mean position to the extreme position, then to the other extreme position and back to the mean position.

4. (a) **Uniform motion:** When an object covers equal distances in equal intervals of time, the object is said to move in uniform motion.

Non-uniform motion: A body is said correct in non-uniform motion when it travels an unequal distance in equal intervals of time or vice versa.

(b) **Speed:** The distance travelled by an object in unit time.

Average speed: The rate of change in distance with respect to time.

5. Distance = 320 km

Time = 6h

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{320}{6} = 53.33 \text{ km/h}$$

$$\text{Speed in m/s} = \frac{320 \times 100}{6 \times 3600} = 14.81 \text{ m/s}$$

6. Speed = 140 km/h

Distance = 560 km

$$\text{Time taken} = \text{Speed}/\text{Distance} = 140/560 = 0.25 \text{ h} = 900 \text{ s}$$

WORKSHEET – 96

NUMERICAL QUESTIONS (3 MARKS)

1. Number of oscillations = 25

Total time taken = 64 s

$$\text{Therefore, time period} = \frac{\text{Total time taken}}{\text{Number of oscillations}} = \frac{64}{25} = 2.56 \text{ seconds.}$$

2. Movement of bob from one of its extreme positions to the mean position is 1/4th of an oscillation.

So, the time taken by one oscillation = 4×0.5 second = 2.0 seconds

Therefore, the time period of this pendulum = 2.0 seconds

3. Let us say that the distance was 100 metres.

$$\text{Speed of Rohita} = \frac{\text{Distance travelled}}{\text{Time taken to travel the distance}} = \frac{100 \text{ m}}{35 \text{ s}} = 2.857 \text{ m/s}$$

Similarly, we can calculate the speed of Rohan.

$$= \frac{100 \text{ m}}{40 \text{ s}} = 2.5 \text{ m/s}$$

So, Rohita ran faster than Rohan.

4. Distance travelled by the bus = 6 km

Time taken = 10 h

$$\text{Therefore, speed} = \frac{\text{Distance}}{\text{Time taken}} = \frac{6 \text{ km}}{10 \text{ h}} = 0.6 \text{ km/h}$$

If we convert this speed into m/s, then

Distance travelled by the bus = 6 km

Distance travelled by the bus in metres = $6 \times 1000 = 6000 \text{ m}$

Time taken = 10 h

Time taken in seconds = $10 \times 60 \times 60 = 3600 \text{ s}$

$$\text{Therefore, speed of the bus in m/s} = \frac{6000 \text{ m}}{3600 \text{ s}} = 1.66 \text{ m/s}$$

DO AS DIRECTED

- | | | |
|----------|------------|---------------|
| 1. Speed | 2. Seconds | 3. Zero, zero |
| 4. T | 5. F | 6. T |

WORKSHEET – 97

CROSSWORD PUZZLE

Across

- | | | |
|-----------|-------------|----------|
| 1. Motion | 3. Circular | 5. Timer |
|-----------|-------------|----------|

Down

- | | | |
|----------|------------|---------|
| 2. Clock | 4. Huygens | 6. Hour |
|----------|------------|---------|

CHAPTER - 14 (ELECTRIC CURRENT AND ITS EFFECTS)

WORKSHEET – 98

MCQs

- | | | | | | | | |
|--------|---------|---------|---------|---------|--------|--------|--------|
| 1. (a) | 2. (b) | 3. (c) | 4. (c) | 5. (b) | 6. (d) | 7. (b) | 8. (c) |
| 9. (b) | 10. (a) | 11. (d) | 12. (a) | 13. (c) | | | |

WORKSHEET – 99

VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

1. The longer line represents positive terminal and the thicker or the shorter line represents the negative terminal in the symbol of electric cell.
2. Devices like torches, transistors, toys and TV remote controls use batteries.
3. Hans Christian Oersted was the first person who noticed the deflection of compass needle every time, when the current was passed through the wire.
4. When electric current is passed through coil of wire, it behaves like a magnet.
5. Tiny electromagnets are used by doctors to take out small pieces of magnetic material that have accidentally fallen in the eye.
6. An electric bulb which gives undesirable heat, results in the wastage of electricity and this wastage only can be reduced by using CFLs and that is why they are more beneficial.
7. When a large current passes through a wire, the wire may become so hot that it may even melt and break.
8. No, magnetic field is produced only when the charge is in motion.
9. Nichrome wire is used for the heating element in an electric iron.
10. An electric circuit displays the arrangement of different electrical components symbolically.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

- (a) Electromagnet cannot be used for separating plastic bags from a garbage heap because they are not good conductor of electricity. Plastic bags are not magnetic material.

(b) When electric current is passed through geysers' element, it becomes red hot.
- When the current is switched 'ON' through a wire, it behaves like a magnet. As a result, magnetic effect of current is obtained due to attraction of wire and finally a compass needle gets deflected from its north-south position.
- (a) The factors on which the amount of heat produced in a wire depends on length and thickness.

(b) The two effects of electric current are heating effect and magnetic effect.
- Miniature Circuit Breakers (MCBs) are the kind of switches which automatically turn off when current in a circuit exceeds the safe limit. You turn them 'ON' and the circuit is once again complete. That is why they are being used in place of fuses.
- If the insulation on the wires has come 'OFF' due to wear and tear, then the excessive currents in electrical circuits touch the wires directly. As a result, short circuit is caused.
- When large currents are passed through some special materials made wires, they melt quickly and break. Hence, these wires are made for making electric fuses.

WORKSHEET – 100

ANSWER THE FOLLOWING

- (a) Positive, (b) Battery, (c) Becomes hot, (d) Fuse

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

- (a) When electric current passes through a wire, it behaves like a magnet and this is called the magnetic effect of the electric current.

(b) The SI unit of electric current is ampere.
- (a) We generally represent its by diagram because it is much easier to draw a circuit diagram using symbols.

(b) A thin wire present in bulb, is called filament.
- The compass needle will not show deflection because the switch in the circuit is shown closed in Fig. As a result, current will not flow.

WORKSHEET – 103

ANSWER THE FOLLOWING

- (a) **Electrical fuse:** A safety device which prevents damage to the electrical appliance.

(b) **Electric circuit:** A closed path through which electric current flows when the switch is in a closed position.

(c) **Electromagnet:** A coil of insulated current-carrying wire around a soft iron core.

(d) **Filament:** A loose spiral of a very thin wire of high melting alloy or metal.

(e) **Solenoid:** A solenoid is a coil wound into a tightly packed helix. It is a type of electromagnet whose purpose is to generate controlled magnetic field.

2. (a) Electric circuit
(b) Filament
(c) Battery
(d) Tungsten
(e) Miniature circuit breaker (MCB)
3. (a) increasing (b) battery
(c) iron (d) circuit
(e) hammer
4. (a)-(iv), (b)-(v), (c)-(i), (d)-(ii), (e)-(iii)
5. (a) When the circuit is not complete, electric current will not flow.
(b) Electric bulb is hot to touch due to the heating effect of electric current.
(c) Fuse is a safety device that prevents the overheating of electric circuit and prevents fires, so it is a necessary evil.
(d) The wire of electric fuse is made of material that melts quickly and thus breaks the circuit. When a large amount of current passes through the circuit, wire gets heated up and melts away.
6. When an electric current is passed through a coil of insulated wire wrapped around a piece of iron, the iron exhibits the properties a magnet. The magnet made using such an arrangement is called an electromagnet.

Uses of Electromagnets:

Electromagnets are used on cranes, in scrap yards and in the steel industry for lifting heavy loads. They are also used to separate magnetic substances from non-magnetic ones and in scrap yards.

They are used in telephones, speakers, audio, video tape recorders and electric bells.

7. A solenoid is a coil wound into a tightly packed helix. A solenoid is a type of electromagnet whose purpose is to generate a controlled magnetic field. When current is passed through such a coil, it acts like a bar magnet. A solenoid acts like a strong magnet in the following cases.

To increase its strength:

- (i) Wire is wound over an iron core.
- (ii) The number of turns of wire per unit length of the solenoid is increased.
- (iii) Strong current is passed through its coil.

WORKSHEET – 104

DO AS DIRECTED

- | | |
|-----------------------|--------------------------------|
| 1. Bulb | 2. Positive, negative terminal |
| 3. Negative, positive | 4. T |
| 5. F | 6. T |

ANALOGY TYPE QUESTIONS

- | | | |
|------------|--------------------------------|------------------|
| 1. volt | 2. Switch is in 'OFF' position | 3. Electric cell |
| 4. Battery | 5. Closed, open | |

ONE WORDS SUBSTITUTION

1. Silver
2. Hans Christian Oersted
3. Open circuit
4. Closed circuit
5. The heating effect of electric current

CHAPTER - 15 (LIGHT)

WORKSHEET - 106

MCQs

1. (d)
2. (c)
3. (a)
4. (a)
5. (a)
6. (b)
7. (a)
8. (d).
9. (d)
10. (c)
11. (d)
12. (b)
13. (b)
14. (c)
15. (d)

WORKSHEET - 107

VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

1. Sun is the most important and natural source of light for our planet.
2. Candles, oil lamps, lanterns, electric bulb and fluorescent tubes, etc., are some of the man-made (artificial) sources of light.
3. The light which travels in a straight line, is called rectilinear propagation of light.
4. Light takes 8.3 minutes to reach the earth from sun.
5. The distance between the image and the pencil would be 25 m.
6. The image formed by a concave lens is always virtual, erect and smaller in size than the object.
7. Any polished or shiny surface acts as a mirror.
8. When the sun is low in the sky after raining, the rainbow usually appears.
9. The rainbow is seen as a large arc in the sky with many colours.
10. Convex lens is used to read very small print.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. Concave mirror is used as shaving mirror and also used in reflecting telescopes.
Convex mirror is used as street light reflections as it diverges ray over a wide range.
2. The image that cannot be obtained on screen, is called virtual image. The image of our face formed by plane mirror cannot be obtained on screen. Hence, the image formed by plane mirror is virtual image.
3. (a) Concave mirror can produce a virtual image larger than the object.
(b) Convex mirror is used by drivers to see the traffic behind them while driving.
4. The image which can be obtained on a screen, is called real image. In a cinema hall, we see the images of actors on screen.
5. A convex mirror is that spherical mirror in which the reflection of light takes place at the convex surface (bulging out surface).
A concave mirror is the spherical mirror in which the reflection of light takes place at the concave surface (bent in surface).

6. (a) Concave mirror acts as reflectors of torches, headlights of cars and scooters.
 (b) The image of an object formed by a plane mirror cannot be obtained on a screen.
7. When the disc is rotated fast, the colours get mixed together and the disc appears to be whitish. Such a disc is popularly known as Newton's disc.

WORKSHEET – 108

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1.	Concave lens	Convex lens
	<ul style="list-style-type: none"> • A concave lens always forms erect, virtual and smaller image than the object. 	<ul style="list-style-type: none"> • A convex lens forms real and inverted image but when the object is placed very close to the lens, the image formed is virtual, erect and magnified.
	<ul style="list-style-type: none"> • Concave lens is not used as a magnifying glass. 	<ul style="list-style-type: none"> • Convex lens is used as a magnifying glass.

2. (a) Convex lens is also known as magnifying glass.
 (b) Concave mirrors are used for examining eyes, ears, nose, throat and also seeing an enlarged image of the teeth.

WORKSHEET – 111

ANSWER THE FOLLOWING

1. (a) **Convex mirror:** A curved mirror with a reflecting surface bulging outward at the middle.
 (b) **Real image:** Image which can be obtained on screen.
 (c) **Erect image:** An image that is upright as compared to the object.
 (d) **Dispersion:** Splitting of white light into seven coloured light bands.
 (e) **Virtual image:** Image which cannot be obtained on screen.
2. (a) — (v), (b) — (iv), (c) — (ii), (d) — (iii), (e) — (i)
3. (a) Old people suffer from long-sightedness, therefore, they use convex lens.
 (b) Concave mirrors are used by dentists because at a short range (object distances less than the focal length) they produce magnified, upright images. It is useful to have a magnified image of a tooth when you're looking for or repairing cavities, cracks, or other abnormalities.
 (c) We cannot see a light source through a bent tube because light travels in a straight line.
4. (a) **Concave mirror:** A mirror in which the hollow inner surface functions as a reflecting surface is called a concave mirror.
Convex mirror: A mirror in which the outer bulging surface functions as a reflecting surface is called a convex mirror.
- (b) **Real image:** If the rays of light emitted from an object actually meet at one point after reflection, a real image is formed. A real image is always inverted, may be of the same size as the object or bigger or smaller than the object. It can be obtained on a screen.
Virtual image: If the rays of light do not actually meet at a point after reflection but appear to meet at a point behind the screen, a virtual image is formed. A virtual image is always erect, and may be of the same size, or bigger or smaller than the object. It cannot be captured on a screen.

(c) **Concave lens:** It is thin at the middle and gradually becomes thicker at the edges. When a parallel beam of light passes through a concave lens, it spreads or diverges.

Convex lens: This lens is thick in the middle and becomes thinner towards the edges. For example, magnifying lenses. When a parallel beam of light passes through a convex lens it bends and narrows down at a point on the principle axis.

(d) **Reflection:** The bouncing of light rays by a surface is called reflection of light.

Refraction: Refraction is the bending of a wave when it enters a medium where its speed is different.

(e) **Mirror:** A smooth and highly polished surface.

Lens: A piece of transparent material bound by two curved surface.

5. (a) Plane mirror

(b) Mirror

(c) Lens

(d) Straight line

(e) Plane mirror

6. **Left-right inversion of the image:** As the name suggests, images are laterally inverted, that is, the right part of an object appears as the left in the image and vice versa. For example, the word AMBULANCE is painted left-right inverted on the ambulance, so that when the driver of a vehicle in front looks into his rear-view mirror, he can read the word AMBULANCE quickly and give way to it.

WORKSHEET – 112

DO AS DIRECTED

1. Reflection

2. Lens

3. Behind

4. T

5. F

6. T

ANALOGY TYPE QUESTIONS

1. Convex mirror

2. Convex lens

3. Concave mirror, convex mirror

4. Surface of convex mirror

5. Concave mirror

ONE WORDS SUBSTITUTION

1. Concave mirror

2. White light

3. Concave lens

4. Convex mirror

5. Convex lens

CHAPTER – 16 (WATER : A PRECIOUS RESOURCE)

WORKSHEET – 114

MCQs

1. (b)

2. (c)

3. (c)

4. (b)

5. (a)

6. (b)

7. (d)

8. (b)

9. (c)

10. (c).

11. (d)

12. (a)

13. (a)

14. (c)

15. (c)

16. (c)

WORKSHEET – 115

VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

1. Water day is celebrated every year to attract the attention of everybody towards the importance of conserving water.
2. The amount of water was recommended by the United Nations for drinking, washing, cooking and maintaining proper hygiene which is about 50 litres per person per day.
3. The year 2003 was observed as the International Year of Freshwater to make people aware of this dwindling natural resource.
4. Liquid form of water is present in oceans, lakes, rivers and even underground.
5. The continuous cycling of water among its three forms keeps the total amount of water on the earth constant when the whole world is using it.
6. The moisture in the soil found near a water body while digging a hole in the ground, indicates the presence of underground water.
7. The circulation of water between ocean and land is known as the water cycle.
8. Increasing population and industries along with agricultural activities are responsible for the depletion of water table.
9. Bhujpur in the kutch area of Gujarat where there is the only source of freshwater which lies underground.
10. Groundwater gets recharged by infiltration process.
11. The place where groundwater is stored between layers of hard rock below the water table is known as aquifer.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. Water shortage has become a matter of concern throughout the world because there is apprehension that more than one-third of the people in the world might face water scarcity in the days to come.
2. Rise in temperature results in evaporation of water from water bodies and soil. Due to heat, requirement of water for all organisms increases. Rainfall can only give back some amount of water, but normally no rainfall occurs in summer, hence shortage of water takes place.
3. (a) Rapid growth of industries, increasing population, growing irrigation requirements and mismanagement are some of the causes of water shortage.
(b) *Bawris* was the traditional way of collecting water.
4. (a) About 71% of the earth's surface is covered with water.
(b) The water that is fit for use is freshwater.
5. (a) Rain is the ultimate source of water.
(b) Drip irrigation is a technique of watering plants by making use of narrow tubings which deliver water directly at the base of the plant.
6. All the ten tubewells are connected with the water table. So, when they are in working condition, they will lift the water. As a result, water table will deplete in the long run.

WORKSHEET – 116

1. Two ways through which we can adopt to minimise the wastage of water are:
 - (i) Turn off taps while brushing.
 - (ii) Mop the floor instead of washing.

2. (a) The main reason of uneven distribution of water is resulted from human activities.
(b) Plants need water to get nutrients from the soil to prepare their food.
3. If water is not available to plants, the green character of the plant will be lost. As a result, there will be end of all life in the scarcity of food, oxygen and enough rain.
4. (a) Plants wilt and ultimately dry-up if they are not watered for a few days.
(b) The process in which rainwater can be used to recharge the groundwater, is called rainwater harvesting.

WORKSHEET – 119

ANSWER THE FOLLOWING

1. (a) True, (b) False, (c) False, (d) True, (e) False
2. (a) **Aquifer:** A layer of rock in which groundwater collects.
(b) **Water table:** The upper level of the groundwater is called water table.
(c) **Drip irrigation:** The method of watering the plants drop by drop.
(d) **Ground water:** The water stored under the ground where the soil is completely filled or saturated with water.
(e) **Infiltration:** The process of seeping of water into the ground is called infiltration.
3. (a) — (iii), (b) — (iv), (c) — (v), (d) — (i), (e) — (ii)
4. (a) Rainwater is the biggest source of water, so we need to conserve rain water.
(b) All living things need water for their survival. So, shortage of water could ultimately be responsible for the death of all life forms on the earth.
5. **Precipitation:** It is any product of the condensation of atmospheric water vapour that falls on the earth. The main forms of precipitation include drizzle, rain, sleet, snow and hail.
Condensation: Condensation is the change of water from its gaseous form (water vapour) into liquid water. Water vapour condenses to form cloud droplets.
6. A dam is a barrier or an artificial wall built over a river. A reservoir is made behind the dam which is used for the storage of water which can be evenly distributed among locations. Dams generally serve the primary purpose of retaining water. Dams also help to generate electricity. The Brahmaputra, Ganges and Indus basins contribute about 80 per cent of electricity generation.
7. Water is used for domestic, industrial and agricultural purposes. Maximum usage of water involves in agricultural activities. Water in agriculture is mainly obtained from groundwater, rainwater, rivers and canals.

WORKSHEET – 120

DO AS DIRECTED

- | | | |
|----------------------|-----------|----------------|
| 1. Underground water | 2. Rivers | 3. Water cycle |
| 4. F | 5. T | 6. T |

ANALOGY TYPE QUESTIONS

- | | | |
|---------------|----------------|------------------------|
| 1. Atmosphere | 2. 500 ml | 3. Solid form of water |
| 4. 2.77% | 5. Percolation | |

CHAPTER - 17 (FORESTS: OUR LIFELINE)

WORKSHEET - 122

MCQs

1. (c)
2. (b)
3. (c)
4. (b)
5. (c)
6. (b)
7. (a)
8. (b).
9. (d)
10. (b)
11. (a)
12. (b)
13. (d)
14. (c)
15. (d)

WORKSHEET - 123

VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

1. In the absence of trees, soil is not able to hold water. As a result, floods are caused.
2. Deforestation endangers our life and environment, therefore, we should always try to preserve our forests.
3. When forests disappear, the amount of carbon dioxide in air will increase, resulting in increase in earth's temperature.
4. Forests are the major source of getting medicinal plants, timber and many other useful products.
5. Forest also acts as a natural absorber of rainwater.
6. Soil helps forests to grow and regenerate.
7. The five products we get from the forests are gum, oils, spices, fodder for animals and medicinal plants.
8. The root system helps water to seep down into the ground.
9. The decaying animals' dung also provides nutrients to the seedlings to grow.
10. A large numbers of herbivores mean increased availability of food for a variety of carnivores.
11. Plants are the ultimate source of food for all animals.
12. Boar, bison, jackals, porcupine and elephants are the kinds of animals which live in the deeper areas of the forest.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. (a) Humus is obtained when microorganisms act upon the dead plants.
(b) Forests protect the soil from erosion.
2. The microorganisms which convert the dead plants and animals into humus are known as decomposers.
Bacteria and fungi are the examples of decomposers.
3. (a) Different layers of vegetation, *i.e.*, the dense bushes and the tall grasses, provide food and shelter for animals, birds and insects.
(b) Forest comprises of various plants, animals and microorganisms.
4. Trees take in water from their roots and release water vapour into the air through evaporation. As a result, clouds are formed.
5. (a) Climate, water cycle and air quality are influenced by forests.
(b) The plants provide oxygen for animal respiration.
6. The forests provide food, shelter, water and medicines for tribals. Tribals have traditional knowledge about many plants. Therefore, they mostly depend on the forests.

WORKSHEET – 124

ANSWER THE FOLLOWING

1. (a) Pollination, (b) Water, air (c) Soil

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. The plants help to provide oxygen for animal respiration. They also maintain the balance of oxygen and carbon dioxide in the atmosphere. Hence, forests are called lungs of living and non-living beings.
2. If an animal dies in the forest, it becomes food for vultures, crows, jackals and insects. As a result, nutrients are cycled and nothing goes waste in a forest.
3. Lac is used for making toys and bangles whereas medicinal plants are used for extracting medicines for human and veterinary.

WORKSHEET – 127

ANSWER THE FOLLOWING

1. (a) **Canopy:** This is thickest layer and serves as roof of the forest. The thick foliage of this layer stop the rain drops.
(b) **Humus:** It is the organic component of soil formed by decomposition of leaves, flowers and fruits by microorganisms.
(c) **Decomposer:** These are organisms that break down dead or decaying organism. They are heterotrophic in nature, *e.g.*, bacteria and fungi.
(d) **Deforestation:** Indiscriminate cutting down of forest for wood and other benefits.
(e) **Soil erosion:** Displacement of upper layer of soil by water and wind.
2. (a) — (iii), (b) — (iv), (c) — (i), (d) — (v), (e) — (ii)
3. (a) Emergent layer (b) Forest floor (c) Biotic community (d) Canopy (e) Understory layer
4. (a) True, (b) False, (c) False, (d) True, (e) False
5. Soil conservation is important because soil is necessary for trees to grow. And trees are important for the wildlife to survive. Therefore, soil conservation, forest conservation and wildlife conservation are related to each other.
6. Forests are of great importance as a source of timber and other products. The constant need of farmland, grazing area and fuelwood has caused destruction through centuries. So we need to conserve this valuable resource. One of the ways to replenish the forest cover is by afforestation.
 - **Afforestation:** Afforestation is the planting of trees in barren land to increase the area under forests. Afforestation influences the climate of a particular area and shows positive effect on the environment. Afforestation helps in restoring balance in the environment. The government insists that everybody should plant trees in their lifetime. It has to take necessary actions for converting wastelands into forests.
 - **Preventing overgrazing:** Overgrazing by animals should be controlled. Animals should not be allowed to graze in one area for a very long time.
 - **Ensuring protection from forest fires:** Forests should be protected from fires which cause large-scale destruction.
 - **Preventing illegal logging:** Cutting and uprooting of trees should be made a punishable offence. Vanmahotasav festival should be observed every year by planting seedlings in large numbers.

- **Practising planned cultivation:** If felling of trees is essential, new trees should be planted and taken care of in a planned way. While constructing dams and roads, all ecological factors should be taken into consideration.
7. Forests give out the oxygen we need to survive and absorb the carbon dioxide we exhale. Thus, they are the main source of oxygen. Since forests help to maintain the balance of gases in the atmosphere, they are also known as the **lungs of the earth**.

WORKSHEET – 128

DO AS DIRECTED

- | | | |
|------------|-----------|-----------------|
| 1. Forests | 2. Oxygen | 3. Understoreys |
| 4. T | 5. T | 6. F |

ANALOGY TYPE QUESTIONS

- | | | |
|---------------|---------------------------|----------|
| 1. Pan masala | 2. Bangles | 3. Trunk |
| 4. Rain | 5. Carbon dioxide, oxygen | |

MATCH THE COLUMNS

(a) — (v), (b) — (viii), (c) — (vii), (d) — (iii), (e) — (i), (f) — (iv), (g) — (ii), (h) — (vi)

CHAPTER – 18 (WASTEWATER STORY)

WORKSHEET – 130

MCQs

- | | | | | | | | |
|--------|---------|---------|---------|---------|---------|---------|--------|
| 1. (b) | 2. (b) | 3. (d) | 4. (a) | 5. (c) | 6. (b) | 7. (d) | 8. (a) |
| 9. (a) | 10. (c) | 11. (a) | 12. (d) | 13. (d) | 14. (c) | 15. (d) | |

WORKSHEET – 131

VERY SHORT ANSWER TYPE QUESTIONS (1 MARK)

- The increasing scarcity of freshwater is due to population growth, pollution, industrial development, mismanagement and other factors.
- Wastewater treatment is commonly known as “Sewage Treatment”.
- A network of big and small pipes, called sewers, form the sewerage.
- The dissolved and suspended impurities which are present in liquid waste, *i.e.*, sewage, called contaminants.
- Sewage should be treated before being discharged in a water body because there would be lots of impurities present in it.
- Vermicomposting toilet is a design of a toilet in which humans’ excreta is treated by earthworms.
- A skimmer removes the floatable solids like oil and greases.
- Sludge is a process in which solid like faeces settle at the bottom and are removed with a scraper.

9. Water pollution and soil pollution may be caused through untreated human excreta which is a health hazard.
10. Onsite sewage disposal systems are being encouraged to improve sanitation.
11. Most of the diseases are caused by open drain system because it is a breeding place for flies, mosquitoes and organisms.

SHORT ANSWER TYPE QUESTIONS (2 MARKS)

1. We should plant eucalyptus trees all along sewage ponds because these trees absorb all surplus wastewater rapidly and release pure water vapour into the atmosphere. Gradually, water vapour is converted into its liquid form.
2. Chemicals like paints, solvents and insecticides may kill microbes that help to purify water. These kinds of used wastematter should be thrown in dustbin. Never throw these wastematter in drain otherwise these wastes will choke the drains and will not allow free flow of life giving oxygen.
3. (a) Groundwater is a source of water for wells, tubewells, springs and many rivers.
(b) Standing dirty water emits foul smell.
4. (a) Dirty water is drained through drains.
(b) Closed drains carry water to sewer system.
5. Wastewater treatment plant involves physical, chemical and biological processes which remove physical, chemical and biological matter that contaminates the wastewater.
6. (a) Cleaning of water is a process of removing pollutants before entering a water body.
(b) Hepatitis is caused by virus.

WORKSHEET – 132

ANSWER THE FOLLOWING

1. (a) Plastic, sludge
(c) Eucalyptus
(b) Wastewater treatment plant
(d) 97%
2. Bar screen is a kind of machine used in purifying the water in a wastewater treatment plant. Through bar screen, wastewater is passed out. With the result of that, large objects like rags, sticks, cans, plastic packets and napkins are removed.
3. Sanitation is the equipment and system that keeps places clean, especially by removing human waste whereas disease occurs due to poor sanitation and contaminated drinking water. A vast number of people are still without sewerage.
4. (a) — (T), (b) — (F), (c) — (F), (d) — (T)

WORKSHEET – 135

ANSWER THE FOLLOWING

1. (a) **Aeration:** It is done in water to remove dissolved gases and oxidises dissolved metals as iron, hydrogen sulphide and volatile organic chemicals (VOCs).
(b) **Sewer:** It is a large underground channel that carries drainage water and waste matter.
(c) **Sanitation:** It is conditions of public health related to clean drinking water and adequate sewage disposal.

- (d) **Sludge:** Solid wastes that settle down at the bottom during the primary treatment of wastewater.
- (e) **Contaminant:** These are polluting or poisonous substances which make something impure. Contaminants may be physical, chemical, biological or radiological.
- (a) — (v), (b) — (iii), (c) — (iv), (d) — (ii), (e) — (i)
 - (a) True, (b) False, (c) False, (d) True, (e) True
 - The sanitary sewer (also called a sewer system) is an underground carriage system which is specifically designed for transporting sewage from our houses and commercial buildings through a network of pipes for its treatment or disposal. The drainage pipes carry wastewater from our homes or industries. These drains are further connected to bigger pipes which carry waste from each building to larger, underground main pipelines. These pipelines transport the sewage to sewage treatment facilities. The sewage carrying pipes are usually made of precast concrete and have a slight slope for water to flow quickly. Big holes with cover, called manholes, connect the main pipelines to the surface. The manholes provide access to maintenance workers to the sewer pipes for their inspection and maintenance in case of a blockage. The manholes also help sewer gases to escape.
 - A septic tank is an efficient, low-cost and underground system to manage the household wastewater. These are generally used in rural areas where houses are located at a distance from each other. In semiurban areas, septic tanks are called on-site disposal system. The household wastewater is allowed to pass into the underground septic tank. The solid waste settles down and the liquid and the lighter waste floats on it. The microorganisms present naturally in the wastewater digest the solid waste. The clarified liquid then flows from the tank to the outlet pipe where it gradually seeps into the soil around it.
 - Sewage contains harmful components, such as human and animal waste, suspended particles and harmful chemicals. If these are thrown directly into the waterbody, then they will pollute the water and make it unfit for human consumption. If this water mixes with drinking water supply then it may lead to an epidemic of water-borne diseases such as diarrhoea, jaundice, typhoid and cholera. Many of our major rivers such as the Ganga and Yamuna have become polluted to such an extent that they are also called open sewers. In villages, people often wash their clothes, utensils, and animals in ponds and lakes which makes these sources polluted. It is important to note that if the sewage is treated properly, then we can protect our water sources from getting polluted and can also generate fuels

WORKSHEET – 136

DO AS DIRECTED

- | | | | | | |
|----------|----------|----------|------|------|------|
| 1. Sewer | 2. Sewer | 3. Water | 4. T | 5. T | 6. F |
|----------|----------|----------|------|------|------|

ANALOGY TYPE QUESTIONS

- | | | | | |
|--------------------------|----------|-----------|----------|-----------|
| 1. Inorganic and organic | 2. Paint | 3. Toilet | 4. Solid | 5. Manure |
|--------------------------|----------|-----------|----------|-----------|

DOUBLE MATCHING

- (A) — (c) — (ii), (B) — (a) — (iii), (C) — (b) — (i)