Book-6

Chapter-1: The Wonderful World of Science

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. food 2. three 3. Fats, carbohydrates 4. carbohydrates

C. Short answer type questions:

1. Stars are huge glowing balls of hot gases. They release huge amounts of energy that heats the gas, so they shine.
2. A plant needs water, sunlight, and nutrients from the soil to grow.
3. The food we eat is made up of more than one ingredients. The ingredients of all food items contain components which are needed by our body. These components are called nutrients. The nutrients are chemical substances needed by our body for proper growth and functioning. The main nutrients are known as Carbohydrates, Proteins, Fats, Vitamins and Minerals.
4. Water continuously moves from the earth to the atmosphere and from the atmosphere back to the earth again. This circulation of water in nature is called water cycle.
5. Water is converted into water vapours by many processes like evaporation, transpiration, etc. The water vapour rises up, becomes cooler and condenses to form tiny droplets which float in air as clouds. Many droplets come together to form large
   drops which fall down as rain.
6. Our body also requires some elements like iron, calcium, potassium, sodium, magnesium, chlorine, iodine etc. for proper growth and functioning. These are called minerals and are contained in different foods in the form of their salts.

Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.
2. (c) A is true but R is false.

Case Study

1. (c)
2. (a)

3. Ghee, oil, butter, milk, meat etc. are some sources of fats.
4. Vitamins and minerals keep us away from diseases, so they are called protective nutrients.
5. Iron, calcium, potassium, sodium, magnesium, chlorine, iodine are some important minerals.

Chapter-2: Diversity in the Living World

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

1. (c)	2. (c)	3. (a)	4. (d)
5. (b)	6. (c)	7. (b)	8. (c)

B. Fill in the blanks:

1. Water, minerals	2. leaves	3. Herbs	4. banana
5. trees	6. Fibrous	7. Banyan, sugarcane	8. stem

C. Write 'T' for True and 'F' for false:

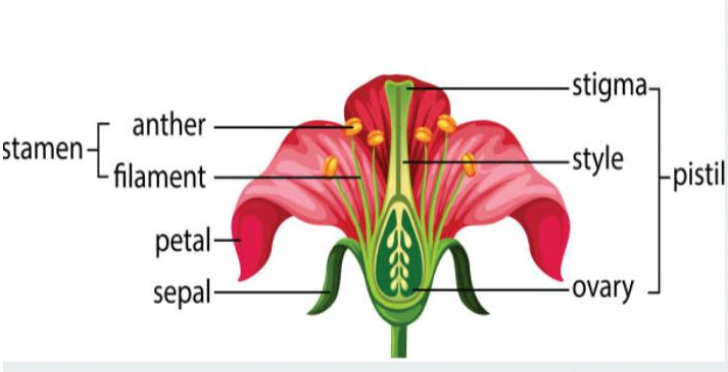
1. T	2. T	3. F	4. F
5. T	6. F	7. T	8. T

D. Short answer type questions:

1. For storage of food, the roots of some plants, such as carrot, turnip, sweet potato, radish and beetroot, store food and become fleshy.
2. Nodes are the link regions between a leaf and the stem. Internodes are the regions between two nodes.
3. The arrangement of veins in a leaf is termed as venation. Venation may differ from one type of plant to another.
4. The flower develops into a fruit only when the pollen grains from the anther get transferred to the stigma of the pistil. This process is called pollination.
5. The place where plants and animals live is called their habitat.
6. Animals have certain special characteristics that enable them to live in a particular climate successfully. These special characteristics are called adaptations.
7. Two main categories of habitats are land (terrestrial) and water (aquatic).
8. Elephant, lion are terrestrial animals and fish, sea horse are aquatic animals.

E. Long answer type questions:

1. Biodiversity is the variety of life on Earth, including all living things and their interactions. It can be measured at multiple levels, such as genetic, species, and ecosystem diversity. Biodiversity is constantly changing due to evolution and extinction.
2. Functions of roots are:
    - Roots absorb water and nutrients from the soil for making food.
    - The roots fix the plant firmly into the ground and prevent it from being blown away by wind or flown away by water.
    - Roots help to bind the soil particles together, thereby preventing them from being carried away by water or wind.
3. Roots of some plants are modified to perform additional function.
    - For nutrition, plants such as dodder have specialized roots called parasitic roots arising from their stem, which help them to absorb water and nutrients from the host.
    - For extra support, root of plants such as bamboo, sugarcane, and banyan give out extra roots from their branches. These roots grow downwards and give extra support to the stem of the plant. These are called prop roots.
    - For storage of food, the roots of some plants, such as carrot, turnip, sweet potato, radish and beetroot, store food and become fleshy.
4. Leaves are known as food factories of the plant. The main function of a leaf is to prepare food. Leaves generally have a green coloured substance called chlorophyll. The process of manufacture of food by a leaf in presence of sunlight and chlorophyll, using water, mineral salts and carbon dioxide of air is called photosynthesis.
5. Do yourself
6.



Sepals: These are the small green, leaf like structures present at the base of a flower. They protect the flower during its development and support the petals when the flower blooms.

Petals: These are the flat, broad, generally coloured structures present in a flower. Petals are colourful structures that surround the inner parts of the flower. They may be in one or more layers. They may be separated or joined to one another. They attract the flies and insects.

Stamens: Stamens are the male reproductive parts of a flower. These are placed inside the petals and can be seen completely only after removing the petals. They consist of two parts- a long, thin tube like structure called the filament and a sac like structure attached to it at the top called anther. The anther produces a powdery substance called pollen.

Carpel: It is the female reproductive part of the flower. It is the innermost part of a flower. It has three parts: a sticky top portion called stigma, an enlarged base called ovary, and a stalk called style that connects these two. The ovary contains tiny ball- like structures called ovules, which later become seeds.

7. All living things breathe, eat, grow, move, reproduce and have senses. Non-living things do not eat, grow, breathe, move and reproduce.
8. The place where plants and animals live is called their habitat. For example, the habitat of sea turtles is the sea or the ocean. The habitat of a camel is the hot or the cold desert, and the habitat of a rhododendron is the mountains. The habitat of plants and animals provides them food, water, air, shelter and other needs for their survival. Many types of plants and animals may share the same habitat. Habitat plays an important role in shaping the biodiversity of a region.
   There are mainly two types of habitats:

Terrestrial habitat: Terrestrial habitats are ones that are found on land, like forests, grasslands, deserts. For example: elephants and tigers.

Aquatic habitats include any water habitats. These water habitats can be freshwater or saltwater. Some plants and animals, such as fish and seaweed, live Assertion-Reason Based Questionsentirely underwater, while others can live partly in and partly out of the water.

Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.
2. (c) A is true but R is false.

Case Study

1. (b)
2. (b)
3. The arrangement of veins in a leaf is termed as venation.
4. A network of branching veins forms a supporting framework and also serves to transport raw materials and manufactured food into and out of the lamina.

Chapter-3: Our Green Friends (Uses of Plants)

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

1. (d)	2. (c)	3. (b)	4. (a)
5. (c)	6. (a)	7. (c)	

B. Fill in the blanks:

1. food	2. Sugar, starch	3. liquid	4. Proteins
5. fats	6. Sugar, starch	7. Vitamin D	8. minerals

C. Match the columns:

1. – (e) 2. –(f) 3. – (a) 4. - (b) 5. – (d)

D. Write 'T' for true and 'F' for false:

1. T	2. F	3. F	4. T
5. T	6. F	7. F	8. T

E. Short Answer type questions:

1. Nutrients are necessary for good health, growth and energy.
2. Carbohydrates provide energy to our body, which keeps it going throughout the day.
3. Proteins are called body-building nutrients. These are essential for growth, repair and maintenance of our body. Proteins also help our body in repairing damaged parts, replacing worn out or dead cells and tissues.
4. Vitamins are necessary for its proper functioning and good health. In addition to keeping our eyes, teeth, skin, bones etc. healthy, vitamins also protect our body against many diseases.
5. Fat Soluble vitamins are those vitamins which are stored in fat tissue and are only used when the body needs them. Vitamin A, D, E and K are fat soluble vitamins.
6. Diseases that are caused due to the lack of carbohydrates, proteins, vitamins, or minerals in the diet are called deficiency diseases.
7. Dietary fibres are known as roughage. They do not provide any nutrient to our body. It helps to get rid off from constipation.
8. Water is needed by our body for several functions:
    - Water helps to transport substances inside our body.
    - Water helps our body to absorb nutrients from food.
    - Water helps to get rid off from constipation.
    - Water helps to regulate our body temperature.

F. Long Answer type questions:

1. Food is essential for the body for the following purposes:
    - It is required for proper growth and development of body.
    - It provides energy for various activities.
    - It is required to perform various functions to sustain life
    - For repairing of damaged or injured body parts.
    - It keeps away us from diseases and infections.
2. Saturated fats are normally solid at room temperature (e.g., butter), whereas unsaturated fats are mostly liquid at room temperature (e.g., vegetable oil).
3. Vitamins are necessary for its proper functioning and good health. In addition to keeping our eyes, teeth, skin, bones etc. healthy, vitamins also protect our body against many diseases. Different kinds of vitamins are known by different names such as vitamin A, C, D, E and K etc.

Kind of Vitamins	Functions
Vitamin A	Keeps skin and eyes healthy
Vitamin B (Group of Vitamins)	Helps in proper functioning of nerves and muscles.
Vitamin C	Keeps blood vessels, teeth and gums healthy, heals cuts and injuries.
Vitamin D	Makes bones and teeth strong.

4. Proteins are required for muscle-building and repair of worn-out tissues in the body. Lack of proteins in the diet weakens muscles. Growing children need more proteins in their diet. Deficiency of proteins leads to a disease called kwashiorkor. Early symptoms include fatigue, irritability, and lethargy. As protein deprivation continues, one sees growth failure, loss of muscle mass, generalized swelling (edema), and decreased immunity.
5. Deficiency of proteins along with carbohydrate deficiency is called protein energy malnutrition (PEM). It leads to marasmus these diseases are more common in the children of rural areas.

A child suffering from kwashiorkor has some or all of the following symptoms are: Large pot-like belly, Stunted growth, Swelling of face and limbs (especially the feet), Skin diseases, Mental retardation, Diarrhea.

Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.
2. (c) A is true but R is false.

Case Study

1. Dietary
2. Soluble fibres help in blood circulation.
3. Dietary
4. Insoluble fibres are not soluble in water. Lack of insoluble fibre in the diet causes the stool to because become hard and difficult to pass.
5. Whole grains, carrots, cabbage, turnips, and cauliflower are sources of foods rich in insoluble fibres.

Chapter-4: Exploring Magnets

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

5. (d) 6. (d)

B. Fill in the blanks:

1. Non- magnetic
2. magnetite
3. Non – magnetic materials
4. temporary magnets
5. Poles
6. Poles
7. permanent magnets
8. repel

C. Write 'T' for true and 'F' for false:

1. T
2. T
3. F
4. T
5. F
6. T
7. T

D. Short Answer type questions:

1. Magnets are made of materials that attract objects made of certain substances such as iron, cobalt, and nickel.
2. The materials which are attracted by magnets are called magnetic materials such as iron, cobalt and nickel.
3. Those materials which are not attracted by magnets are called non-magnetic materials.
4. Wood, plastics, rubber, paper.
5. Temporary magnets retain their magnetic properties only for a short period of time.
6. When magnetic materials (such as iron filings) are brought close to a magnet, they do not stick evenly to all parts of the magnet. They stick more at the both end of the magnet. These are called the poles of the magnet.
7. A small piece of magnet or needle is allowed to rotate freely inside a small circular box. This instrument uses to find directions is called a magnetic compass.
8. Bar magnet, a horse-shoe magnet, a cylindrical or disc shape are different shapes of magnet.

E. Long Answer type questions:

1. According to legend, the first magnet was discovered by a Greek shepherd named Magnes. It is said that the nails in his shoes and the iron tip of his staff got stuck to a large black rock on which he was standing. He found that he couldn't move as his boots and his shoe got stuck to the rock. He dug up the earth to find a black rock which stuck iron things to it. It is believed that because of Magnesia, the rock is called magnetite.
2. A magnetic compass has a small magnetic needle at its centre. This needle can rotate freely and always points in the north-south direction. Different

directions (north, south, east, and west) are marked on the compass. With the help of it, we can find the direction anywhere on the Earth.

3. Properties of a magnet are

- A magnet always comes to rest in North-South direction.
- Like Poles repel each other and unlike poles attract each other.
- Magnets exert more magnetic force at the ends as compared to the middle.
- Magnetic poles always exist in pairs.

4. Electromagnets are special types of magnets in which the magnetism is produced by a flow of electric current. It is used in electric motors, doorbells, etc. a piece of soft iron bar with a wire wound around it acts as an electromagnet when a current passes through it. A piece of soft iron bar behaves like a magnet only as long as the wire would over it carries current. Its magnetism is soon lost when the current in the wire is switched off.
5. Magnets are used for a variety of things these days:

- Television, computers, music systems, watches, magnetic buttons in dresses and carry bags etc. All contain magnets of some or the other shape.
- Magnets are also used to make self closing pencil boxes, pin holders, etc.
- Credit cards, ATM cards, and identity cards have a strip of magnetic materials that stores information.
- Magnets are used in picking up substances made of iron from scrap yard.

Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.
2. (d) A is false but R is true.

Case Study

1. (d)
2. (c)
3. Poles
4. South
5. North

Chapter-5: Measurement of Length and Motion

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

5. (a)	6. (b)	7. (b)	8. (d)

B. Fill in the blanks:

1. 4000 m	2. 500 cm	3. 80 mm	4. 50 mm
5. 80 m	6. Animals	7. wheel	8.fathom

C. Write 'T' for True and 'F' for false:

1. F	2. T	3. T	4. F
5. T	6. F	7. T	8. T

D. Short Answer type questions:

1. We need transport to move from one place to another place.
2. We need to measure distance because it is needed to calculate other things like speed, time taken in a journey and much more.
3. Hand span is the distance between the tip of the thumb and the tip of the little finger of a fully stretched hand.
4. The foot span is the distance between the point of the toe and the heel of the foot.
5. In 1960 it was recommended that a common system called the International System of Units (or SI unit system) should be used all over the world. S.I. is the abbreviation of the "System International d Unites".
6. If position of an object does not change with respect to surrounding with time then object is said to be in rest.
7. If an object changes its position with respect to surrounding with time, it is said to be in motion.
8. It is the motion of a body in circular path around a fixed point called axis. When a body as a whole moves on a circular path its motion is called revolution and the body is said to revolve. The earth revolves around the sun, the moon revolves around the earth.

E. Answer the following questions:

1. Standard units are those that have a fixed value and, therefore, do not vary from person to person and place to place. For uniformity and convenience, a common unit is necessary for measurement of a physical quantity. For accurate measurement, we need some standard representation of every physical quantity.

2. When an object moves in a straight line, it is said to be in rectilinear motion. If a body moves along a curved path its motion is called curvilinear.

3. When the same motion repeats itself after equal intervals of time, it is said to be periodic motion. Any type of motion that does not repeat itself after equal intervals of time is called non-periodic motion.
4. Earth revolves round the sun on a circular path so it shows circular motion or revolution. With revolution, earth also moves around on its axis which is called rotation. So earth shows two types of motion at the same time - circular and rotational.
5. The motion of a particle or a body is said to be uniform if it moves along a straight line and covers equal distance in equal intervals of time. The motion of a particle or a body is said to be non-uniform if it covers unequal distances in equal intervals of time and covers equal distances in unequal intervals of time.

F. Name the type of motion involved in the following examples:

1. Oscillatory
2. Rotational
3. Rotational
4. Circular
5. Circular

Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.
2. (d) A is false but R is true.

Case Study

1. (b)
2. (c)
3. (c)
4. Standard units are those units which do not vary from person to person and have a fixed quantity.
5. International System of Units are also called SI units. These SI units were adopted worldwide in 1960 and since then all countries and all people around the globe use these units. For different measurements, there are different units. For example, the SI unit of measuring length is 'metre'.

Chapter-6: Material Around Us

Assessment Time
Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. Space, volume 2. liquid 3. natural 4. Transparent
5. Lustre 6. magnetism

C. Write 'T' for true and 'F' for false:

1. F 2. T 3. T 4. F
5. F 6. T

D. Short Answer type questions:

1. Placing or sorting similar things together is called grouping. Grouping makes it easier for us to find things when we need them.
2. Particles are very closely packed in solids. So, solids have definite shape, mass and volume, e.g. wooden box, knife, candle etc.
3. A glass sheet, flower petals, and surface of an apple, surface of an ice are smooth surfaces.
4. Rocks, sandpaper, brick and bark of a tree.
5. Window glass pane, a drinking glass, water, a plastic bottle, and swimming goggles.
6. Certain materials float on water whereas others sink. This property is called flotation.

E. Long Answer type questions:

1. Objects can be grouped together on the basis of a variety of consideration. As you put your books in one part of bag and notebooks in other part of bag and all small size items like pencil, pen, eraser, sharpner etc. in a pencil box. A chemist keeps different medicines in separate shelves according to their use, make or some specific considerations. Such a method of grouping similar things together is called classification. In other words, the process of sorting out and grouping things according to some basis or criteria is called classification.
2. Such materials through which light can pass are called transparent materials. This is because window panes are made of glass through which we can see things outside the window, they are not made of wood or iron. Materials that do not allow light to pass through them are called opaque materials. Wood, metals, stone, and cardboard are opaque materials.
3. Lustre is the shine of a material. All metals in pure state are shiny and said to possess luster. These materials are said to have a luster and are called lustrous materials. Metallic surfaces generally show this property. This property of metals is widely used for making jewellery and other decorative articles.

4. Some materials are soluble in water whereas some are insoluble. Solids like sugar, common salt, and soil are examples of solids that are soluble in water. Some solids are insoluble in water, e.g., wood, stone, sand, chalk powder, and wax.
5. Conductivity is the measure of the heat can pass through a material. A conductor is a material which gives very little resistance to the flow of an electric current or thermal energy.

Assertion-Reason Based Questions

1. (c) A is true but R is false.
2. (b) Both A and R are true but R is not the correct explanation of the Assertion.

Chapter-7: Transportation in Animals and Plants

Assessment Time
Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. plasma	2. Hemoglobin	3. arteries	4. To pump	5. excretion

C. Write 'T' for true and 'F' for false:

1. F	2. T	3. T	4. F	5. T

D. Answer the following questions:

1. Transport of materials is necessary in both plants animals as every cell needs a regular supply of nutrients and oxygen for releasing energy through respiration.

2. Blood is a red coloured liquid which flows in blood vessels. It is the bodily fluid that carries nutrients, gases and metabolic waste substances to different parts of the body. It is also a fluid connective tissue.
3. Arteries are so thick as thickness of hair. They have very thin walls. They oxygen is picked up from the alveoli in the lungs. The oxygen and digested food are passed on to each cell of the body. Veins are the vessels which carry carbon dioxide-rich blood from all parts of the body back to the heart. The veins have thin walls. There are valves present in veins which allow blood to flow only towards the heart.
4. Each side of the heart is divided into two parts or chambers. The top chambers with comparatively thinner walls are called auricles. The two lower chambers with thick muscular walls are called ventricles. The right side of the heart, the

right auricle and ventricle, receives blood with carbon dioxide from all parts of the body and sends it to lungs. Its left side, the left auricle and ventricle, receives oxygen rich blood from the lungs and sends it to all parts of the body.

5. The food prepared by the leaves is transported to all parts of the plant in the form of a solution through phloem and this process is known as translocation.

Case Study

1. (b)
2. (d)
3. (c)
4. Blood is a red coloured liquid which flows in blood vessels. It is the bodily fluid that carries nutrients, gases and metabolic waste substances to different parts of the body. It is also a fluid connective tissue.
5. Hemoglobin binds with oxygen and transports it to all the parts of the body and ultimately to all the cells. It will be difficult to provide oxygen efficiently to all the cells of the body without hemoglobin.

Chapter-8: A journey Through States of Water

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

1. (d)	2. (d)	3. (b)	4. (d)
5. (a)	6. (c)	7. (d)	8. (c)

B. Fill in the blanks:

1. transpiration	2. Rain water harvesting	3. Underground water
4. body Temperature	5. Salty	6. Condensation
7. transpiration	8. sweat	

C. Write 'T' for true and 'F' for false:

1. F	2. T	3. T	4. T
5. T			

D. **Match the following:**

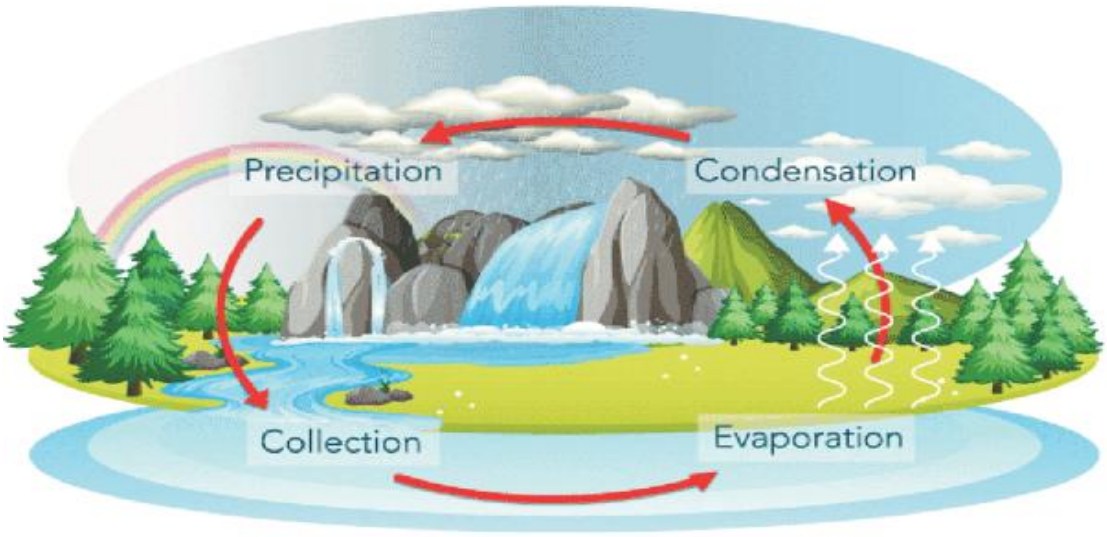
1. (c) 2. (d) 3. (a) 4. (b)

E. Short Answer type questions:

1. About three-fourths of the earth's surface is covered with water. That is why Earth is also called the blue planet.
2. Water exists in all three physical states: solid (ice), Liquid (water), Gas(vapour).
3. The change of water into water vapour is called evaporation.
4. The change of water vapours into water is called condensation.
5. Loss of water from plants in the form of water vapours is called transpiration.

F. Long Answer type questions:

1. We need water for following purpose:
    - Water is used for drinking, cooking, cleaning, bathing and washing. Water that is suitable for drinking is called potable water.
    - All animals including human beings need water for their body processes like digestion of food, absorption of nutrients, their circulation, getting rid of wastes, etc.
    - Plants also need water for processes like germination, photosynthesis and transporting minerals from roots to other parts of the plants.
    - It is used in agriculture. Water is required for irrigation of crops, which results in growth of crop plants and production of food grains.
    - Industries use water to make almost everything we use like paper, rayon, petroleum, refineries, fertilizers and chemicals.
    - All factories use a large amount of water every day-as raw material, for cleaning, for heating, cooling, for generating electricity etc.
2. Water is continuously evaporated from the earth to the atmosphere and from the atmosphere back to the earth again. This circulation of water in nature is called water cycle. When the water vapour of clouds condenses and falls down to the earth as rain, it is called precipitation. If precipitation remains in the liquid form till it reaches the earth, we call it rain.



Water Cycle

3. (a) When the clouds come in contact with the ground, we call it fog. Fog is formed when water vapour condenses into very tiny liquid water droplets.
   (b) When small droplets of water remain suspended in air, we call it mist. You must have seen mist being formed in front of your mouth when you speak in very cold weather.
   (c) When the temperature is very low, dew takes the form of ice called frost.
   (d) A hailstorm is very destructive as it damages crops, destroys buildings and may even kill animals.
4. Water is very important for our survival but its excess and its lack are both harmful for us, they may cause of natural disasters. Floods raise the water level of rivers, lakes, ponds causing them to overflow and this water spreads in the fields, villages and cities sometimes submerging them. This condition is called flood. Flood water damages the houses, building and dams. It carries away animals and many other objects with it.
5. Collection of rainwater from surface on which rainfalls and storing it for future use is called rainwater harvesting. Storing rainwater that collects on roofs instead of letting it go down the drain, it increases the level of ground water which is most useful during droughts. This technique is known as rooftop rainwater harvesting.

Chapter-9: Methods Of Separation in Everyday Life

Assessment Time

Multiple Choice Questions

A. **Darken the correct circle in the OMR sheet:**

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

B. Fill in the blanks:

1. different 2. bran 3. threshing 4. Fodder

5. supernatant 6. Pure substance

C. Write 'T' for True and 'F' for false:

1. T 2. T 3. F 4. T

5. T 6. F

D. Short Answer type questions:

1. Any substance which is made up of only one kind of particles is called a pure substance such as wood, gold, iron, silver, oxygen, hydrogen etc.
2. A mixture is made up of two or more pure substances in any ratio in such a way that mixture shows the property of each substance which are used in the mixture. A mixture may be solid, liquid or gas.
3. The things that we can see easily in the food items in the form of small stones, unwanted grains and husk, etc. These impurities can be picked easily by hands so this method of separation is called Hand-Picking.
4. Sieving method is used to separate particles of different size, they can be separated by sieving. The smaller component passes through the pores of the sieve whereas the larger component is left behind in it. This method is used in some homes to separate wheat bran from flour.
5. A filter paper is placed inside a glass funnel and a put container under it. The solid part remaining on the filter paper is called the residue. The liquid which has passed through the filter paper is called the filtrate.
6. The liquid above the sediments is called supernatant.

E. Long Answer type questions:

1. Many tiny stones and other impurities are mixed in the grains, pulses. These impurities should be removed or separated before cooking. Similarly, there are many other instances where we need to separate one substance from another. Sometimes, we need to remove unwanted things, for example, seeds from the fruits, separating tea leaves from tea using a strainer, separating impurities from the drinking water. Separation is also done to obtain useful things such as obtaining butter by churning milk, and separating cotton fibres from its seeds using cotton gin (a machine).

2. Stalks are dried in sun heat before the grain is separated from them. After harvesting a crop, the next step is threshing. The process of beating out the grains from the harvest crop plants is called threshing. Threshing involves beating the stalks to separate the grains or seeds from the crop. It is done manually or with the help of machines. In manual, bundles of crops are beaten on the rocks to remove the seeds.
3. The process of separating insoluble solids suspended in a liquid by allowing them to settle down is called sedimentation. The solid particles that settle down during sedimentation are called sediments. The process of pouring out the clear upper liquid without disturbing the sediments is called decantation.
4. The process of conversion of a liquid into its vapour is called evaporation. In nature, this process takes place slowly, but if we increase the temperature, the process of evaporation becomes faster. Evaporation is done naturally when the sun heats up water from rivers or lakes or the ocean and turns it into vapour or steam.
5. The solution in which more solute can be dissolved is called unsaturated solution. A saturated solution is the solution in which no more of the solute can be dissolved.

There are some other factors that increase the solubility of a solute.

(a) On Stirring, rate of dissolving is increased.

(b) Solute in powdered form is dissolved much faster than solute in solid form.

Chapter-10: Living Creatures: Exploring Their Characteristics

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

1. (d) 2. (b) 3. (c)

B. Fill in the blanks:

1. habitat 2. aquatic 3. terrestrial 4. Flower, fruit

C. Write 'T' for True and 'F' for False:

1. F 2. T 3. T 4. T

D. Answer the following questions:

1. All living things have some common characteristics, these are:

- All living things are made up of cells. A cell can be defined as the smallest living entity which can function independently. There are many types of cells present in a living thing.
- Another important characteristic of living organisms is their ability to move. A living thing can move from one place to another. All animals move from one place to another in search of food and water.
- Growth is another important characteristic of living things. All living things grow.
- Respiration is a process by which all living organisms use oxygen present in air to release energy from the food they eat.
- Food is one of the basic requirements of all living things.
- Excretion is the process of removal of waste products from the body.
- All living things reproduce more of their own kind.
- All things grow, reproduce, get old, and then they die.

2. A habitat is a place where an organism makes its home. A habitat meets all the environmental conditions an organism needs to survive.
3. For germination of seed, air, water and sunlight are necessary.
   Water: Seeds require water for germination. Water enables the seeds to carry out the processes necessary for their growth. The outer covering of the seed is called seed coat. Water softens the seed coat and helps the tiny embryo inside it to develop into a plant.
   Air and Soil: Seeds need air for germination. They use the air available in the spaces between soil particles. Moreover, spaces between the soil particles allow roots to grow easily.
   Light and/or dark conditions: We have learnt that for the bean seeds, presence of light is not essential for their germination. In general, most seeds do not require light for germination. But after germination, sunlight is required for further growth of the seedling.
4. There are the 5 stages of plant life cycle. The seed, germination, growth, reproduction, pollination, and seed spreading stages.
5. Stage-1: The adult frog will lay all its eggs together in the water to start off the cycle. These eggs float around in the ponds, lakes and rivers they were laid in, and often just look like a large mass of jelly from far away. When the eggs are clumped together, they're collectively known as frog spawn. The frog spawn starts out as tiny black dots in a jelly-like substance. The jelly itself serves many purposes for the eggs. Not only does it keep the egg moist to help it survive, but it also offers a decent amount of protection from predators.

Stage 2: When the eggs hatch, they enter the second stage of the life cycle. By this point, they're known as tadpoles. When they first hatch and for the first 1-3 weeks afterwards, tadpoles will stay close to the water plants and grass. Tadpoles still can't survive on land, so they'll usually feed on nearby plants filtered by the water, as well as graze on small bites of nearby vegetation. Luckily, tadpoles develop gills very early on, allowing them to breathe underwater and swim around in their fish-like stage. Over the next 14 weeks, the tadpole will do a whole heap of growing until it eventually

becomes a froglet.

Stage 3: At this stage, the froglet begins to resemble an adult frog much more closely. The front and back legs will have fully formed, and the tail will begin to shorten. The longer tail the frog had as a tadpole meant it could store

Stage 4: It can then take another four years for froglets to mature into an adult frog. nutrients to feed from at this critical stage.

Chapter-11: Nature's Treasures

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. Cannot	2. Ultra	3. 0.04%	4. weather

C. Write 'T' for True and 'F' for false:

1. T	2. F	3. T	4. F

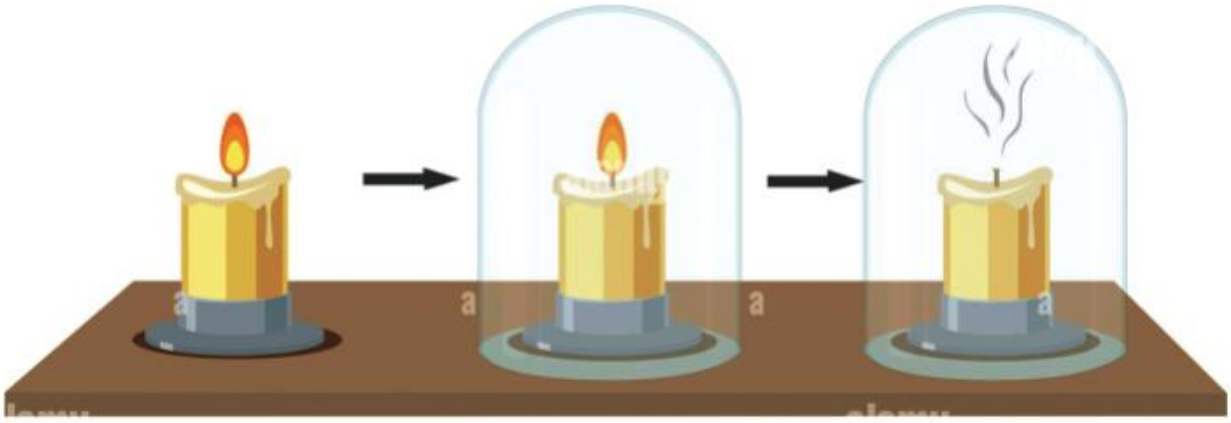
D. Short Answer type questions:

1. A thick layer of the air that surrounds the Earth is called atmosphere.
2. Moisture is the amount of water vapour present in the atmosphere.
3. The trapping of sun's heat by certain gases present in air is called green house effect. These gases are carbon dioxide and methane. Due to increased pollution, amount of these gases increases in the environment, which leads to increase in green house effect which in turn causes global warming.
4. Ozone layer protects us from harmful ultraviolet rays of the sun, thus preventing many eye problems and skin cancers in human beings.

E. Long Answer type questions:

1. Activity

- Take a candle and place it in a big bowl.
- Now fill the half bowl with some water.
- Light the candle and cover it with an inverted transparent glass.
- The candle keeps burning for some time. After some time, the candle goes off. The water level of the glass has also increased (approximate 1/5 of the
- glass) after the candle is goes off.



It proves that air contains about 21% oxygen.

2. Plants and animals use oxygen to respire and return it to the air and water as carbon dioxide. Carbon – di - oxide is then taken up by algae and terrestrial green plants and converted into carbohydrates during the process of photosynthesis, oxygen being a by-product. Animals take in oxygen and gives out carbon – di – oxide. This cycle of oxygen and carbon – di – oxide continue in the nature.
3. **The properties of air are:**
    - Air is a mixture of many gases, water vapours and dust particles.
    - Air exerts pressure.
    - Air has mass.
    - Air occupies space.
    - Air is colourless and odourless.
4. Plants have tiny pores called stomata, found on the underside of a leaf. Through stomata, leaves respire.

Chapter-12: Beyond Earth

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. 6000 ^{0}C 2. Mercury, venus 3. mars 4. 95

C. Short Answer type questions:

1. A large group of asteroids occupies the space between the planets Mars and Jupiter.
2. The solar system is a part of the galaxy called the Milky Way. It consists of the sun, the planets that revolve around it, their satellites, asteroids, meteors and comets. The sun is located at the centre of the solar system and its eight planets revolve around it in their elliptical paths.
3. The Indian National Satellite System or INSAT, is **a series of multipurpose geostationary satellites** launched by the Indian Space Research Organisation (ISRO). EDUSAT, a satellite specially designed for facilitating distance education in India has been launched in September 2004. This satellite using Ku band covers the whole country. ISRO has setup this satellite based interactive network, to meet the requirements of various users in education sector.
4. Orion constellation is called the Hunter. It is called Mriga in Hindi. When we join the lines of the stars that form this constellation, it resembles a hunter in a kneeling position with his bow.

D. Long Answer type questions:

1. The sun is a star. It is medium sized star as compared to other stars in the sky. It is a huge ball of fire that mainly consists of hydrogen. The temperature of the sun's surface is approximately 6000^{0}C. While the temperature at its centre is about 15 million degree celsius. Massive nuclear reactions take place in the sun that continuously converting hydrogen into helium. These reactions also give out huge amount of heat and light. The sun is 100 times bigger than the earth. It has a diameter of approximately 1.4 million kilometres.
2. Mercury, Venus, Earth and Mars are called inner planets. Mercury is closest planet to the sun. It is also the smallest planet in the solar system. Venus is the second planet from the sun. Like the planet Mercury, Venus is also very hot and can be seen only before sunrise and after sunset. Earth is the only planet in the solar system where life is known to exist. It is the third planet from the sun. It is also called the blue planet because of the oceans that give this planet a bluish appearance. Life exists on earth because the conditions on this planet

are favourable. Mars is the fourth planet from the sun. It can be seen as a bright orangish red object. The red colour is due to the soil on this planet which is reddish in colour.

3. Jupiter, Saturn, Uranus and Neptune are called outer planets. Jupiter is the fifth planet from the sun. It is also the biggest planet in the solar system. Its mass is about 318 times that of our earth. The Jupiter is one of the brightest objects in the sky after the moon and the planet Venus. Saturn is the sixth planet from the sun and the second largest as well. It is also called the planet with rings or the ringed planet because of the cloud of dust and rocks surround it forming a ring. Saturn is mainly made up of hydrogen and helium. Uranus is the seventh planet from the sun. It is the third biggest planet in the solar system. It was the first planet to be discovered. Neptune is the eighth planet from the sun. It is the outermost planet of the solar system.
4. Uses of satellite are:
   - Artificial satellite is used to forecast weather. It can give us information on the upcoming cyclones and tsunamis.
   - Artificial satellite helps us to collect information about other planets and other celestial bodies.
   - Artificial satellite is also used in communication technology. It is used to transmit news and messages through television, radios and telephones and internet.
   - Artificial satellite is used in defence of one's country. It is used to spy on the doings of enemies and other countries.
   - A type of artificial satellite called remote sensing satellite is used to survey the natural resources of the earth like minerals, crops and fishing zones in the sea.
5. Planets are celestial bodies that orbit around the Sun. They don't have the ability to emit light and energy from nuclear fusion reactions. Stars are huge celestial bodies made up of hydrogen and helium that can emit their light and energy from nuclear fusion reactions. Stars are bigger than planets.

Model Test paper-1

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. food 2. leaves 3.liquid 4. magnetite 5. animals

C. Write 'T' for true and 'F' for false:

1. T 2. F 3. F 4. F 5. T

D. Short Answer type questions:

1. Stars are huge glowing balls of hot gases. They release huge amounts of energy that heats the gas, so they shine.
2. For storage of food, the roots of some plants, such as carrot, turnip, sweet potato, radish and beetroot, store food and become fleshy.
3. Proteins are called body-building nutrients. These are essential for growth, repair and maintenance of our body. Proteins also help our body in repairing damaged parts, replacing worn out or dead cells and tissues.
4. The materials which are attracted by magnets are called magnetic materials such as iron, cobalt and nickel.
5. We need transport to move from one place to another place.

E. Long Answer type questions:

1. Biodiversity is the variety of life on Earth, including all living things and their interactions. It can be measured at multiple levels, such as genetic, species, and ecosystem diversity. Biodiversity is constantly changing due to evolution and extinction.
2. Functions of roots are:
    - Roots absorb water and nutrients from the soil for making food.
    - The roots fix the plant firmly into the ground and prevent it from being blown away by wind or flown away by water.
    - Roots help to bind the soil particles together, thereby preventing them from being carried away by water or wind.
3. Food is essential for the body for the following purposes:
    - It is required for proper growth and development of body.
    - It provides energy for various activities.
    - It is required to perform various functions to sustain life
    - For repairing of damaged or injured body parts.
    - It keeps away us from diseases and infections.
4. According to legend, the first magnet was discovered by a Greek shepherd named Magnes. It is said that the nails in his shoes and the iron tip of his staff got stuck to a large black rock on which he was standing. He found that he couldn't move as his boots and his shoe got stuck to the rock. He dug up the earth to find a black rock which stuck iron things to it. It is believed that because of Magnesia, the rock is called magnetite.
5. Standard units are those that have a fixed value and, therefore, do not vary from person to person and place to place. For uniformity and convenience, a

common unit is necessary for measurement of a physical quantity. For accurate measurement, we need some standard representation of every physical quantity.

Model Test Paper-2

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. plasma 2. transpiration 3. different 4. habitat

5. cannot

C. Write 'T' for true and 'F' for false:

1. F 2. F 3. T 4. F 5. T

D. Short Answer type questions:

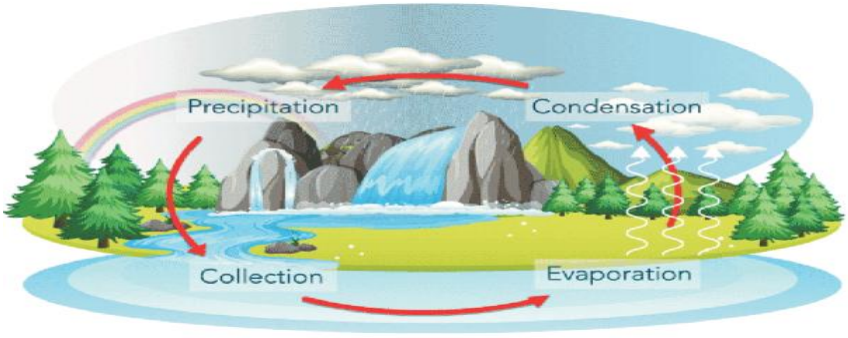
1. About three-fourths of the earth's surface is covered with water. That is why Earth is also called the blue planet.
2. Solid (ice), liquid (water) and gas (vapours) are three states of water.
3. Any substance which is made up of only one kind of particles is called a pure substance such as wood, gold, iron, silver, oxygen, hydrogen etc.
4. The trapping of sun's heat by certain gases present in air is called green house effect. These gases are carbon dioxide and methane. Due to increased pollution, amount of these gases increases in the environment, which leads to increase in green house effect which in turn causes global warming.
5. Ozone layer protects us from harmful ultraviolet rays of the sun, thus preventing many eye problems and skin cancers in human beings.

E. Short Answer type questions:

1. We need water for following purpose:
    - Water is used for drinking, cooking, cleaning, bathing and washing. Water that is suitable for drinking is called potable water.
    - All animals including human beings need water for their body processes like digestion of food, absorption of nutrients, their circulation, getting rid of wastes, etc.
    - Plants also need water for processes like germination, photosynthesis and transporting minerals from roots to other parts of the plants.

- It is used in agriculture. Water is required for irrigation of crops, which results in growth of crop plants and production of food grains.
- Industries use water to make almost everything we use like paper, rayon, petroleum, refineries, fertilizers and chemicals.
- All factories use a large amount of water every day-as raw material, for cleaning, for heating, cooling, for generating electricity etc.

2. Water is continuously evaporated from the earth to the atmosphere and from the atmosphere back to the earth again. This circulation of water in nature is called water cycle. When the water vapour of clouds condenses and falls down to the earth as rain, it is called precipitation. If precipitation remains in the liquid form till it reaches the earth, we call it rain.



Water Cycle

3. Many tiny stones and other impurities are mixed in the grains, pulses. These impurities should be removed or separated before cooking. Similarly, there are many other instances where we need to separate one substance from another. Sometimes, we need to remove unwanted things, for example, seeds from the fruits, separating tea leaves from tea using a strainer, separating impurities from the drinking water. Separation is also done to obtain useful things such as obtaining butter by churning milk, and separating cotton fibres from its seeds using cotton gin (a machine).
4. **The properties of air are:**

- Air is a mixture of many gases, water vapours and dust particles.
- Air exerts pressure.
- Air has mass.
- Air occupies space.
- Air is colourless and odourless.

5. Plants have tiny pores called stomata, found on the underside of a leaf. Through stomata, leaves respire.

Book-7

Chapter-1: Nutrition in Plants

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. nutrition 2. glucose 3. chlorophyll 4. Parasitic

5. damp

C. Write 'T' for True and 'F' for false:

1. F 2. T 3. T 4. T

5. T

D. Match the following:

1. -b 2. -e 3. -d 4. -c

5. dodder -f 6. -a

E. Answer the following questions:

1. This mode of nutrition in which the plants make their own food is called autotrophic nutrition. Organisms that make their own food are called autotrophs. Green plants prepare their own food from simple raw materials around them such as carbon dioxide, water, sunlight.
2. Carbon dioxide and oxygen from air is taken in through the tiny pores present on the surface of the leaves, called stomata.
3. Procedure
   - Take a green leaf and boil it for about five minutes in water to soften it.
   - Place it in a test tube containing alcohol.
   - Now place this test tube in a beaker of water and warm it until the alcohol begins to boil.
   - The alcohol will dissolve chlorophyll and the leaf will lose its green colour.
   - Now, wash the leaf in warm water to remove the alcohol. Now spread the leaf out flat on a dish and cover with iodine solution. Remove the leaf from the iodine and wash it with water.

- On adding iodine solution, certain areas of leaf become blue black in colour. Compare these areas with the other leaf.
- The appearance of bluish-black colour indicates the presence of starch in green area of the leaf. This proves that green area of leaf can only prepare starch.

4. Animals and non-green plants such as fungi and bacteria cannot prepare their own food. They depend directly or indirectly on green plants for their food. This method of nutrition is called heterotrophic nutrition. Animals and non-green plants are known as heterotrophic.
5. The mode of nutrition in which organisms take in nutrients in solution form from dead and decaying matter is called saprotrophic nutrition. Plants which use saprotrophic mode of nutrition are called saprotrophs such as fungi.
6. Some organisms live together and share shelter and nutrients. This is called symbiotic relationship. For example, certain fungi live in the roots of trees. The tree provides nutrients to the fungus and in return receives help from it to take up water and nutrients from the soil. This association is very important for the trees. In organisms called lichens, a chlorophyll-containing partner, which is an algae and a fungus live together. The fungus provides shelter, water and minerals to the algal and in return, the algae provide food which prepares by photosynthesis.

Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.
2. (a) Both A and R are true and R is the correct explanation of the Assertion.

Case Study

1. (d)
2. (d)
3. (d)
4. The mode of nutrition in which organisms make food themselves from simple substances is called autotrophic nutrition.
5. Carbon dioxide and oxygen from air is taken in through the tiny pores present on the surface of the leaves, called stomata.
6. Plants absorb mineral nutrients and water from the soil. After sometime, fertility of the soil becomes less so for being fertile the soil we add fertilizers and manures contain plant nutrients such as nitrogen, potassium, phosphorous etc. We can grow plants and keep them healthy if we fulfill the nutrient

requirement of plants. When plants and animals die, they decay. Certain microorganisms like bacteria and fungi feed on the dead remains of plants and animals causing them to rot. Rotting releases the nutrients back into the soil in the form of humus. Plants use these mineral nutrients, especially nitrogen, present in the soil, for their growth. As a result, there is a depletion of nitrogen in the soil over a period of time. Manures and fertilizers are used to replenish the nutrients in the soil.

Chapter-2: Nutrition in Animals

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. Multi- cellular	2. oesophagus	3. liver	4. Gall bladder
5. incisors	6. acid	7. J- shaped	8. 7.5 m
9. villi	10. Swallow food		

C. Write 'T' for True and 'F' for false:

1. F	2. F	3. T	4. F
5. T	6. T	7. F	8. T

D. Match the following:

1. -b	**2. -e**	**3. -a**	**4. -c**
5. -f	**6. -d**		

E. Which part of the digestive canal in involved in:

1. Small intestine
2. Large intestine
3. Small intestine
4. Large intestine

F. Answer the following questions:

1. The various processes involved in nutrition, in animals that take in solid form, are as follows:
   Ingestion, digestion, absorption, assimilation and egestion.
2. Hydra is a simple, multi cellular animal. It has a number of tentacles around its mouth which are used for ingestion of food. The tentacles entangle small aquatic animals and kill them with their stinging cells.
3. Some harmful bacteria grow and produce acid. This acid damage the enamel of our teeth and damage the teeth. This is called tooth decay. Sweets, toffees, chocolates, soft drinks are major culprits of tooth decay therefore, one should clean the teeth with tooth powder and datum twice a day and clean the teeth after eating.
4. Sometimes, when we are talking as well as eating or in hurry. We may cough, get hiccups or a choking sensation. This happens when food particles or water enter the windpipe (breathing pipe) instead of food pipe. The windpipe carries air from the nostrils to the lungs, it runs adjacent to the food pipe. But inside the throat, air and food share a common passage. During the act of swallowing a flap like valve closes the passage of the windpipe and food enters into the food pipe. But sometimes at the time of talking, some particles enter into windpipe and we feel choked, get hiccups or cough.
5. 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. It secretes bile juice that is stored in a sac called the gall bladder. The bile plays an important role in the digestion of fats.
6. The pancreas is a large cream coloured gland located just below the stomach. The pancreatic juice acts on carbohydrates, fat and protein and changes them into simpler forms. It secretes insulin which helps to enter the glucose in the cell to liberate energy.
7. The inner walls of the small intestine have thousands of fingers like out growths. These are called villi. The villi increase the surface area for absorption of the digested food. Each villus has a network of thin and small blood vessels close to its surface. The surface of the villi absorbs the digested food materials. The absorbed substances are transported via the blood vessel to different organs of the body where they are used to build complex substances such as the proteins are body building.
8. Its function is to absorb water and some salts from the undigested food material.

9. Ruminants quickly swallow the grass and store it in a part of the stomach called rumen. Here the food gets partially digested and is called cud. But later the cud returns to the mouth in small lumps and the animal chews it. This process is called rumination and these animals are called ruminants, that's why these animals chewing continuously.
10. We get instant energy from glucose because it is quickly absorbed into the bloodstream after digestion, allowing our cells to use it immediately for energy production.

Assertion-Reason Based Questions

1. (b) Both A and R are true but R is not the correct explanation of the Assertion.
2. (c) A is true but R is false.

Case Study 1

1. (b)
2. (a)
3. (b)
4. Chocolates, sweets, soft drinks and other sugar products are the major culprits of tooth decay.
5. Therefore, one should clean the teeth with a brush or datun and dental floss (a special strong thread which is moved between two teeth to take out trapped food particles) at least twice a day and rinse the mouth after every meal.

Case Study 2

1. (b)
2. (c)
3. (b)
4. The breakdown of complex components of food into simpler substances is called digestion.
5. There are two types of digestion–mechanical digestion and chemical digestion is carried out by the teeth in our mouth.

Chapter-3: Heat and its Effects

Assessment Time
Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

1. (a)	2. (b)	3. (a)	4. (c)
5. (d)	6. (a)	7. (a)	8. (c)

B. Fill in the blanks:

1. temperature	2. degree	3. energy	4. Hot, cold
5. kelvin	6. clinical	7. 212	8. convection

C. Write 'T' for true and 'F' for false:

1. T	2. T	3. F	4. F
5. T	6. F		

D. Match the following:

1. -d	**2. -a**	**3. -b**	**4. -c**

E. Answer the following questions:

1. Heat is a form of energy that may be changed from one form to another form.

   Effects of Heat:

   - On heating, ice changes into water and further on heating, it changes into steam. So, heat can change the physical state of the substance.
   - Heat can rise the temperature of substance.
   - On heating, movement of molecules increases so volume of substances increases. Therefore, heat causes expansion.
   - After boiling the liquid such as water, milk, some harmful bacteria present in it are died. Therefore, heat affects living organisms.
   - After heating, the vegetables, pulses and other thing become soft and their taste changes.

2. When we heat a substance, the movement of its molecules increases. This increases the molecular space. Therefore, the space occupied by the molecules, that is the volume of the substance, increases. Thus, it concludes that heat causes expanse.
3. Gases have not fixed shape and volume because molecules of gases are not closely packed, they are free to move anywhere, they take the shape of

container. Thus, gases expand more than liquids and solids on being heated.

4. There are three types of scales to measure temperatue:
   a. Celsius scale
   b. Fahrenheit scale
   c. Kelvin scale
5. Liquids have not fixed shape because molecules of liquids are not closely (tightly) packed. Therefore, on heating molecules of liquids vibrate freely here and there very fast. So, liquid expands more than solids on heating.
6. We know that,
   $C = 5/9(F - 32)$
   or $F = 9/5\ C + 32$
   $= 9/5 \times 150 + 32$
   $= 270 + 32$
   $= 302°F$
7. $C = 5/9\ (40 - 32)$
   $= 5/9 \times 8 = 4.44°C$
8. $-45°C = (-45+273)\ °K = 228°\ K$
   $173°\ K = (173-273)\ °C = -100°\ K$

F. Explain the reason of following:

1. The railway track on which trains run are made of iron. During summer, the iron expands. To allow this expansion, space has to be left between joints of the rail track if this not done, expansion of the track can cause them to bend. This can cause serious accidents.
2. Steel bridges one end is made to rest on rollers with enough space provided for expansion during summer.
3. When very hot liquid is poured in a glass tumbler, the tumbler sometimes cracks. This is because that inner wall gets heated first and expand but outer wall does not expand at that instant or fast. So, inner wall does not get space to expand therefore it cracks.
4. Wheels of these carts are made of wood but mounted by iron strip. This iron strip prevents it by tearing and breaking. This iron strip is not stick it with the nails. Actually, this is done by expansion method. Round iron strip is made slightly less than wood wheel, first it is heated, and after expansion place the wood wheel inside it. After cooling, iron strip shrinks and grip the wheel tightly.

Assertion-Reason Based Questions

1. (d) A is false but R is true.
2. (d) A is false but R is true.

Case Study

1. vacuum
2. black surface, white surface
3. Land Breeze are during the night, the land becomes cooler faster than the sea. The air above the sea is still hot and rises. The cool air from above the land rushes towards the sea. This causes movement of air towards the sea at night.
4. Sea Breeze are during the day, the land gets heated faster than the sea. The hot air above the land rises creating a space. This space is filled in by the cool air above the sea rushing towards the land. This movement of air causes cool air to blow during the day.
5. Radiation is the process of transfer of heat from the heat source to the surroundings in the form of wave.

Chapter-4: Acid, Bases and Salts

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

5. (d)

B. Fill in the blanks:

1. bases 2. Organic acids 3. Sour in taste

4. caustic soda 5. Milk of magnesia 6. Blue vitriol

C. Write two uses of each:

1. a. HCl is used in laboratories for various experiments.
   b. It is used in the manufacture of glue.
2. a. As seasoning for food

   b. in manufacture of chlorine and sodium

3. a. It is used to make fertilizers.
   b. It is used to clean jewellery made of gold and silver.
4. a. It is used for white washing
   b. in the manufacture of bleaching powder
5. a. It is used in the manufacture of fertilizers, nylons, plastics, dyes,

b. Used as ink remover to remove ink spots from clothes.

6. It is used in manufacture of soap, paper, rayon, textiles, medicine etc.
7. In bakery and medicine
8. In manufacture of fertilizers, pesticides, glass, fireworks, explosives, and rocket fuels.
9. It is used as a fungicide, algaecide, root killer, and herbicide in both agriculture and non-agricultural settings.
10. In purification of water

D. Complete the following Chemical reactions:

1. $SO_2 + H_2O \rightarrow H_2SO_3$
2. $CO_2 + H_2O \rightarrow H_2CO_3$
3. $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$
4. $Na_2O + 2HNO_3 \rightarrow 2NaNO_3 + H_2O$
5. $Al(OH)_3 + 3HNO_3 \rightarrow Al(NO_3)_3 + 3H_2O$
6. $2NaCl + H_2SO_4 \rightarrow Na_2SO_4 + 2HCl$
7. $NH_4OH + HCl \rightarrow NH_4Cl + H_2O$
8. $Ca(OH)_2 + CO_2 \rightarrow CaCO_3 + H_2O$

E. Answer the following questions in one word:

1. Sour taste
2. Lactic acid
3. Citric acid
4. Nitric acid
5. Carbon di oxide
6. Methyl orange turns red in acidic solutions and yellow in basic solutions.
7. Carbon di oxide
8. Nitric acid
9. Caustic soda
10. Potassium aluminum sulphate

F. Answer the following questions:

1. Acids can be prepared from non-metals by a two-stage process. Carbon, phosphorus, sulphur and nitrogen are some non-metals. They are not hard and shiny like metals. They react with oxygen to form non-metallic oxides. These are acidic in nature. When they are dissolved in water, they form acids.

Physical properties

- Acids are sour in taste.

- Acids are corrosive in nature. They can corrode substances they come in contact with. Strong acids like hydrochloric acid and Sulphuric acid can even burn human skin, clothes and paper.

2. The acids present in fruits and in some food items have weak acids. These acids are also called organic or weak acids. Some acids can be obtained from minerals. That is why, such acids are called strong acids such as Sulphuric acid (H_2SO_4), hydrochloric acid (HCl).
3. The acids present in fruits and in some food items have weak acids. These acids are also called organic acids. Some acids can be obtained from minerals, called strong acids.
4. Acids react with carbonates to form salt, water and carbon dioxide.
   $CaCO_3 + 2HCl \rightarrow CaCl_2 + H_2O + CO_2$
   $Na_2CO_3 + H_2SO_4 \rightarrow Na_2SO_4 + H_2O + CO_2$
5. **Uses of acids are**
   - HCl is used to remove stains and deposits or scales from inside the boilers. This is called descaling.
   - HCl is used to make aqua regia. Aqua regia is three parts of hydrochloric acid and one part of water. It is used to dissolve metals like gold.
   - HCl is also used for cleaning tiles, wash basin and toilet, etc.
   - H_2SO_4 is used to make paints, dyes and fertilizers.
   - H_2SO_4 is used in car batteries.
   - HNO_3 is used to manufacture explosives like TNT.
6. **Uses of bases**
   - Sodium hydroxide (NaOH) is commonly known as caustic soda. It is used in manufacture of soap, paper, rayon, textiles, medicine etc.
   - Calcium hydroxide ($Ca(OH)_2$) is commonly known as slaked lime. It is used for white washing, in the manufacture of bleaching powder, for neutralizing acidity of soil, for removing hair from the animal skins in leather industry etc.
   - Ammonium hydroxide is used in the manufacture of fertilizers, nylons, plastics, dyes, as an ink remover to remove ink spots from clothes.
   - Sodium carbonate is used as washing soda and sodium hydrogen carbonate as baking soda. Magnesium hydroxide is used as an antacid to neutralize acidity in the stomach.
7. When an acid reacts with a base, they neutralize each other and salt and water are formed. This is called neutralization reaction. When hydrochloric acid reacts with sodium hydroxide (caustic soda), sodium chloride

(common salt) and water are produced. A salt is neutral, it is neither acidic nor basic.

8. Soaps which we use for cleaning, are actually sodium salts of some acids. Soap can be prepared by boiling vegetables oil or animal fat with caustic soda (NaOH).

   Oil + sodium hydroxide $\xrightarrow{\text{on heating}}$ Soap + glycerine

   To separate the soap from the mixture, add a teaspoonful of salt to the container and stir. On cooling, solid soap separate out as a crust on top of the solution.

Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.
2. (b) Both A and R are true but R is not the correct explanation of the Assertion.

Case Study

1. (c)
2. (b)
3. Some acids can be obtained from minerals. That is why, such acids are called mineral acids such as Sulphuric acid (H_2SO_4), hydrochloric acid (HCl).
4. The acids present in fruits and in some food items have weak acids. These acids are also called organic or weak acids.
5. Properties of acids are
   - Acids are sour in taste.
   - Acids are corrosive in nature. They can corrode substances they come in contact with. Strong acids like hydrochloric acid and Sulphuric acid can even burn human skin, clothes and paper.

Chapter-5: Physical and Chemical Changes

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

1. (b), white 2. (b) 3. (c) 4. (b)

5. (b)

B. Fill in the blanks:

1. The chemical **name** of baking soda is **sodium bicarbonate**.
2. Cleaning of utensils is a **physical** change.
3. Lighting of bulb is a **physical** change.
4. Rusting of iron is a **chemical** change.
5. Colour of lime water turns **milky** when carbon dioxide gas is pass through it.
6. In chemical change **new** substance is formed.

C. Write 'T' for True and 'F' for false:

1. T 2. F 3. F 4. T

5. T 6. T

D. Classify the changes involved in the following processes as ohysical or chemical changes:

1. Chemical change
2. Chemical change
3. Physical change
4. Chemical change
5. Physical change
6. Chemical change
7. Physical change
8. Physical change
9. Physical change
10. Physical change

E. Answer the following questions:

1. Standard units are those that have a fixed value and, therefore, do not vary from person to person and place to place. For uniformity and convenience, a common unit is necessary for measurement of a physical quantity. For accurate measurement, we need some standard representation of every physical quantity.

2. When an object moves in a straight line, it is said to be in rectilinear motion. If a body moves along a curved path its motion is called curvilinear.
3. When the same motion repeats itself after equal intervals of time, it is said to be periodic motion. Any type of motion that does not repeat itself after equal intervals of time is called non-periodic motion.
4. Earth revolves round the sun on a circular path so it shows circular motion or revolution. With revolution, earth also moves around on its axis which is called

rotation. So earth shows two types of motion at the same time - circular and rotational.

5. The motion of a particle or a body is said to be uniform if it moves along a straight line and covers equal distance in equal intervals of time. The motion of a particle or a body is said to be non-uniform if it covers unequal distances in equal intervals of time and covers equal distances in unequal intervals of time.

F. Name the type of motion involved in the following examples:

1. Oscillatory
2. Rotational
3. Rotational
4. Circular
5. Circular

Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.
2. (d) A is false but R is true.

Case Study

1. (b)
2. (c)
3. (c)
4. Standard units are those units which do not vary from person to person and have a fixed quantity.
5. International System of Units are also called SI units. These SI units were adopted worldwide in 1960 and since then all countries and all people around the globe use these units. For different measurements, there are different units. For example, the SI unit of measuring length is 'metre'.

Chapter-6: Respiration in Organims

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. Aerobic	2. anaerobic	3. anaerobic	4. gills
5. skin	6. Bronchi	7. 15-18	8. body

C. Write 'T' for true and 'F' for false:

1. F 2. T 3. T 4. T
5. T

D. Match the columns:

1. C 2. E 3. B 4. A 5. d

E. Answer the following questions:

1. They allow air and other gases to enter and exit the nasal cavities. They contain branched bones or cartilages called turbinates in birds and mammals. Their function is to warm the air during inhaling and to remove moisture during exhalation.

2. Respiration that takes place in the absence of air is called anaerobic respiration or fermentation. During anaerobic respiration, glucose is converted into ethyl alcohol and carbon dioxide.
3. Muscles are cramped after heavy exercise due to respiring anaerobically muscle cells. The partial breakdown of glucose produces lactic acid. The accumulation of lactic acid causes muscles cramps. We get relief from cramps after a hot water bath or a massage with oil.
4. The nostrils (the passages in the nose trachea (windpipe), bronchi and lungs are the main organs of the respiratory system. Lungs are present in the chest cavity. This cavity is surrounded by ribs on the sides.
5.

Difference Between Cellular Respiration and Combustion

Cellular Respiration	Combustion
It is a slow process.	It is a fast process
It occurs at body temperature.	It occurs at high temperature.
It occurs only in living cells.	It can occur anywhere.
In this process, energy is released slowly-slowly and stored in cells.	In this process, energy is released in a form of heat and light.

6. From the nose cavity, the air passes through the pharynx or throat cavity to the windpipe or trachea. The windpipe branches into two smaller tubes called the bronchi. Each bronchus enters a lung. In the lungs, each bronchus branches out into smaller tubes called bronchioles. At the end of these tubes, tiny air sacs are present and called alveoli.
7. Each lung contains about 300 million alveoli. The air we breathe in eventually reaches these air sacs. The sacs are surrounded by blood vessels.

The oxygen present in the air we breathe in, goes into the blood contained in blood vessels. The carbon dioxide presents in the blood passes out of the blood into the air sacs. Thus, exchange of gases takes place in the lungs.

8. They breathe through their skin. Air dissolves on the mucus of their skin, so they must stay moist to breathe. If worms dry out, they suffocate. As fresh air is taken in through the skin, oxygen is drawn into the worm's circulatory system, and the worm's hearts pump the oxygenated blood to the head area.
9. Most fish have special organs called gills that allow them to breathe oxygen by extracting it from water. Fish take in water through their mouth, and it passes across the gills on its way out. When it does, oxygen gets diffused into the blood stream and travels through the fish's body.
10. Leaves consist of tiny pores known as stomata. Gaseous exchange occurs through diffusion via stomata. Guard cells regulate each of the stomata. Exchange of gases occurs with the closing and opening of the stoma between the inferior of leaves and the atmosphere.

Assertion-Reason Based Questions

1. (d) A is false but R is true.
2. (a) Both A and R are true and R is the correct explanation of the Assertion.

Case Study 1

1. (c)
2. (a)
3. During heavy exercise, fast running, cycling, walking for many hours or heavy weight lifting, the Demand for energy is high.
4. Hot water bath or massage improves circulation of blood. As a result, the supply of oxygen to the muscle cells increases. The increase in the supply of oxygen results in the complete breakdown of lactic acid into carbon dioxide and water.
5. The number of times a person inhale in one minute is called breathing rate.

Case Study 2

1. (c)
2. (b)
3. (a)
4. Cellular respiration takes place in the cells of all organisms. In the cell, the food (glucose) is broken down into carbon dioxide and water using oxygen. When

breakdown of glucose occurs with the use of oxygen it is called aerobic respiration.

5. Each cell of an organism performs certain functions such as nutrition, transport, excretion and reproduction. A cell is the smallest structural and functional unit of an organism.

Chapter-7: Transportation in Animals and Plants

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. plasma 2. Hemoglobin 3. arteries 4. To pump

5. Excretion 6. kidneys 7. Xylem 8. Transpiration

9. 2.5% 10. WBCs

C. Write 'T' for true and 'F' for false:

1. F 2. T 3. T 4. F

5. T 6. T

D. Answer the following questions:

1. Transport of materials is necessary in both plants animals as every cell needs a regular supply of nutrients and oxygen for releasing energy through respiration.

2. Blood is a red coloured liquid which flows in blood vessels. It is the bodily fluid that carries nutrients, gases and metabolic waste substances to different parts of the body. It is also a fluid connective tissue.
3. Arteries are so thick as thickness of hair. They have very thin walls. They oxygen is picked up from the alveoli in the lungs. The oxygen and digested food are passed on to each cell of the body. Veins are the vessels which carry carbon dioxide-rich blood from all parts of the body back to the heart. The veins have thin walls. There are valves present in veins which allow blood to flow only towards the heart.
4. Each side of the heart is divided into two parts or chambers. The top chambers with comparatively thinner walls are called auricles. The two lower chambers with thick muscular walls are called ventricles. The right side of the heart, the

right auricle and ventricle, receives blood with carbon dioxide from all parts of the body and sends it to lungs. Its left side, the left auricle and ventricle, receives oxygen rich blood from the lungs and sends it to all parts of the body.

5. The food prepared by the leaves is transported to all parts of the plant in the form of a solution through phloem and this process is known as translocation.
6. The waste materials produced during metabolic activities are toxic to the body and must not be stored there; instead, they must be excreted out through the excretion process. During the functioning of body cells, certain waste and harmful substances are produced.
7. All parts of a plant need water, minerals and food. A transport system moves these materials throughout the plant. The roots absorb water and minerals from soil and transport through stem. Water and minerals reach to leaves prepare food with the help of these constitutions. The transportation of water and dissolved minerals salts from the root to the stem and leaves takes place through the xylem.
8. The process of losing water in the form of water vapour from a living plant is known as transpiration. The evaporation of water from leaves generates a suction bull, which can pull water to great heights in the tall trees as we suck soft drinks throw straw. Transpiration also cools the plants.

Assertion-Reason Based Questions

1. (d) A is false but R is true.
2. (c) A is true but R is false.

Case Study

1. (d)
2. (d)
3. (c)
4. Blood is a red coloured liquid which flows in blood vessels. It is the bodily fluid that carries nutrients, gases and metabolic waste substances to different parts of the body. It is also a fluid connective tissue.
5. Hemoglobin binds with oxygen and transports it to all the parts of the body and ultimately to all the cells. It will be difficult to provide oxygen efficiently to all the cells of the body without hemoglobin.

Chapter-8: Reproduction in Plants

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

5. (d) 6. Small, non-scented and colorless

7. (b) 8. (b)

B. Fill in the blanks:

1. Self pollination 2. Spore 3. unisexual flowers

4. stamen 5. Self pollination, cross pollination respectively

6. fertilization 7. Wind, water , animals 8. Hairs

9. bisexual 10. bud

C. Write 'T' for true and 'F' for false:

1. F 2. T 3. T 4. F

D. Match the following:

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

E. Answer the following questions:

1. Methods of reproduction are broadly grouped into two main types: sexual and asexual.
2. In this type of reproduction, an individual is capable of reproducing by budding, spore formation or fragmentation. Only single individual is required. No gamete formation takes place. Asexual reproduction needs favourable conditions to take place.
3. The vegetative propagation method is a simple, faster and less expensive method for multiplying plants.It is for this reason, that this method is commonly used in agriculture and horticulture.Some artificial methods for vegetative propagation are:
   Cutting, Layering, Grafting, Tissue culture.
4. Some green colour patches in the pond or in other stagnant water bodies are algal. In the presence of water and nutrients, algae grow and multiply rapidly by fragmentation. An algae breaks up into two or more fragments. These fragments or pieces grow into new individuals.
   This process continues and they cover a large area in a short time duration.

5. The flowers which contain both stamens and pistil are called bisexual flowers.
6. Cross-pollination is defined as the deposition of pollen grains from a flower to the stigma of another flower. Commonly, the process is done by insects and wind.
7. The male cell moves into the ovule and fuses with the egg to form to zygote. This process is known as fertilization.
8. After fertilization, the ovary grows into a fruit and other parts of the flower fall off. The fruit is the ripened ovary.
9. There are main modes of seed dispersal are wind, ballistic, water, and by animals.
10. Favorable Conditions for Seed Germination are adequate water, oxygen, organic manures, sunlight

Assertion-Reason Based Questions

1. (b) Both A and R are true but R is not the correct explanation of the Assertion.
2. (a) Both A and R are true and R is the correct explanation of the Assertion

Case Study

1. (a)
2. (b)
3. (b)
4. A zygote is formed due to the fusion of a male and female gamete by a process called fertilization.
5. Flowers which contain both stamens and pistil are called bisexual flowers.

Chapter-9: Motion and Measurement of Time

Assessment Time

Multiple Choice Questions

A. **Darken the correct circle in the OMR sheet:**

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

B. Fill in the blanks:

1. speedometer 2. m/s 3. uniform 4. Galileo

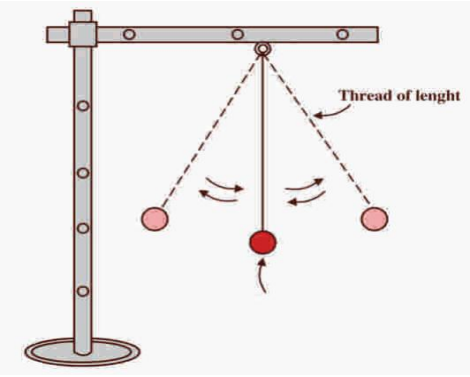
5. increasing 6. quartz

C. Write 'T' for True and 'F' for false:

1. T 2. T 3. T 4. T 5. T

D. Answer the following questions:

1. Sundial, sandclock etc. are the sources of measurement of time in ancient time.
2. A simple pendulum consists of a small metallic ball or a piece of stone, suspended from a rigid base by a thread. The metallic ball is called the bob of the pendulum. It is used to measure time.
3. The pendulum is said to have one complete oscillation when its bob starting from its mean position 'O' and moves to 'A' then to 'B' and comes back at 'O'.



4. The time taken to complete one oscillation is called time period.
5. Time period is increased on increasing the length and time period is decreased on decreasing the length of pendulum.
6. Now-a-days various type of electronic watches are available in the market. These watches have the crystals of a substance called quartz. A quartz clock tells more accurate time than a pendulum and other clocks.
7. Time Period = Time taken/Number of oscillations
   = 20 /25 = 0.8 sec
8. Speed of bus = Distance / Time taken
   = 360/6 = 60 km/hr
9. If a body covers equal distances in any equal intervals of time, however small the interval may be, then the motion is said to be uniform. If a body covers unequal distances in equal in travels of time, then its motion is termed as non-uniform.

Assertion-Reason Based Questions

1. (b) Both A and R are true but R is not the correct explanation of the Assertion.
2. (b) Both A and R are true but R is not the correct explanation of the Assertion.

Case Study

1. (b)
2. equilibrium position
3. A simple pendulum has a mass or weight in the form of a bob hanging at one end of a string. The other end of the string is held at a fixed point.
4. The movement of the bob from one point to another through its equilibrium position is called an oscillation.
5. The time taken to complete one oscillation is called the time period.

Chapter-10: Electric Current and its Effects

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

5. (a) 6. (c)

B. Fill in the blanks:

1. heating 2. battery 3. coiled 4. Electromagnet
6. MCB 7. electromagnet

C. Write 'T' for True and 'F' for False:

1. T 2. T 3. F 4. T 5. F

D. Answer the following questions:

1. An electric circuit is a continuous path for electric current consisting of circuit elements such as bulb, wire, battery or cell etc.
2. Resistor is used to resistance the flow of electric current.
3. When an electric current flows through a conductor, some of it gets converted into heat energy. Some appliances are specially designed for heating purpose such as heater, room heater, press (electric iron), geyser, toaster, kettle, oven etc.
4. The heating effect of current is also used in an electric fuse, which is a safety device to prevent damage in an electric current if suddenly very

high current passes through it.

5. (MCB) is used in place of fuse. It is switch that automatically switches off a circuit if the current in it exceeds the specified maximum limit. When we turn them 'on' then circuit is once again complete.
6. The term 'magnetic effect of electric current' means that an electric current flowing in a wire produces a magnetic field around it. Electromagnets are based on the magnetic effect of current.
7. An electromagnet shows magnetic properties only a long as the electric current flows through its solenoid. Thus, electromagnet are temporary magnets. Electromagnets of very high strength can be made easily.
   An electromagnet is usually prepared by winding a large number of turns of an insulated copper wire on a soft iron core.
   Uses of Electromagnet
   - Electromagnet are used on cranes in steel works and scrap yards for lifting heavy loads.
   - In hospitals dealing with eye injuries, electromagnets are used for removing iron, splinters from the eyes.
8. When the switch is pressed, current flows in the electromagnet. It then attracts the iron rod towards itself, causing the hammer to strike the gong at the same time, the armature loses contact with the screw and the current is switched off. This causes the electromagnet to lose its magnetism and the armature springs back to close the circuit once again. Current flows once again and the cycle repeats itself till the current is switched off.

Assertion-Reason Based Questions

1. (b) Both A and R are true but R is not the correct explanation of the Assertion.
2. (a) Both A and R are true and R is the correct explanation of the Assertion.

Case Study

1. (d)
2. (b)
3. In some appliances, electric current is converted into heat energy. This happens in appliances like iron, water heater, hair dryer, geysers and torch. All these appliances produce heat. This is the heating effect of current.
4. The term 'magnetic effect of electric current' means that an electric current flowing in a wire produces a magnetic field around it.

5. CFLs are used to produce light instead of electric bulbs. They don't have filaments, hence heat energy is not produced hence they are power efficient.

Chapter-11: Light

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

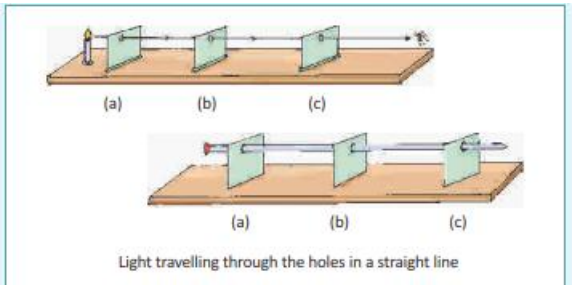
1. straight	2. Regular, smooth	3. irregular	4. virtual
5. mirror	6. Plane	7. Lens	8. Convex
9. concave	10. seven		

C. Match the columns

1. e	2. a	3. d	4. B	5. a

D. Answer the following questions:

1. Those objects which give out light of their own are called luminous objects. The sun, stars are the examples of luminous objects. Those objects which do not give out light of their own are called non-luminous objects. These objects become visible when light from a luminous body falls on them and these objects reflect some part of light on our eye retina. For example, wood, book.
2. Procedure
    - Take three square pieces of cardboard make them straight with the help of support.
    - Make the holes in all three cardboards at same point.
    - Keep a burning candle on the table, with its flame at the level of the holes.



Light travelling through the holes in a straight line

Observation

Now you will see the flame of candle through holes. If you displace one cardboard then you will not see the flame of candle.

Conclusion

It proves that light travels in a straight line.

3. On ambulance vans, AMBULANCE is written as ECNALUBMA because when the driver of a vehicle ahead of an ambulance looks in his/her rearview mirror. He/she can read AMBULANCE written on it and give way to it.
4. When the rays of light after getting reflected from a mirror actually meet at a point, a real image is formed. A real image can be obtained on a screen. When the rays of light after getting reflected from a mirror appear to meet at a point, a virtual image is formed.
5. The reflecting surface of a spherical mirror can either be on the outside or inside. If the reflecting surface is on the inside, the mirror is called a concave mirror. If the reflecting surface is on the outside, the mirror is called a convex mirror.
6. The centre of the mirror is called its **pole (P).** The centre of the sphere of which the mirror forms a part is called the **centre of curvature (c).** The line passing through the centre of curvature of the mirror and the pole is called the **principal axis** of the mirror.
7. Concave mirrors are used in
   - torches and car, bike headlights to reflect the light of the bulb to form a powerful beam of light.
   - Shaving mirrors are concave mirrors in which we see magnified image of our face.
   - A doctor used it to examine eyes, ears, nose, throat and teeth.
   - The astronomical telescope is an instrument used to view stars and planets. It users a large concave mirror to form an image of the star or the planet.
8. A magnifying lens is a converging lens because all the rays, parallel to principal axis, converges at one point. So, it is called converging lens.
9. Light can be split into its different colours (violet, indigo, blue, green, yellow, orange and red) or VIBGYOR. The pattern formed by these colours is called a spectrum.
10. We can show that the colours of the spectrum are combined to give white light, which is done by allowing the colours of the spectrum coming through the first prism to pass through another inverted glass prism placed behind the first prism.

Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.
2. (a) Both A and R are true and R is the correct explanation of the Assertion.

Case Study 1

1. Thick, thinner
2. Thin, thick
3. (a)
4. The point on the principal axis where all the light rays meet or appear to meet is known as principal focus of the lens (F).
5. Concave lens are used in Galilean telescope, the spectacles of the people who can't see distant objects.

Case Study 2

1. (c)
2. (d)
3. If the surface on which a beam of light falls from an object is smooth and highly polished, it reflects light in one direction. The beam of light reflected is parallel and in one direction. This is called regular reflection.
4. If the reflecting surface is rough, it does reflect light, but the beam of light reflected travels in all directions. This is called diffused reflection.
5. A plane mirror has the ability to reflect light over large distances. Plane mirrors are also used in garments, because they reflect light. You can see your clothes from every angle.

Chapter-12: Our Forests: Lifeline

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. Air, water 2. Bottom layer 3. home 4. Litter, trees

5. Omnivores or carnivores 6. Deforestation 7. Decomposers

8. rainfall, temperature

C. Write 'T' for True and 'F' for False:

1. T 2. F 3. T 4. F 5. T

D. Answer the following questions:

1. They are useful in the following ways:
   - They provide food and shelter for wildlife.
   - They help to cool the air and bring about rainfall.
   - They help to maintain the ratio of oxygen and carbon dioxide in the air.
   - The roots of plants bind the soil and prevent soil erosion, thus maintain the fertility of soil.
   - They help to prevent floods.
   - They yield valuable products such as timber, wood pulp (for making paper), turpentine, latex (for the manufacture of rubber) and many other useful products such as resin, gum, lac and medicinal plants.
2. Forest is a natural absorber of rain water. It allows rain water to seep through. The roots of the trees absorb the water and prevent it from flowing away. The trees present in the forest prevents the rain from directly hitting the ground which may result in floods.
3. A food chain refers to the **order of events in an ecosystem**, where one living organism eats another organism, and later that organism is consumed. A grasshopper eats a green plant, a frog eats the grasshopper, the frog is eaten by a snake and the snake is eaten by an eagle. This is called food chain.
4. The microorganisms which convert the dead plants and animals to humus are known as decomposers. These micro-organisms play an important role in the forest. Decomposers convert dead animals and plants into a dark coloured substance called humus. The presence of humus ensures that the nutrients of the dead plants and animals are released into the soil. These nutrients are again absorbed by the roots of the living plants.
5. The branches emerge at a certain height from the ground on the trunk of the tree. This branching point where the trunk gives out branches which form another layer of the forest is called the crown. Some trees grow so tall and spread out their branches forming a roof. The branches of such trees come together and completely shade the area from sunlight. This topmost layer of branches of trees that form a roof is called the canopy.
6. The ground layer of the forest that is dense, moist and dark due to blocking of sunlight by the canopy is called the understorey. Plants in the understory comprise an assortment of seedlings and saplings of canopy trees together with specialist understory shrubs and herbs.
7. We get timber, medicines, paper wood, oil, rubber from forests.

8. Deforestation or forest clearance is **the removal and destruction of a forest or stand of trees from land** that is then converted to non-forest use.
9. Planned harvesting is an efficient way to get wood from forests by cutting some trees in a forest and the fruits of these trees produce seeds so that new trees can grow.
10. Afforestation is the planting of saplings and trees to increase forest cover. This is a measure taken to protect and conserve our environment from the harmful effects of pollution and human development. Afforestation ensures the maintenance of ecological balance and environmental stability.

Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.
2. (b) Both A and R are true but R is not the correct explanation of the Assertion.

Case Study

1. (a)
2. (d)
3. (a)
4. Saksham reminded Prof Verma that he had not explained why forests are called Green lungs.
5. Oxygen is the by product of photosynthesis and released into the air we breathe. It is also needed by animals to survive. This is the reason why forests are also called green lungs.

Chapter-13: WasteWater Management

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. Sewer system 2. Bottom layer 3. T 4. T 6. T

C. Match the following:

1. D 2. E 3. F 4. A 5. B

6. A

D. Write ‘T’ for True and ‘F’ for False:

1. T 2. F 3. T 4. F 5. T

E. Answer the following questions:

1. Wastewater is generated as a result of numerous human activities like agriculture, construction of buildings, domestic wastes etc.
2. It is a mechanical process where the solid material in the wastewater is separated. This is done by screening and settling of large particles. The sewage is made to pass through vertical bars and grit chambers. It removes iron objects, plastic, cloth, cans and human faeces. The grit chamber helps in removing sand. All other solids present in the water settle down here.
3. Sludge consists of human faeces and other organic matter. It also has large amounts of water and needs to be thickened so that it can be easily transported and used as compost in farmlands.
4. An excessive growth or 'blooms' of algae in lakes rich in nutrients such as phosphates is called eutrophication.

Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.

2. (a) Both A and R are true and R is the correct explanation of the Assertion.

Case Study

1. (a)
2. (b)
3. The light waste that floats on the surface of water is called the scum.
4. The sedimentation tank has separate outlets for the sludge and the water that is to be passed further. The water that comes out from the sedimentation tank is called clarified water.
5. The sludge that comes out of the sedimentation tank is rich in organic matter. It contains human faeces and domestic waste like vegetable peels and food particles.

Model Test paper-1

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. Parasitic plant 2. 7.5 m 3.clinical 4. anaerobic 5. gills

C. Match the following:

1. B 2. E 3. D 4. C 5. D 6. A

D. Write 'T' for true and 'F' for false:

1. F 2. F 3. F 4. T 5. T

E. Answer the following questions:

1. Sometimes, when we are talking as well as eating or in hurry. We may cough, get hiccups or a choking sensation. This happens when food particles or water enter the windpipe (breathing pipe) instead of food pipe. The windpipe carries air from the nostrils to the lungs, it runs adjacent to the food pipe. But inside the throat, air and food share a common passage. During the act of swallowing a flap like valve closes the passage of the windpipe and food enters into the food pipe. But sometimes at the time of talking, some particles enter into windpipe and we feel choked, get hiccups or cough.
2. Heat is a form of energy that may be changed from one form to another form.

   Effects of Heat:

   - On heating, ice changes into water and further on heating, it changes into steam. So, heat can change the physical state of the substance.
   - Heat can rise the temperature of substance.
   - On heating, movement of molecules increases so volume of substances increases. Therefore, heat causes expansion.
   - After boiling the liquid such as water, milk, some harmful bacteria present in it are died. Therefore, heat affects living organisms.
   - After heating, the vegetables, pulses and other thing become soft and their taste changes.
3. The acids present in fruits and in some food items have weak acids. These acids are also called organic or weak acids. Some acids can be obtained from minerals. That is why, such acids are called strong acids such as Sulphuric acid (H_2SO_4), hydrochloric acid (HCl).
4. Muscles are cramped after heavy exercise due to respiring anaerobically muscle cells. The partial breakdown of glucose produces lactic acid. The

accumulation of lactic acid causes muscles cramps. We get relief from cramps after a hot water bath or a massage with oil.

5. The waste materials produced during metabolic activities are toxic to the body and must not be stored there; instead, they must be excreted out through the excretion process. During the functioning of body cells, certain waste and harmful substances are produced.

Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.
2. (c) A is true but R is false.

Case Study

1. **(c)**
2. **(d)**
3. **(a)**
4. **Red**
5. **turmeric**

Model Test Paper-2

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. spore 2. electromagnet 3. electromagnet 4. Bottom

5. home

C. Match the following:

1. e 2. c 3. d 4. b 5. a

D. Write 'T' for true and 'F' for false:

1. T 2. T 3. F 4. T 5. T

E. Answer the following questions:

1. The male cell moves into the ovule and fuses with the egg to form to zygote. This process is known as fertilization.
2. A simple pendulum consists of a small metallic ball or a piece of stone, suspended from a rigid base by a thread. The metallic ball is called the bob of the pendulum. It is used to measure time.
3. The reflecting surface of a spherical mirror can either be on the outside

or inside. If the reflecting surface is on the inside, the mirror is called a concave mirror. If the reflecting surface is on the outside, the mirror is called a convex mirror.

4. An excessive growth or 'blooms' of algae in lakes rich in nutrients such as phosphates is called eutrophication.
5. An electromagnet shows magnetic properties only a long as the electric current flows through its solenoid. Thus, electromagnet are temporary magnets. Electromagnets of very high strength can be made easily.
   An electromagnet is usually prepared by winding a large number of turns of an insulated copper wire on a soft iron core.
   Uses of Electromagnet
   - Electromagnet are used on cranes in steel works and scrap yards for lifting heavy loads.
   - In hospitals dealing with eye injuries, electromagnets are used for removing iron, splinters from the eyes.

Assertion-Reason Based Questions

1. (b) Both A and R are true but R is not the correct explanation of the Assertion.
2. (a) Both A and R are true and R is the correct explanation of the Assertion.

Case Study

1. **(d)**
2. **(b)**
3. **(a)**
4. Flowers are the reproductive part of a plant.
5. In asexual reproduction, an individual is capable of reproducing by budding, spore formation or fragmentation. Only single individual is required. No gamete formation takes place.

Book-8

Chapter-1: Crop Production and Management

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

1. (a)	2. (a)	3. (a)	4. (d)
5. (d)	6. (c)	7. (a)	8. (d)

B. Fill in the blanks:

1. Ploughing, levelling	2. Hybrid seeds	3. Rice crop	4. NPK
5. weeding	6. Animal husbandry	7. Fruits, vegetables	
8. cereal crops	9. Friends	10. manure	

C. Match the column:

1. C	2. B	3. A	4. E	5. d

D. Write for true or for false:

1. F	2. T	3. F	4. F	5. T
6. T	7. F	8. T	9. F	10. F

E. Short answer type questions:

1. To ensure a good crop yield, farmers carry out certain activities in a particular sequence till the crops mature at harvest. These activities are called agricultural practices.
2. Kharif crops are sown in the rainy season. Generally, rainy season starts from june and continue till September. Such crops depend on monsoon rains for growth. Rice, maiza soyabean, groundnut, cotton, etc. are the kharif crops. Rabi crops are grown in the winter season. Generally, in the month of November and harvested in the month of april. Such crops do not depend on monsoon rains. Wheat, barley, peas, gram, mustard and linseed are rabi crops.
3. Farmers put seeds in a bucket of water and stir. After some time, good seeds settle down at bottom and infected seeds from insects float on the water surface because infected seeds become lighter. Now separate infected seeds and collect good seeds.
4. A fertile land should be rich in the nutrients that are required for plant growth. When seeds are sown in a field, they absorb minerals and a nutrient from the soil. Repetition of crops in the same soil depletes the essential minerals and

nutrients from the soil that are essential for growth of plants. For replenish the minerals and nutrients to the soil, farmers add manures and fertilizers to it.

5. Drip irrigation is very good method of irrigation. In this system, water is not waste, it is directly go to the roots of the plants through pipes. It is a boon in regions where there is very less water available.
6. Sometimes, undesirable plants start growing with the crop. These undesirable plants are called weeds. Weeds generally start growing at the irrigation stage. Sometimes, seeds of weeds may get mixed up with desirable seeds while sowing. The removal of weeds is called weeding.
7. The process of separating grains from the chaff is called threshing. Threshing can be done manually or with the help of a machine called thresher.
8. The fresh crop has more moisture since moisture encourages microbial growth, it is necessary to ensure that both the grains and the storage area are free of moisture. Therefore, before storing them, they should be dried properly in the sunlight to reduce the moisture.
9. A special kind of farm machine called a combine is used for harvesting and threshing at the same time.

F. Long answer type questions:

1. The preparation of soil is very important part of growing the plants. Plants absorb water, nutrients and minerals from the soil.
2. Loosening of the soil is important because loose soil allows the roots to penetrate deep into the soil and roots to breathe easily when they do deep into the soil. Roots of plants reach deeper in loose soil. This helps to fix the plant more firmly. Loose soil retains moisture for a longer duration. Loose soil mixes well with manure and absorbs fertilizers more easily. The loosened soil helps in the growth of earthworms and microbes present in the soil. These micro-organism and earthworms are the friends of farmers because they help to loosen the soil and humus to it.
3. The supply of water to crops at different intervals is called irrigation. Even rainfall is one of the major natural sources of water but it is uncertain. The sources of irrigation are tubewells, rivers, canals, dams, etc. There are some traditional and some modem methods for irrigation. Moat (Pully system); chain system, rahat (lever system) and dhekli are some traditional method to irrigate the field. Tube wells, drip irrigation are the modern methods of irrigation. Pumps are commonly used for lifting underground water.

4. Nitrogen cycle is a natural cyclic process in which atmospheric nitrogen enters the soil and becomes a part of living organisms, before returning to the atmosphere. Nitrogen fixation can also be accomplished by nitrogen-fixing bacteria present in the root nodules of leguminous plants (such as peas and beans). These bacteria can convert atmospheric nitrogen directly to soluble nitrates. Nitrogen fixed as nitrates is taken up directly by plants and incorporated in their tissues as plant proteins.
5. The fresh crop has more moisture since moisture encourages microbial growth, it is necessary to ensure that both the grains and the storage area are free of moisture. Therefore, before storing them, they should be dried properly in the sunlight to reduce the moisture. This prevents the attack by insect pests, bacteria and fungi. Godowns should be clean, dry, and free of rodents and insects. Pesticides should be sprayed beforehand to keep away pests. Good storage can keep our food grains safe.

Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.
2. (b) Both A and R are true but R is not the correct explanation of the Assertion.

Case Study

1. (a)
2. (b)
3. (c)
4. When plants of the same kind are cultivated at one place on a large scale, it is called a crop.
5. The crops grown in the winter season (October to March) are called rabi crops. Examples of rabi crops are wheat, gram, pea, mustard and linseed.

Chapter-2: Micro Organisms

Assessment Time
Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

1. (b)	2. (a)	3. (d)	4. (a)
5. (b)	6. (c)	7. (b)	8. (c)

B. Fill in the blanks:

1. virus	2. lactose	3. yeast	4. bacteria
5. fermentation	6. Algae, fungi	7. colonies	8. viruses

C. Write 'T' for True and 'F' for false:

1. F	2. T	3. T	4. T
5. F	6. T	7. T	8. T

D. Match the columns:

1. C 2. d 3. A 4. E 5. B

E. Short answer type questions:

1. Micro-organisms are classified into five major groups:
   1. Viruses 2. Bacteria 3. Fungi
   4. Algae 5. Protozoa
2. Some of the micro-organisms cause diseases in human beings, animals. Such disease - causing microorganisms are called pathogens.
3. Common ailments like cold, influenza (flu) and most coughs are caused by viruses. Serious diseases like polio and chicken pox are also caused by viruses.
4. Moderately warm conditions with air moisture are the main causes of growth of microbes.
5. Food poisoning, also called foodborne illness, is an infection or irritation of your digestive tract that spreads through food or drinks. Viruses, bacteria, and parasites cause most food poisoning. Harmful chemicals may also cause food poisoning.
6. Bacteria like Lactobacillus helps in the production of lactic acid from lactose which is essential in the formation of curd. It lowers the pH of the milk which helps in coagulation of protein and forming the curd.
7. Fermentation is the process in which a substance breaks down into a simpler substance. Fermentation refers to the metabolic process by which organic molecules (mainly carbohydrates, such as starch or a sugar) are converted into acids, gases, or alcohol in the absence of oxygen or any electron transport chain.
8. The fungus penicillium notatum is used in the manufacture of penicillin, the first antibiotic to be discovered. Brown algae are a rich source of iodine and potassium.

F. Long answer type questions:

1. These organisms are not visible by naked eyes since they are very small. They can be seen through microscope that's why they are called Micro-organisms or microbes. Microbes enter our body through the air we breathe, the water we drink or the food we eat. They are also transmitted by direct contact with an infected person or carried through an animal.
2. Common ailments like cold, influenza (flu) and most coughs are caused by viruses. Serious diseases like polio and chicken pox are also caused by viruses. Some diseases like typhoid and tuberculosis (TB) are bacterial diseases. Diseases like dysentery and Malaria are caused by protozoans.
3. Some bacteria and blue green algae are able to fix nitrogen from the atmosphere to enrich soil with nitrogen and increase its fertility. These microbes are commonly called biological nitrogen fixers. Micro-organisms decompose dead organic waste of plants and animals converting them into simpler substances. These substances are again used by other plants and animals. These micro-organisms can be used to degrade the harmful and smelly substances and thereby clean up the environment.
4. Vaccines are very useful against disease carrying germs enters in our body the body also remembers how to fight the microbes if it enters again. So, if dead or weakened microbes are introduces in a healthy body, the body fights and kills them by producing suitable antibodies. The antibodies remain the body and we are protected from the disease causing microbes.
5. Sometimes, we suffer by food poisoning; it is due to the consumption of spoilt food by growth of micro-organisms in it. So, we need to preserve food items. These microbes produce toxic substance in it. We can preserve raw food material and cooked food material by applying some methods. Pulses, spices, dry fruits and other food items can be dehydrated by putting these in sunlight the process of removal of water from a substance is known as dehydration. Cooked food are preserved by boiling or refegerating.

Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.
2. (c) A is true but R is false.

Case Study

1. (d)
2. (b)
3. (b)

4. Organisms that are visible only through a microscope are called microorganisms or microbes. They are bacteria, fungi, virus, algae and protozoa.
5. Water and soil are full of tiny microbes.

Chapter-3: Coal and Petroleum

Assessment Time
Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. Anthracite 2. 98% 3. Jet fuel 4. CNG
6. coke

C. Write 'T' for true and 'F' for false:

1. T 2. F 3. T 4. F
5. F

D. Short Answer type questions:

1. Those resources which are present in unlimited quantity in nature and cannot be exhausted by human activities are known as Inexhaustible natural resources. They are also known as renewable resources. Examples: Sunlight, air, water, etc. Those resources which are present in limited quantity in nature and are likely to get exhausted over a certain period of time are called exhaustible resources. They are also known as non-renewable resources. Examples: Coal, petroleum, natural gas, etc.
2. Fossil fuels are the dead remains of plants and animals which got buried under the surface of the Earth, millions of years ago, during earthquakes or volcanic eruptions. Coal, petroleum, natural gas etc. are the example of fossil fuels.
3. Under high pressure and temperature, dead plants got slowly converted to coal. As coal contains mainly carbon, the slow process of conversion of dead vegetation into coal is called carbonisation.
4. Almost 70 percent of India's natural gas reserves are found in Bombay High basin and in Gujarat. rest found in Andhra Pradesh and Tamilnadu, Maharashtra, Mumbai.

5. Fossil fuels are called non-renewable sources of energy because they take millions of years to form and cannot be renewed. Fuels must be conserved as much as possible so that the existing deposits could be stretched to the maximum extent.

E. Long Answer type questions:

1. The process of separating the various constituents of petroleum is known as fractional distillation. This is done in oil refineries. Petroleum is heated to 400ºC and introduced in a fractionating column, which is a tall cylindrical structure fitted with horizontal trays. Each tray is provided with number of holes and an overflow pipe is attached. As the vapour of crude oil rise up, it cools. Therefore, the high boiling fraction condense in the lower portions of the tower. The lower boiling fractions rise up in the tower and condense at different levels depending upon their boiling points. Each fraction is a mixture of hydrocarbons having a definite boiling point.
2. Destructive Distillation of coal consists of heating it strongly in the absence of air. Some of the products obtained by destructive distillation of coal are coke, coal tar and coal gas.
3. **Ways of conservation of fuels:**
    - Drive at moderate speed to conserve petrol/diesel.
    - Use public transport and bicycles for short distances.
    - Use car pools to go for work or to school.
    - Ensure correct tyre pressure.
    - Switch off the engine at traffic lights.
    - Get the vehicles serviced regularly.
4. About 300 million years ago the earth had dense forests in low lying wetlands areas. Due to natural processes like earthquake floods; these forests got buried under the earth crust. As passage of time soil deposited over them and they were compressed. The temperature inside the earth rose as they sank deeper and deeper. Under high pressure and temperature, dead plants got slowly converted to coal.
5. These resources once depleted cannot be replenished back. It takes millions of years for the formation of fossil fuels. The rate at which we are using them is very fast compared to the rate of their formation. Due to this, fossil fuels are exhaustible in nature.

Assertion-Reason Based Questions

1. (b) Both A and R are true but R is not the correct explanation of the Assertion.
2. (c) A is true but R is false.

Case Study

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

Chapter-4: Fuel and Combustion

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

5. (b) 6. (b) 7. (a) 8. (d)

B. Fill in the blanks:

1. oxygen 2. Hydro- carbon 3. Carbon monoxide

4. non- luminous 5. middle 6. oxygen

7. slow 8. Coke 9. Coal tar

10. CNG 11. The innermost zone (black colour), The middle zone (yellow colour), The outermost zone (blue colour)

12. fossil 13. 150000 kj/kg 14. 25000-33000

C. Match the columns:

1. B 2. A 3. E 4. C 5. D

D. Write 'T' for true and 'F' for false:

1. F 2. T 3. T 4. F

5. F 6. T 7. T 8. T

E. Short Answer type questions:

1. Combustion is categorized into two groups based on rate of combustion. Slow combustion and Fast combustion.
2. **Necessary Conditions for Combustion**

- Presence of combustible substance.
- Supporter of combustion i.e. oxygen (air) should be present.
- Ignition temperature should be attained by combustible substance.

3. The lowest temperature at which a particular substance starts to burns in the presence of air is called its ignition temperature.
4. Calorific value of a fuel is defined as "The amount of heat produced on complete combustion of 1kg of a fuel." The calorific value of a fuel is expressed in a unit called kilojoule per kg or KJ/kg.
5. Three different forms of fuel are solid, liquid and gas.
6. Hydrogen gas has the highest calorific value therefore it is considered as best fuel. It is used as rocket fuel due to high efficiency.
7. When fossil fuels are burned, they release nitrogen oxides into the atmosphere, which contribute to the formation of smog and acid rain. The most common nitrogen-related compounds emitted into the air by human activities are collectively referred to as nitrogen oxides.

F. Long Answer type questions:

1. The process of burning a substance is called combustion. Combustion is possible in the presence of air (oxygen) and produce heat and light. Substances which are burnt called, combustible substances such as wood, paper, cloth, LPG, coal, kerosene etc. Substances which are not burnt, called non-combustible substances such as sand, mud, water, cement etc.
2. A flame is a region where combustion of fuel takes place. The colour of the flame depends on the supply of oxygen (air), temperature and the substance burning. Generally, colour of flame is yellow (in insufficient supply of air) or blue (in sufficient supply of air). A non-luminous flame is flame accompanied with heat and a very little light. A blue flame is a non- luminous flame and occurs because of complete combustion of hydrocarbons in the presence of excess of oxygen. This type of flame does not leave any residuce. A luminous flame is flame accompanied with heat and light. A yellow flame is a luminous flame and is observed when there is insufficient supply of air (Oxygen). Its temperature is lower than that of a blue flame and it leaves black soot and other residue.
3. The candle flame can be divided into three zones depending upon the amount of air it receives. These zones can be distinguished by their colour:
   i. The innermost zone (black colour)
   ii. The middle zone (yellow colour)
   iii. The outermost zone (blue colour)

4. **Characteristics of an Ideal Fuel**
    - It should have a high calorific value.
    - It should be safe to handle, store and transport.
    - It should have a moderate rate of combustion and should release the heat in a controlled manner.
    - Its ignition temperature is low but higher than room temperature otherwise it will catch fire. If ignition temperature is very high then it will take too long time to catch fire.
    - It should not cause pollution on burning.
5. Fossil fuels are compound mixtures made of fossilized plant and animal remnants from millions of years ago. The creation of fossil fuels—either oil, natural gas, or coal—from these fossils is determined by the type of fossil, the amount of heat, and the amount of pressure.

Assertion-Reason Based Questions

1. (b) Both A and R are true but R is not the correct explanation of the Assertion.
2. (d) A is false but R is true.

Case Study

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

Chapter-5: Conservation of Plants, Animals (Biodiversity)

Assessment Time
Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

5. (c) 6. (c) 7. (d) 8. (c)

B. Fill in the blanks:

1. Rain forests 2. fauna

3. fauna of the Pachmarhi Biosphere Reserve 4. forests

5. Western Ghats hills and mountains of southwestern India

6. habitat 7. fauna 8.illegal 9. Satpura national Park

C. Match the columns:

1. E 2. D 3. A 4. C 5. B

D. Write 'T' for True and 'F' for false:

1. T 2. T 3. F 4. T

5. T 6. F 7. F 8. T

E. Short Answer type questions:

1. The existence of a diverse variety of plants and animals and other living forms is known as biodiversity. Biodiversity is not evenly distributed across the earth. It is different place to place, it depends on the size and climatic conditions of the region.
2. Habitat is the place where particular animal live. Nature has given each of the species characteristic features to live in a particular environment in which they survive easily.
3. A species refers to a group or class of animals or plants having certain common and permanent characteristics that clearly distinguish it from other groups.
4. The plants and animals found in a particular area are termed flora and fauna of that area.
5. Endemic species are plant and animal species that are found in a particular geographical region and nowhere else in the world. Some species are endemic to a continent while others can be endemic to an island. In India, certain areas are very rich in endemic species like the north- east India, the western ghats and the north western and eastern Himalayas.
6. Many species die and disappear from earth if they are not able to reproduce and adapt to climate changes, or are unable to compete with other organisms. Such species which cannot be found in the areas where they once lived, or in any other habitat, are called extinct species.
7. The Nilgiri tahr is endemic to the Nilgiri hills and the southern portion of the western ghats range in Tamil Nadu and Kerala. Nilgiri tahrs are stock goats that possess short, coarse fur and bristly mane.
8. The lion tailed macaque is found in south east India. It gests its name from its tail which is 25 cm in length and has a black tuft at the end similar to lion's tail.

F. Answer the following questions:

1. Deforestation is the process in which large areas of forest lands are cleared for various human activities. Deforestation has many negative effects on our environment, like loss of habitat for animals and climate change.
2. Biodiversity is essential for the processes that support all life on Earth, including humans. Without a wide range of animals, plants and microorganisms, we cannot have the healthy ecosystems that we rely on to provide us with the air we breathe and the food we eat.
3. Developing protective areas such as national parks, wildlife sanctuaries to protect the animals in their natural habitat. The endangered and vulnerable species can be kept in captivity in places such as zoos and bred to increase their population. The cutting of forests should be strictly prohibited.
4. Project tiger was launched by the government to protect the tigers in the country. The objective of this project was to ensure the survival and maintenance of the tiger population in the country. Tiger is one of the many species which are slowly disappearing from our forests. But, the Satpura tiger reserve is unique in the sense that a significant increase in the population of tigers has seen here. Once upon a time, animals like lions, elephants, wild buffaloes and barasingha were also found in the Satpura national park. Animals whose numbers are diminishing to a level that they might face extinction are known as the endangered animals.
5. Migration is the movement of animals and birds in masses in search of food and water and to escape from extreme weather conditions. It is the adaptation to escape from hard conditions of their habitat and to return to their habitat when the conditions become favourable. The birds living in these regions migrate to warmer places on the earth.

Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.
2. A is true but R is false.

Case Study

1. (c)
2. (d)
3. The natural environment of plants and animals where they live, breed and multiply is called its habitat.
4. The species of plants living in their habitat is called flora.
5. The species of animals living in their habitat is called fauna.

Chapter-6: Reproduction in Animals

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. harmones	2. sperm	3. ova	4. conception
5. Adrenal glands	6. Pancreas	7. Penis	8. Oviduct
9. penis	10. placentra		

C. Write 'T' for true and 'F' for false:

1. T	2. F	3. T	4. T
5. T	6. T	7. T	8. F
9. F	10. F		

D. Match the columns:

1. E	2. A	3. D	4. B	5. C

E. Short Answer type questions:

1. Important glands are Pituitary gland, Thyroid gland, Adrenal gland, Pancreas, Ovaries and Testes.
2. There are two modes of reproduction, Sexual reproduction And Asexual reproduction.
3. When sperms come in contact with an egg, one of the sperms may fuse with the egg. Such fusion of the egg and sperm is called fertilization.
4. The cells then begin to form groups that develop into different tissue and organs of the body. This developing structure is termed as embryo. Foetus is a young human or animal that is still developing in its mother's body.
5. A structure found inside the nucleus of a cell. A chromosome is made up of proteins and DNA organized into genes. Each cell normally contains 23 pairs of chromosomes.
6. In fact, there are many other diseases that can be spread through sexual contact, including herpes, chlamydia, genital warts, vaginitis, viral hepatitis and HIV (the virus that causes AIDS).

7. In fact, there are many other diseases that can be spread through sexual contact, including herpes, chlamydia, genital warts, vaginitis, viral hepatitis and HIV (the virus that causes AIDS).
8. External fertilization is a mode of reproduction in which a male organism's sperm fertilizes a female organism's egg outside of the female's body.
9. After fertilization the eggs of frog, a tadpole (larva) comes out from the egg and becomes adult frog after some time. The process of development changes by which a tadpole changes into a frog, is called metamorphosis.
10. Reproduction in which only a single present is involved is called asexual reproduction such as reproduction in hydra, amoeba

F. Long Answer type questions:

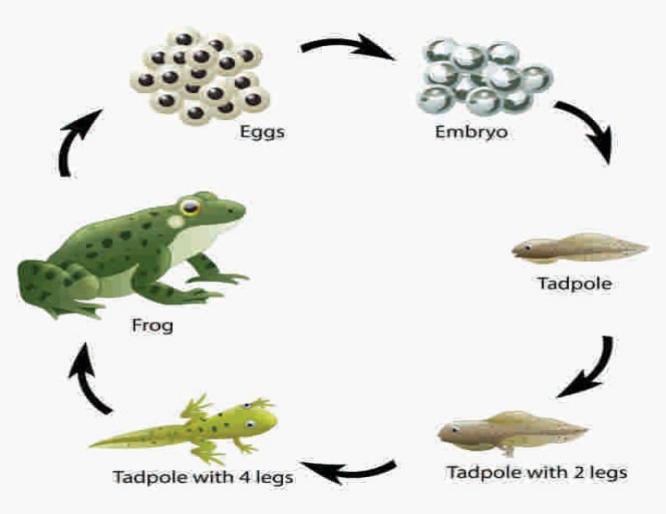
1. Hormones control many different bodily processes, including: Metabolism. Homeostasis (constant internal balance), such as blood pressure and blood sugar regulation, fluid (water) and electrolyte balance and body temperature. Growth and development.

2. The pancreas is an organ located in the abdomen. It plays an essential role in converting the food we eat into fuel for the body's cells. The pancreas has two main functions: an exocrine function that helps in digestion and an endocrine function that regulates blood sugar. Thyroid is a part of your endocrine system and controls many of your body's important functions by producing and releasing (secreting) certain hormones. Your thyroid's main job is to control the speed of your metabolism (metabolic rate), which is the process of how your body transforms the food you consume into energy.

3. Sometimes, some women have problems in ovary so these women are unable to bear babies because sperms cannot reach the egg for fertilization. In such cases, doctors collect freshly released egg and sperms and keep them together for a few hours for IVF (in vitro fertilization) i.e. fertilization outside the body. When fertilization occurs then zygote is allowed to develop for about a week and then it is placed in the mother's uterus. Complete development takes place in the uterus and the baby is born like any other baby. Babies born through this technique are called test-tube babies.
4. **Fallopian tubes** are the tubes that carry the ovum released by the ovary for fertilization. They are also known as oviduct.

Uterus is the organ where the zygote matures and grows till it is ready to be born. The embryo (the developing baby) grows and develops inside the uterus which is also called the womb.
Vagina receives the penis during sexual intercourse.

5. After fertilization the eggs of frog, a tadpole (larva) comes out from the egg and becomes adult frog after some time. The process of development changes by which a tadpole changes into a frog, is called metamorphosis.



Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.
2. (a) Both A and R are true and R is the correct explanation of the Assertion.

Case Study

1. (a)
2. None of these
3. (d)
4. When sperms come in contact with an egg, one of the sperms may fuse with the egg. Such fusion of the egg and the sperm is called fertilisation.
5. Some women are unable to bear babies because sperms cannot reach the egg for fertilisation. In such cases, doctors collect freshly released egg and sperms and keep them together for a few hours for IVF or in vitro fertilisation (fertilisation outside the body). In case fertilisation occurs, the zygote is allowed to develop for about a week and then it is placed in the mother's uterus. Complete development takes place in the uterus and the baby is born like any other baby. Babies born through this technique are called test-tube babies.

Chapter-7: Reaching the Age of Adolescence

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

1. (a) 2. (c) 3. (b)

B. Fill in the blanks:

1. menopause 2. ductless 3. harmones

4. Human immunodeficiency virus (HIV) 5. menarche

C. Write 'T' for true and 'F' for false:

1. T 2. F 3. T 4. T

D. Short Answer type questions:

1. Good personal hygiene is vital because it helps stop you from getting sick. It also helps stop you from spreading germs and infectious diseases. The germs that cause many diseases can be passed on by: touching other people.

2. Energy (calories) and protein are essential in pubertal development. Adolescent females require approximately 2200 calories/day, whereas male adolescents require 2500-3000 calories/day. Additional intake requirements include fat, calcium, iron, zinc, vitamins, and fiber.

3. Young people may experience higher risk of mental health issues with early puberty. Those most frequent in the teenage years include anxiety and depression, eating disorders, conduct disorder (serious antisocial behaviour), attention deficit and hyperactivity disorder (ADHD) and self-harm.

4. Pituitary gland is called the master gland because it controls the functioning of all other glands. It secretes growth hormone. Growth hormone controls the development of bones and muscles.

E. Long Answer type questions:

1. Some of the secondary sex characteristics that develop in boys during puberty are as follows:
   - Voice becomes deeper.
   - Facial hair (beard and moustache) develops.
   - Hair develop under the armpits, under chest, and in the pubic region.
   - Muscles develop and shoulders become broad.

Some of the secondary sex characteristics that develop in girls during puberty are as follows:

- Breasts develop and increase in size.
- Hair develop under armpits and in the pubic region.
- Hips broaden and the pelvic region widens.
- The menstrual cycle begins.

2. In case fertilization does not occur, the released egg, and the thickened lining of the uterus along with its blood vessels are discharged out of the vagina. This causes bleeding called menstrual flow and the process is called menstruation. The menstrual flow lasts for 4-7 days. Menstruation occurs once in about 28-30 days. The first menstrual flow begins at puberty and is called menarche.
3. Having sex without a condom and sharing needles to take drugs are the most common ways that HIV spreads. These are some ways to reduce your risk: Use latex condoms (rubbers) whenever you have any type of sex (vaginal, anal or oral). Don't use condoms made from animal products (like lambskin).
4.
   a. The thyroid gland is located in the throat region. It makes a hormone called thyroxine which contains iodine. The function of thyroxine hormone is to control the rate of metabolism, growth and respiration.
   b. Adrenal glands are located is the abdomen just above the kidneys. Adrenal glands produce thehormone adrenalin. This hormone is produced under stress. It increases the flow of blood to the brain.
   c. The pancreas is located just below the stomach in the body. Pancreas is both exocrine as well as endocrine. It secretes insulin along with some other hormones. The function of insulin hormone is to control sugar metabolism in the body. Lack of insulin causes diabetes.

Assertion-Reason Based Questions

1. (c) A is true but R is false.
2. (a) Both A and R are true and R is the correct explanation of the Assertion.

Case Study

1. (a)
2. (b)
3. Some of the secondary sex characteristics that develop in girls during puberty are as follows:
   - Breasts develop and increase in size.

- Hair develop under armpits and in the pubic region.
- Hips broaden and the pelvic region widens.
- The menstrual cycle begins.

Chapter-8: Force and Friction

Assessment Time
Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

5. (b)

B. Fill in the blanks:

1. reduce 2. force 3. contact 4. friction

5. less 6. Ball bearings 7. Non-contact force

8. repel 9. Gravitational force 10. one - sixth

C. Write 'T' for true and 'F' for false:

1. F 2. T 3. T 4. F

5. T

D. Short Answer type questions:

1. A force is a push or a full acting on an object. It can change the state of an object.
2. When we push a door or lift a heavy bag, we need a force. Such types of forces are called muscular forces.
3. The force between electric charges is called electric force.
4. Objects or things fall towards the earth because it pulls them. This force is called the force of gravity or gravitational force.
5. Oiling and greasing to the moving parts of the machinery and automobiles. Ball bearing are use to reduce friction.

E. Long Answer type questions:

1. **Effects of Force**
   - A force can change the state of motion.
   - A Force can change the shape of an object.

- A force can change the speed of moving object.

2. A contact force is applied on an object by direct or indirect physical contact. There are two type of contact forces such as muscular force and frictional force. In non- contact forces, there is no need of any physical contact between the objects. There are three type of non- contact force such as Magnetic force, Electric force, Gravitational force.
3. The force which opposes the motion of object is called force of friction or frictional force. The force of friction always acts on all the moving objects and its direction is always opposite to the direction of motion.
   Disadvantages of friction
   - Due to friction moving parts of the machinery and automobiles are heated up, this may result in waste of energy, fuel and also causes wearing and tearing in the moving parts.
   - Wear and tear of an object is not desirable because it reduce its life and efficiency. Wear and tear due to friction depends on two factors, the roughness depends on two factors, the roughness of the two surfaces in contact and the amount of time the two surfaces rub against each other.
4. **Friction is called necessary evil because**
   - We cannot hold anything in our hand.
   - We cannot walk, sit write etc.
   - We cannot stop, we will slip.
   - We cannot tie a knot in the rope.
5. Magnetic force exerted by magnets on each other and on some metals like iron and nickel. Since magnets attract iron so it is used to separate waste iron objects from garbage dumps so that they can be recycled.

Assertion-Reason Based Questions

1. (b) Both A and R are true and R is not the correct explanation of the Assertion.
2. (b) Both A and R are true and R is not the correct explanation of the Assertion.

Case Study

1. (c)
2. (b)
3. When we push a door or lift a heavy bag, we need a force. Such types of forces are called muscular forces.
4. The force between electric charges is called electric force.
5. The force exerted by magnets on another magnet or magnetic objects like iron is called magnetic force.

Chapter-9: Pressure

Assessment Time

Multiple Choice Questions

A. **Darken the correct circle in the OMR sheet:**

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

B. Fill in the blanks:

1. pressure 2. Newton per square meter. 3. 760

4. decreases 5. mercury

C. Write 'T' for True and 'F' for false:

1. F 2. F 3. F 4. F

5. T

D. Short Answer type questions:

1. To cut vegetables and fruits, we use sharp edge of the knife since area is less, pressure is more by applying equal force.
2. Porters place a round piece of cloth on their heads to carry heavy load. By doing this they increase the area of contact of the load with their head. So, the pressure on their head is reduced and easy to carry the loads.
3. Foundation of walls of the houses has a large horizontal area. This reduces the pressure underneath so that the walls do not sink further into the ground under the weight of the building.
4. Skis have a large area to reduce the pressure on the snow so that they do not sink in too far.
5. Pressure increases with increase in depth. Dams are made stronger and thicker at the bottom than at the top to withstand the high pressures at greater depths.

E. Long Answer type questions:

1. Pressure is defined as the force per unit area. The SI unit of pressure is Pascal (Pa), which is Newton per square meter.
2. Force = 8 N
   Area = 20 cm^2 = 20/10000 m^2
   Pressure = Force/ Area
   = 8 x 10000/20 = 4000 N/ m^2
3. The air inside the balloon exerts a pressure on the inner wall of the balloon. If we blow in too much air, and the material of the balloon is not capable of

expanding further, increasing the pressure inside can cause the wall of the balloon to break at one or more points. This is why a balloon bursts when too much air is blown into it.

4. The pressure experienced by deep-sea divers is so great that they have to wear specially designed suits to protect themselves. They use special suits called diving suits.
5. Atmospheric pressure is the air pressure which is exerted by the weight of air present in the atmosphere. Atmospheric pressure is due to the weight of air present in the atmosphere above us. Atmospheric pressure also acts in all directions. On the surface of earth, the atmospheric pressure is maximum at the sea level.
6. Vacuum cleaner works on the principle of creating a partial vacuum, which generates suction to draw in dust, dirt, and debris. This suction is created by a motor that powers the cleaner, and the air movement inside the machine is vital to its functioning.

Assertion-Reason Based Questions

1. (b) Both A and R are true and R is not the correct explanation of the Assertion.
2. (b) Both A and R are true and R is not the correct explanation of the Assertion.

Case Study

1. (b)
2. (c)
3. (a)
4. (a)
5. The suits protect astronauts from getting too hot or cold and also give astronauts oxygen to breathe while they are working in space. The suits hold water to drink during spacewalks. They also keep astronauts from getting hurt by space dust.

Chapter-10: Sound

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

5. (c) 6. (a)

B. Fill in the blanks:

1. pinna	2. transverse	3. High	4. 14-24 Hz
5. vacuum	6. Least	7. Time period	8. Frequency
9. infrasonic			

C. Write 'T' for True and 'F' for False:

1. T	2. T	3. F	4. F	5. T
6. T	7. T	8. T	9. F	

D. Match the columns:

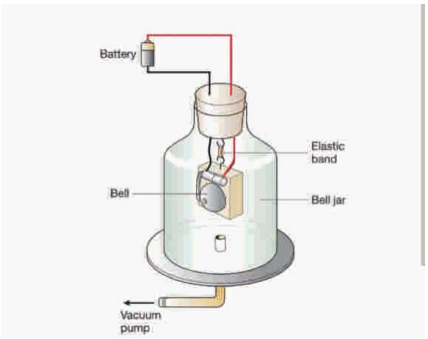
1. B 2. E 3. D 4. C 5. A

E. Short Answer type questions:

1. Sound is generated by vibrating objects and moves the listener's ears as waves in the air or other media. Table, sitar, flute, harmonium, guitar, drum etc. are the sources of sound. All these music instruments produced different type of sound.
2. When the particles of the medians vibrate along the direction in which sound wave is travelling, is called longitudinal waves. For example, sound wave is a longitudinal wave.
3. When the particles of the medium vibrate perpendicular to the direction of propagation, then wave is called a transverse wave. Light waves are transverse particles move up and down.
4. Sounds waves with frequencies below 20 Hz are called infrasonic waves.
5. Sound waves of frequencies above 20,000 Hz are called ultrasonic waves.

F. Long answer type questions:

1. Vibrations cause waves in the air. We hear the sound when these waves reach our ears it will be more clear by the example of loudspeaker. When a loudspeaker is switched on, a membrane in the loudspeaker moves backwards and forward (vibrations). This causes the air molecules surrounding the loudspeaker to vibrate.
2. **Procedure**
   - Take a bell jar and arrange as shown in the figure.



- Press the button of bell and you will hear the sound of bell.
- Now the air from jar is taken out with the help of vacuum pump.
- You will hear no sound even the switch is on.
- Again, on pumping the air inside the jar, you can hear the sound.

Thus, it shows that a medium is required to propagate sound.

3.
    a. The number of oscillation per second is called the frequency of oscillation.
    b. When the bob moves from one position and comes back to the same position (moving in the same direction), it is said to complete one oscillation.
    c. The maximum displacement of the bob from the mean position during oscillation is called the amplitude of the oscillation.
4. The loudness of sound depends on its amplitude. When the amplitude of vibration is large, the sound produced is loud. When the amplitude is small, the sound produced is feeble (low). The frequency determines the pitch (shrillness) of a sound. If the frequency of vibration is higher, then the sound is shrill and has higher pitch. If the frequency of vibration is lower, then the sound has lower pitch. For Example, a drum vibrates with a low frequency, therefore, it produces a low- pitched sound. On the other hand, a whistle has a high frequency and therefore produces a sound of higher pitch.
5. Presence of excessive or unwanted sounds in the environment is called noise pollution. Noise pollution is undesirable and can cause irritability, loss of concentration stress, sleep disturbance and can even damage learning.

    Measures to Reduce Noise Pollution:

    - Use of noise producing things should be minimized.
    - The use of loudspeakers should be stopped.
    - Dot's play music system loudly.

- Loud horns of buses, trucks and cars should be banned.

Assertion-Reason Based Questions

1. (a) Both A and R are true and R is the correct explanation of the Assertion.
2. (b) Both A and R are true and R is not the correct explanation of the Assertion.

Case Study

1. (d)
2. (a)
3. (b)
4. (c)
5. No

Chapter-11: Electricity and its Chemical Effects

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. bad 2. good 3. Good, free ions 4. Negative

5. Free ions

C. Write 'T' for True and 'F' for false:

1. F 2. T 3. F 4. T

5. T 6. F 7. T 8. T

D. Short Answer type questions:

1. Materials which allow electric current to pass through them, are good conductor of electricity such as metals (iron, copper, silver, gold, aluminium etc.), graphite (lead of pencil).
2. The materials which do not allow electric current to pass through them, are called bad conductors or insulators of electricity such as rubber, plastic, wood etc.
3. Electrical conduct is a measure of the ability of a substance to allow the flow of an electric current. Substances that are good conductors have high electrical conductivity as compared that substances that are poor conductors.

4. An ion is an atom or group of atoms that has an electric charge. Ions with a positive charge are called cations. Ions with a negative charge are called anions. Free irons to flow electric currents. Metals are good conductor of electricity since they have electrons to move freely.
5. A light-emitting diode (LED) is a semiconductor device that emits light when current flows through it.
6. A solution of table salt is a good conductor of electricity because it dissociates into its sodium and chloride ions when dissolved in water, allowing the free movement of charged particles within the solution.
7. Yes, impure liquids conduct electricity.
8. The plates we use to dip in the electrolyte are called electrodes. The plate which is connected to positive terminal to the battery is called anode and the plate which is connected to negative terminal to the battery is called cathode.

E. Long Answer type questions:

1. **Procedure**

   a. Pour some orange juice in a cup.

   b. Dip two metal stripes in the juice. One is of zinc and other is of copper.

   c. Connect two wires to two ends of the metal stripes. Remember that strip do not touch each other.

   c. Other end of the wires connect to a LED and a battery.

   The LED will glow, It shows that orange juice is a good conductor of electricity.

2. An electrolytic cell converts electrical energy into chemical energy.
3. The production of a chemical reaction by passing an electric current through an electrolyte is called electrolysis. The plates we use to dip in the electrolyte are called electrodes.
4. We take the copper sulphate solution and two copper electrodes. We take pure copper as a cathode and impure copper as anode. When electric current passes through copper sulphate solution then copper ions and sulphate ions are formed. The copper ions are positively charged so move to the cathode. They deposited as copper metal on the cathode. At the anode, the copper metal loses electrons and becomes copper ions that go into the solution. These then move to the cathode and get deposited here. In this way, copper is purified.
5. The process of deposting a layer of any desired metal on another material by means of electrolysis is called electroplating. In industry, the method of electrolysis is commonly employed for coating one metal on another. Electroplating prevents the metallic portion of a vehicle from corrosion, wearing and rusting. It also makes the body of the vehicle look more attractive and shiny.

Assertion-Reason Based Questions

1. (b) Both A and R are true and R is not the correct explanation of the Assertion.
2. (d) A is false but R is true.

Case Study

1. (b)
2. (a)
3. (d)
4. (c)
5. An atom is the basic unit of matter that consists of a dense positively charged nucleus surrounded by an atmosphere of negative charge.

Chapter-12: Natural Disaster (Earthquakes, Thunder and Lightning)

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

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

5. (a) 6. (b)

B. Fill in the blanks:

1. earthquake 2. Crust, mantle, core 3. 2900 km

4. plates 5. Seismograph 6. attract

C. Write T for true and F for false:

1. F 2. F 3. T 4. T

5. F 6. T

D. Short Answer type questions:

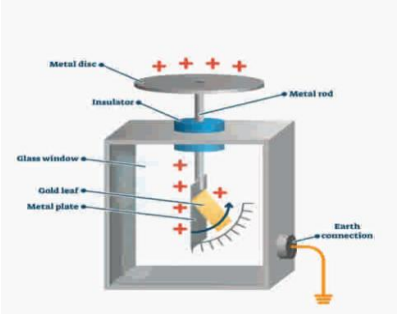
1. An earthquake is a sudden movement or shaking in the crust and the upper layer of the mantle. This causes a series of shocks.
2. There are three layers of the earth, crust, mantle and core.

3. A fault is a fracture or zone of fractures between two blocks of rock. Faults allow the blocks to move relative to each other. This movement may occur rapidly, in the form of an earthquake - or may occur slowly, in the form of creep.
4. The instrument used to measure seismic waves is called a seismograph.
5. The point where the rocks give way is called the **focus**. The point vertically above the focus on the surface of the earth is called the **epicenter**.
6. Richter Scale is used to measure the magnitude of an earthquake.

E. Long Answer type questions:

1. An earthquake is a sudden movement or shaking in the crust and the upper layer of the mantle. This causes a series of shocks. There are many reasons of earthquake. One of the major reasons is collision of earth's plates. The surface of the earth is not continuous piece but is broken into many large pieces called plates. The world is divided into seven large plates and several smaller plates. Due to the slow movement (convection current) inside the Earth, these plates move with respect to each other by about a few inches a year while this may seem very small, the magnitude of energy developed by this small movement is enormous. The boundaries of these plates are prone to vigorous geological activity and it is the movement of these plates with respect to one another that result in earthquakes.
2. The theory that the surface of the earth is made up of lithospheric plates that move with respect to one another is called plate tectonics. This theory explains the locations of earthquakes, volcanic eruptions and newly forming mountains.
3. **Precautions Against Earthquake**
    - If you are driving, stop driving because it is safe but stay inside your car. Stay away from the bridges, overpasses and tunnels.
    - Do not stay under electric wire or near the electric pole.
    - Switch off television or computer if you are seeing it or working on your computer.
    - During an earthquake, if you are inside the house, take cover under a heavy and strong table or cot. Keep away from heavy objects that might fall.
    - If you are indoors then try to come outside in the open area.
    - If you are outside the building, move away from buildings, electric poles and trees because they may fall on you.

4. A device that can be used to test whether an object is carrying charge or not, called electroscope. An electroscope is made up of a metal detector knob on top, which is connected to a pair of metal leaves hanging from the bottom of the connecting rod. When no charge is present, the metal leaves hang loosely downward. But, when an object with a charge is brought near an electroscope, one of the two things can happen.
    - When the charge is positive, electrons in the metal of the electroscope are attracted to the charge and move upward out of the leaves. This results in the leaves having a temporary positive charge, and because like charges repel, the leaves separate. When the charge is removed, the electrons return to their original positions, and the leaves relax.
    - When the charge is negative, the electrons in the metal of the electroscope repel and move toward the leaves on the bottom. This causes the leaves to gain a temporary negative charge, and because like charges repel, the leaves again separate. Then when the charge is removed, the electrons return to their original position, and the leaves relax.



5. Thunder clouds carry electric charge and these charges separate out within the cloud. The lower portion of a cloud generally carries negative charges and the upper portions carry positive charges. This process happens in steps. Successive layers of air are made conductive in a zig zag of step-like path. The path of conductive air (due to charged particles) which extends from the thunder cloud is made and called step leader. The step leader forms the conductive path in the air, from the cloud to the ground or to a neighbouring cloud.

Assertion-Reason Based Questions

1. (b) Both A and R are true and R is not the correct explanation of the Assertion.
2. (b) Both A and R are true and R is not the correct explanation of the Assertion.

Case Study

1. Lightning is the phenomenon in which there is massive discharge of electrostatic charge between electrically charged clouds or between the cloud and the surface of the earth.
2. Lightning conductor is a device that is used to protect buildings from the effect of lightning.
3. A storm with loud noises and flashes of light in the sky (thunder and lightning)

Chapter-13: Light

Assessment Time

Multiple Choice Questions

A. Darken the correct circle in the OMR sheet:

1. (d)	2. (b)	3. (a)	4. (b)
5. (b)	6. (c)	7. (d)	

B. Fill in the blanks:

1. Virtual	2. Left-right reversible	3. equal
4. dispersion	5. Left-right reversible	6. pupil
7. retina	8. iris	

C. Write T for true and F for false:

1. F	2. T	3. F	4. F
5. T	6. T	7. F	8. F

D. Short Answer type questions:

1. Reflection from a smooth polished surface like plane mirror is called regular reflection.
2. When the surface is rough then reflected rays are not parallel, such type of reflection is called irregular or diffused reflection.
3. **There are two laws of reflection:**
   (a) The incident ray, the reflected ray and the normal lie at the same point.
   (b) The angle of incidence (i) is always equal to the angle of reflection(r).

4. An image formed by a mirror the left of the object appears on the right and the right appears on the left. This is known as lateral inversion.
5. When white light passes through prism or falls on a CD then it spilts up into various colours. This process of splitting of white light into its constituent colours is called dispersion.
6. Sometimes people find it difficult to distinguish some colours and shades. This common eye diseases is called colour blindness. Colour blindness is usually inherited and cannot be cured.
7. A person suffering from myopia cannot see far off objects very clearly. This defect can be corrected by wearing spectacles with concave lenses.
8. The formation of the image behind the retina results in a condition called hypermetropia or long sightedness. A person suffering from hypermetropia cannot see nearby objects very clearly. This defect can be corrected by wearing spectacles with convex lenses.

E. Long Answer type questions:

1. Luminous Objects are those that emit light on their own. These are also called sources of light such as Sun, stars, tube light, bulb etc.
   Non- luminous objects are those which do not emit their own light and are seen in the presence of a source of light such as table, chair, fan, cooler etc.
2. **Procedure:**
   i. Now fix the three mirrors in the form of an equilateral triangle.
   ii. Fix them is a cylindrical cardboard.
   iii. Cover one of the tube with white paper with the help of cello tape so that the mirrors will not fall down
   iv. when the tube is held vertical.
   v. Put in the coloured glass pieces and cover the other end of the tube with transparent plastic sheet. Cover the curved portion of the tube with coloured paper.
   vi. Make a hole in the center of the white paper.
   Now kaleidoscope is ready to use.
3. Eye is made up of many parts and can be compared to a photographic camera. The eyelids act as the shutters of the eye and protect them from injury. The eye has a roughly ovule shape. There are many parts of the eye. Function of every part is given below
   Cornea: The outer coat of the eye is white. There is a thin transparent tissue that covers the front of the eye, called the cornea.

Iris: Behind the cornea, a dark muscular structure called iris. Iris is actually a circular band of muscles. In the iris, there is a small opening called the pupil. The size of the pupil is controlled by the iris.The iris is that part of eye which gives it distinctive colour. The colour of eyes of a person may be black, red, blue these colour are actually the colour of the iris. The iris controls the amount of light entering into the eye.

Sclera: The white part of the eye is known as the sclera. This is filled with a clear transparent fluid.

Retina: Just behind the eyeball is a lining called the retina. It is the retina that is sensitive tolight and has receptors called rods and cones. These rods and cones get sensitized by light and generate impulses that can be read by the brain the brain then sends back messages that tells us what we have seen.

Lens: Between the pupil and the retina is a transparent tissue called the lens. The lens helps in focusing the light that passes through the pupil into the eye. This helps in focusing the image on the retina, by bending the light rays.

Optic Nerve: An optic nerve connects the eye to the brain and carries impulses to and from the brain the rods of the retina are receptive to low light conditions, while the cones are sensitive to colour and are receptive in light of higher intensity.

4. Sometimes the lens becomes cloudy or opaque. This causes a condition called cataract. Cataract is a very common disease all over the world and causes blurred or dimmed vision. In some cases there could be double vision or no vision at all. Laser rays or even surgical operations can treat these problems. Cataract affects millions of people all over the world. Now –a –days, intraocular lenses can be implanted to improve vision.

5. Care of the Eyes and Nutrition

- Too little or too much light is bad for eyes. Insufficient light causes eyestrain and headaches. Too much light can injure retina.
- Always read at the normal distance for vision. Proper light should be fall on reading and writing book.
- If any particle of dust falls in the eye then never rub it with your hands or clothes. Wash your eyes daily six to seven times with neat and clean water.
- Good diet is also necessary for good eyes. Lack of vitamin A in our diet for long time may result in night blindness. Therefore we should eat vitamin A rich food like carrots, tomatoes, egg yolk, broccoli, milk, butter etc.

Assertion-Reason Based Questions

1. (c) A is true but R is false.
2. (a) Both A and R are true and R is the correct explanation of the Assertion.

Case Study

1. Lightning is the phenomenon in which there is massive discharge of electrostatic charge between electrically charged clouds or between the cloud and the surface of the earth.
2. Lightning conductor is a device that is used to protect buildings from the effect of lightning.
3. A storm with loud noises and flashes of light in the sky (thunder and lightning)

Model Test paper-1

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. Loosening, levelling 2. diesel 3.hydro - carbon

4. Habitat 5. sperm

C. Write 'T' for true and 'F' for false:

1. F 2. T 3. F 4. F 5. F

D. Short Answer type questions:

1. The preparation of soil is very important part of growing the plants. Plants absorb water, nutrients and minerals from the soil.
2. Fossil fuels are the dead remains of plants and animals which got buried under the surface of the Earth, millions of years ago, during earthquakes or volcanic eruptions. Coal, petroleum, natural gas etc. are the example of fossil fuels.
3. **Necessary Conditions for Combustion**
    - Presence of combustible substance.
    - Supporter of combustion i.e. oxygen (air) should be present.
    - Ignition temperature should be attained by combustible substance.

4. The existence of a diverse variety of plants and animals and other living forms is known as biodiversity. Biodiversity is not evenly distributed across the earth. It is different place to place, it depends on the size and climatic conditions of the region.
5. There are two modes of reproduction, Sexual reproduction And Asexual reproduction.

E. Long Answer type questions:

1. Loosening of the soil is important because loose soil allows the roots to penetrate deep into the soil and roots to breathe easily when they do deep into the soil. Roots of plants reach deeper in loose soil. This helps to fix the plant more firmly. Loose soil retains moisture for a longer duration. Loose soil mixes well with manure and absorbs fertilizers more easily. The loosened soil helps in the growth of earthworms and microbes present in the soil. These micro-organism and earthworms are the friends of farmers because they help to loosen the soil and humus to it.
2. **Ways of conservation of fuels:**
    - Drive at moderate speed to conserve petrol/diesel.
    - Use public transport and bicycles for short distances.
    - Use car pools to go for work or to school.
    - Ensure correct tyre pressure.
    - Switch off the engine at traffic lights.
    - Get the vehicles serviced regularly.
3. A flame is a region where combustion of fuel takes place. The colour of the flame depends on the supply of oxygen (air), temperature and the substance burning. Generally, colour of flame is yellow (in insufficient supply of air) or blue (in sufficient supply of air). A non-luminous flame is flame accompanied with heat and a very little light. A blue flame is a non- luminous flame and occurs because of complete combustion of hydrocarbons in the presence of excess of oxygen. This type of flame does not leave any residuce. A luminous flame is flame accompanied with heat and light. A yellow flame is a luminous flame and is observed when there is insufficient supply of air (Oxygen). Its temperature is lower than that of a blue flame and it leaves black soot and other residue.
4. Deforestation is the process in which large areas of forest lands are cleared for various human activities. Deforestation has many negative effects on our environment, like loss of habitat for animals and climate change.

5. The pancreas is an organ located in the abdomen. It plays an essential role in converting the food we eat into fuel for the body's cells. The pancreas has two main functions: an exocrine function that helps in digestion and an endocrine function that regulates blood sugar. Thyroid is a part of your endocrine system and controls many of your body's important functions by producing and releasing (secreting) certain hormones. Your thyroid's main job is to control the speed of your metabolism (metabolic rate), which is the process of how your body transforms the food you consume into energy.

Model Test Paper-2

A. Darken the correct circle in the OMR sheet:

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

B. Fill in the blanks:

1. menopause 2. force 3. 760 4. tranverse

5. earthquake

C. Write 'T' for true and 'F' for false:

1. T 2. F 3. F 4. T 5. f

D. Short Answer type questions:

1. Good personal hygiene is vital because it helps stop you from getting sick. It also helps stop you from spreading germs and infectious diseases. The germs that cause many diseases can be passed on by: touching other people.
2. A force is a push or a full acting on an object. It can change the state of an object.
3. The pressure experienced by deep-sea divers is so great that they have to wear specially designed suits to protect themselves. They use special suits called diving suits.
4. When the particles of the medians vibrate along the direction in which sound wave is travelling, is called longitudinal waves. For example, sound wave is a longitudinal wave.
5. **Precautions Against Earthquake**
    - If you are driving, stop driving because it is safe but stay inside your car. Stay away from the bridges, overpasses and tunnels.
    - Do not stay under electric wire or near the electric pole.

- Switch off television or computer if you are seeing it or working on your computer.
- During an earthquake, if you are inside the house, take cover under a heavy and strong table or cot. Keep away from heavy objects that might fall.
- If you are indoors then try to come outside in the open area.
- If you are outside the building, move away from buildings, electric poles and trees because they may fall on you.

E. Short Answer type questions:

1. Some of the secondary sex characteristics that develop in boys during puberty are as follows:

- Voice becomes deeper.
- Facial hair (beard and moustache) develops.
- Hair develop under the armpits, under chest, and in the pubic region.
- Muscles develop and shoulders become broad.

Some of the secondary sex characteristics that develop in girls during puberty are as follows:

- Breasts develop and increase in size.
- Hair develop under armpits and in the pubic region.
- Hips broaden and the pelvic region widens.
- The menstrual cycle begins.

2. Effects of Force

- A force can change the state of motion.
- A Force can change the shape of an object.
- A force can change the speed of moving object.

3. As pressure at the bottom of the ocean is very high, deep- sea divers wear special diving suits to prevent their bodies from being crushed by the tremendous pressure of water exerted on all sides.
4. Vibrations cause waves in the air. We hear the sound when these waves reach our ears it will be more clear by the example of loudspeaker. When a loudspeaker is switched on, a membrane in the loudspeaker moves backwards and forward (vibrations). This causes the air molecules surrounding the loudspeaker to vibrate.

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