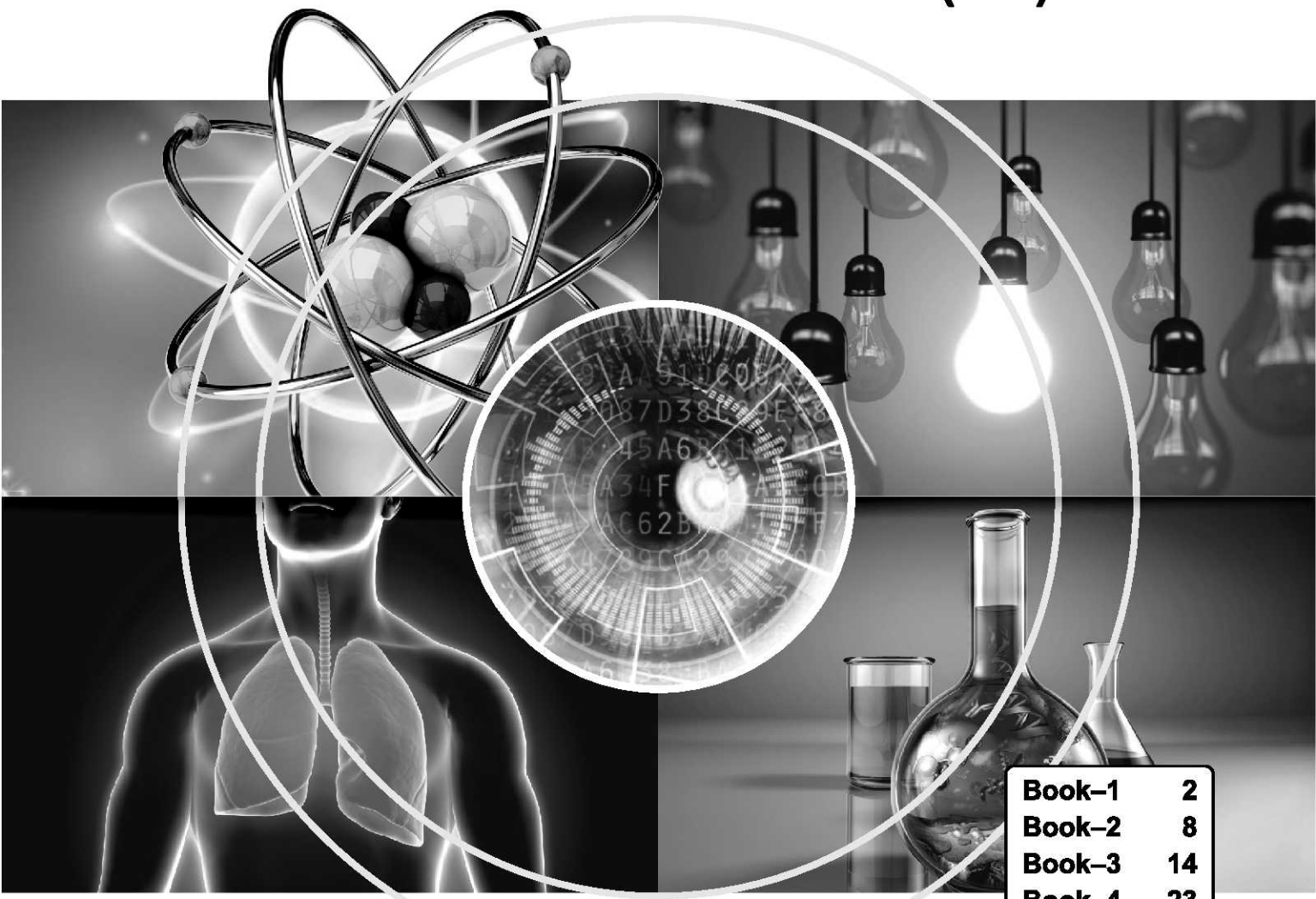
United Books

Amazing Science

Teacher's Help Book (1-5)



Science-1

1 We and Our Surroundings

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

B. 1. False; 2. True; 3. True; 4. False

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

D. 1. We live in a society.
2. Society is made up of people and their families.
3. The area around us is called our surroundings.
4. We should throw waste in garbage bins.

E. 1. If our surroundings are not clean, we may fall ill.
2. We find many things in our surroundings like other people and their houses, trees and plants, vehicles, different birds and animals.
3. We can keep our surroundings clean by :
   - ❖ Sweeping, dusting and mopping the house.
   - ❖ Cleaning the parks and gardens.
4. Plants and trees keep the air clean and fresh.

2 Living and Non-living Things

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

B. 1. False; 2. False; 3. True; 4. True

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

D. 1. Animals
2. Car
3. Non-living things not made by man are called natural things.
4. Non-living things made by man are called man-made things.

E. 1. We find living and non-living things around us.
2. Living things and non-living things are different from each other in many ways.
   - ❖ A living thing eats food but a non-living thing does not.
   - ❖ A living thing breathes but a non-living thing does not.
3. Non-living things not made by man are called natural things. These are found in nature while non-living things made by man are called man-made things.
4. A kitten need food to grow because it is a living thing while a toy is a non-living thing so it does not need food.

3 The World of Plants

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

B. 1. True; 2. True; 3. False; 4. False

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

D. 1. Plants are mostly green in colour.
2. Plants come in many shapes and sizes.
3. Some plants have very weak stem and so cannot stand erect. They are called creeper.
4. Many plants such as rose and cactus have thorns for protection.

E. 1. The places where we see plants are : in a garden, in a house, in a park, in a forest, in a pot, both sides of a road.
2. Based on size plants can be categorized into herbs, shrubs, creepers, climbers and trees.
3. A tree is a big plant. It is tall and strong. It has a thick, strong and woody stem. It stands erect. It lives for many years. Some examples are banyan, apple, ashok and coconut.
4. The different parts of a plant are : roots, stem, leaves, flowers and fruits.

4 Plants Provide Us Food

A. 1. (b); 2. (a); 3. (b); 4. (a)

B. 1. True; 2. False; 3. True; 4. False

C. 1. (c); 2. (d); 3. (a) spinach; 4. (b)

D. 1. Plants are our green friends.
2. If there were no plants, there would be no life on the earth.
3. 1. cabbage, 2. spinach
4. 1. mango, 2. banana

E. 1. Different parts of a plant are eaten as food roots, stems, leaves and flowers.
2. Leaf is called the food factory of the plant.
3. Though potato, ginger and taro grow under the ground, but they are stems. They are called underground stems.
4. Plants also provide us cooking oil. It is obtained by crushing their seeds.

5 Animals Around Us

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

B. 1. False; 2. True; 3. True; 4. False

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

D. 1. Elephant, Giraffe, Lion, Bear, Tiger
2. Dog, Cat, Rabbit, Squirrel, Mouse, Frog, Cockroach, Ant.
3. Animals with six legs are called insects.
4. Grasshopper, Ladybird, Fly, Butterfly

E. 1. Animals with wings and two legs are called birds. Their bodies are covered with feathers. Most birds can fly.
2. some birds cannot fly because they are heavy. They can only walk or run. Some such birds are : Ostrich, Penguin, Emu, Rhea
3. Spiders have eight legs so they are not considered as insects.
4. Snake, rabbit, mice, earthworm are some animals that dig holes.

6 Animals' Food and Shelter

A. 1. (a); 2. (c); 3. (c); 4. (b)
B. 1. False; 2. True; 3. False; 4. True
C. 1. (c); 2. (d); 3. (a); 4. (b)
D. 1. 1. cow, 2. horse
2. Grass and leaves
3. Hen
4. Corral
E. 1. All animals need food to live. They also need it to grow.
2. Some animals like crow, cat and bear eat both plants and meat. Humans also eat both.
3. Goats live in Corral.
4. Some animals live with us. They are useful for us.

7 Know Your Body

A. 1. (c); 2. (b); 3. (c); 4. (a)
B. 1. False; 2. True; 3. False; 4. True
C. 1. (c); 2. (d); 3. (b); 4. (a)
D. 1. Our body have many parts.
2. No, each part has a different function.
3. Parents of our parents are called grandparents.
4. Our brothers and sisters are our siblings.
E. 1. Some organs help us to feel the world around us. These are called sense organs. They are five in number. They are eyes, ears, nose, tongue and skin.
2. Though we all have the same body parts, we do not look the same. We all have different weight, height and hair and eyes colour.
3. We can write, eat, pick, hold and touch things with our hands.
We walk, run, play and jump with our legs.
4. Children grow up and become adults.

8 Our Food

A. 1. (c); 2. (b); 3. (c); 4. (a)
B. 1. False; 2. True; 3. False; 4. True
C. 1. (c); 2. (d); 3. (a); 4. (b)
D. 1. We eat food to stay alive and grow.
2. Food provide us energy.
3. Plants provide us cereals, pulses, vegetables fruits and cooking oil.
4. We get milk, egg and meat from animals.
E. 1. Animals and plants are the main sources of food. We get fruits, vegetables, cereals, pulses etc., from plants. We get milk, egg and meat from animals.

2. Milk provide us calcium. It makes our bones and teeth strong. It is used to make curd, butter, ghee and ice cream.
3. We must eat food which gives us energy and makes us strong. Such food is called healthy food.
4. The diet which contains all the foods needed by the body in proper amount to stay healthy is called a balanced diet.

9 Clothes and House

A. 1. (b); 2. (c); 3. (c); 4. (a)
B. 1. False; 2. True; 3. False; 4. True
C. 1. (c); 2. (d); 3. (b); 4. (a)
D. 1. We wear clothes to cover our bodies.
2. We wear cotton clothes in Summer.
3. We all need a house to live in.
4. There are different types of houses such as huts, flats, bungalows and apartments.
E. 1. Clothes protect us from heat, cold, rain, wind, dirt, dust and insects.
2. We get cotton from cotton plant and wool from sheep.
3. A house has many rooms. Each room serves a different purpose.
4. We study and do our home-work in the study room.

10 Staying Safe and Healthy

A. 1. (c); 2. (a); 3. (a); 4. (b)
B. 1. True; 2. False; 3. True; 4. False
C. 1. (c); 2. (a); 3. (d); 4. (b)
D. 1. An accident happens due to carelessness.
2. The habit of staying clean is called cleanliness.
3. One must be careful all the time. This will help us to remain safe.
4. We can stay safe by following certain rules. This way, we can avoid accidents. These are called safety rules.
E. 1. ❖ Do not fight with others.
❖ Do not talk to strangers or take any thing from them.
❖ Do not fly kites on the road.
2. Zebra crossing is a broad strip made of black and white lines marked on the roads for people to cross the road safely.
3. ❖ Red means 'stop'.
❖ Yellow means 'wait' or 'Ready to go'.
❖ Green means 'Go'.
4. ❖ Do not touch switches, plugs and wires.
❖ Do not play with match sticks and stay away from fire.
❖ Never play with electric irons and table fans.

11 Air

A. 1. (b); 2. (a); 3. (b); 4. (a)

B. 1. False; 2. True; 3. True; 4. False

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

D. 1. Air is all around us.
2. Gently moving air is called breeze.
3. Fast moving air is called wind.
4. We cannot see air but we can feel it.

E. 1. We need air to breath. All the living things can not survive without air.
2. A balloon filled with air heavier than a simple deflated balloon because it is filled with air and air has weight.
3. When wind is accompanied with rain, thunder and lightning, it is called storm.
4. ❖ Air helps to move the sailboat.
❖ Air helps to move the glider and aeroplane.

12 Water

A. 1. (a); 2. (a); 3. (b); 4. (b)

B. 1. True; 2. False; 3. False; 4. True

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

D. 1. We need water to remain alive.
2. We get water from rain, rivers, lakes and wells.
3. Rain is the main source of water.
4. At home, water can be stored in pots, bottles, buckets and overhead tanks.

E. 1. We use water : to drink, wash ourselves, for cooking, wash utensils, clean our house, wash our clothes.
2. Water from rivers, streams and other water bodies can be stored in a dam.
3. Because dirty water can make us sick.
4. Water is precious. We should not waste it.

13 Weather

A. 1. (b); 2. (a); 3. (b; 4. (b)

B. 1. True; 2. True; 3. True; 4. True

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

D. 1. Hot and sunny, rainy, windy, cold.
2. We wear warm woollen clothes in cold days.

3. We wear raincoat and use umbrella on rainy days.
4. In spring the weather is enjoyable.

E. 1. We wear light cotton clothes to cool ourselves on hot days.
2. Days are cold in winter. Up in the mountains, it is snowfall.
3. Spring, Summer, Rainy or Monsoon, Autumn, Winter
4. In India, we have three main seasons. It is summer in March, April, May and June. It rains in July, August, September and sometimes, October. It is winter in November, December, January and February.

14 The Sun, Moon and Stars

A. 1. (a); 2. (b); 3. (a); 4. (a)

B. 1. True; 2. True; 3. False; 4. False

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

D. 1. When we look at the sky during the day, we see the Sun and the clouds.
2. When we look at the sky at night, we see the moon and countless stars.
3. The Sun is a big ball of burning gases.
4. There are countless stars in the sky.

E. 1. The Sun rises in the east.
2. The Sun sets in the west.
3. Moon is closer to the Earth.
4. The stars look small to us as they are very far away from us.

Science-2

1 Types of Plants

A. 1. (a); 2. (c); 3. (b); 4. (b)
B. 1. False; 2. True; 3. True; 4. True
C. 1. (d); 2. (c); 3. (b); 4. (a)
D. 1. Plants are all around us.
2. Trees, herbs, shrubs, climbers, creepers, aquatic plants, thorny plants.
3. Roots, stem, leaves, fruits, flower.
4. Green plants are the only living beings to make their own food.
E. 1. Some plants are big and tall. They have hard, strong and woody stems. These stems are called trunks. Such plants are called trees.
2. Creepers have very weak stems. They creep and spread along the ground as they cannot stand erect. Some examples are pumpkin, musk melon and watermelon.
3. Root is the part that fixes the plant to the ground. It also takes in water and other things needed by the plant.
4. A plant needs air, water and sunlight to make food. The plant gets water from the soil and air from its surroundings. Its leaf is called the food factory of the plant.

2 Plants are Useful

A. 1. (c); 2. (b); 3. (c); 4. (a); 5. (c)
B. 1. True; 2. False; 3. False; 4. True; 5. True
C. 1. (c); 2. (d); 3. (a); 4. (b)
D. 1. Potato, Onion, Ginger, Sugarcane
2. Furniture, doors and window.
3. We get sugar from sugarcane.
4. A spice is generally a dried root, bark, fruit or seed of a plant.
E. 1. Carrot, Radish, Turnip, Beetroot.
2. Cereal – 1. rice, 2. wheat
Spices – 1. cardamom, 2. turmeric
3. Some plants give us rubber. We make eraser and rubber bands with rubber.
4. Some plants like rose and jasmine are used to make perfumes, soaps and shampoos.

3 Helpful Animals

A. 1. (c); 2. (b); 3. (c); 4. (c)
B. 1. True; 2. False; 3. True; 4. False
C. 1. (c); 2. (d); 3. (a); 4. (b)
D. 1. Animals which live with us at our homes are called pet animals.

2. Animals kept at homes and farms are called domestic animals.
3. Duck and Hen.
4. Buffalo, goat, sheep, hen, duck and fish.

E. 1. ❖ Animals provide us milk, eggs, honey and wax.
❖ Buffalo, goat, hen and fish provide us meat.
❖ Sheep provide us wool while silkworms provide us silk.
❖ Skin of dead animals is used as leather.
❖ Pets live with us at our homes.

2. Sheep provide us wool while we get silk from silkworms. Silk is used to make sarees and scarves. Wool is used to make sweaters and woollen garments.
3. Skin of dead animals like buffalo, sheep, camel and crocodile is used as leather.
Leather is used to make shoes, belts, jackets and bags.
4. A dog guards our homes. The cat chases the rats away. Pets are our friends. We must care for them.

4 Wild Animals

A. 1. (a); 2. (a); 3. (b); 4. (a)

B. 1. False; 2. True; 3. False; 4. True

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

D. 1. The animals which live in the forest are called wild animals.
2. Land and water.
3. 1. Tiger, 2. Elephant
4. 1. Jackal, 2. Fox

E. 1. Big Animals : 1. Elephant, 2. Lion
Small Animals : 1. Dear, 2. Fox
2. Different animals have different eating habits.
Some animals like elephant, giraffe and deer eat plants, leaves and grass. These are called plant eating animals.
Animals like lion, tiger and kingfisher kill other animals and eat their flesh. These are called flesh-eating animals.
Some animals eat both plants and animals. Bear eats the flesh of other animals besides plants and honey. Crow eats both bread and flesh. Cat eats both mice and bread and also drinks milk.
3. Animals like vulture, jackal and hyena eat the flesh of dead animals. This way, they help to keep the environment clean. They are called scavengers.
4. For long, animals have been killed for sport, for their body parts like skin, teeth, etc. and for other reasons. Their numbers are decreasing day by day. Some such animals are rhinoceros, tiger, lion and turtle. We must protect and save animals.

5 Bones and Muscles

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

B. 1. True; 2. False; 3. True; 4. True

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

D. 1. Bones are the hard parts in our body.
2. Muscles are the softer parts of the body.
3. The place where two or more bones join together is called a joint.
4. We sit, stand, walk, run and play with our body parts.

E. 1. Bones are the hard parts in our body. They provide support to the body. They also give a shape to it. Muscles are the softer parts of the body. They are attached to the bones. With our muscles, we can move, lift, bend and also smile and cry.
2. Bones lie inside our body and form a framework. This framework is called the skeleton. It is made up of 206 bones. Besides supporting the body, the skeleton protects the internal parts.
3. Regular exercise and healthy food help us to remain fit and healthy.
4. We must carry ourselves in a proper manner. Posture is the position of the body when we walk, sit or stand. Following are some good postures. Good posture provides our body a proper shape. It helps us to stay healthy.

6 Food and Health

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

B. 1. True; 2. False; 3. True; 4. True

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

D. 1. We eat food to live.
2. To remain healthy, we must eat right amounts of different foods.
3. We must have a lot of water everyday because it helps in digesting food.
4. A balanced diet consists of the correct combination of food from all food groups in correct proportions.

E. 1. We eat protective food because it protects us from falling ill.
2. To remain healthy we must eat right amounts of different foods. Food which we eat can be divided into three groups : energy-giving, body-building and protective foods.

Energy-giving Foods

Foods such as rice, chapati, sugar, butter, cheese and bread give us energy. We use this energy to work and play.

Body-building Foods

Food such as milk, eggs, pulses and chicken help us to grow. They also make our bones and muscles strong.

Protective Foods

Fresh fruits, green leafy vegetables and nuts protect us from falling ill.

3. Food eaten at a particular time of the day is called a meal. We generally eat three meals in a day.
(a) We have breakfast in the morning.
(b) We have lunch at mid-day or afternoon.
(c) We have dinner at night.
4. 1. Always eat fresh and clean food.

2. Wash your hands before and after eating the meals.
3. Wash fruits and vegetables before eating and cooking.

7 Houses and Clothes

A. 1. (b); 2. (c); 3. (a); 4. (b)
B. 1. True; 2. False; 3. True; 4. False
C. 1. (b); 2. (a); 3. (d); 4. (c)
D. 1. Early man lived in caves.
2. A house protects us from heat, cold, wind, rain, wild animals and thieves. So we need a house.
3. 1. Sloping roof, 2. Flat roof
4. The house that made of ice blocks in that polar regions people lived are called igloo.

E. 1. Early man did not know how to make clothes. So he covered himself with leaves and skin of animals.
2. Roofs are made sloping so that rainwater or snow may slide off easily.
3. In cities, we see some tall buildings. They have many storeys. These are called skyscrapers.
4. We need clothes to protect ourselves from weather and insect bites.

8 Things Around Us

A. 1. (c); 2. (c); 3. (a); 4. (c)
B. 1. True; 2. True; 3. True; 4. False
C. 1. (c); 2. (d); 3. (b); 4. (a)
D. 1. No, man-made things are not natural.
2. Yes, living things are natural.
3. 1. plants, 2. animals
4. Wood, rubber, plastic and metals are such material.

E. 1. Birds, trees, animals, water, soil, air etc.
2. Chair, table, toys, books, bag, fan etc.
3. Erasers, balloons, gloves, balls and tyres are made from rubber.
4. Utensils, machines, vehicles ornaments and tools are made of metals.

9 Rocks and Minerals

A. 1. (c); 2. (c); 3. (a); 4. (c)
B. 1. False; 2. True; 3. False; 4. True
C. 1. (b); 2. (c); 3. (d); 4. (a)
D. 1. The Earth is mostly made up of rocks.
2. Rocks can be found almost everywhere.
3. Rocks are made up of different minerals.
4. Coal is used as a fuel. It is used to make fire.

E. 1. Marble and Sandstone are hard rocks. Marble may be black, white, green and pink. It is used to make building-floors and statues. The Taj Mahal at Agra is made of white marble.

Sandstone is usually red in colour. Red Fort and India Gate in Delhi are made of sandstone.

2. Minerals are substances that are formed naturally in the Earth. Minerals are solid, inorganic have a crystal structure and form naturally by geological processes. Some minerals are such as coal and gold.
3. Mirror is made up of glass, silver and silica sand.
4. Many items which we use everyday are made of such minerals. Some such things are :
   Machinery, vehicles, equipments and tools are made of iron.
   Jewellery is made of silver, gold and diamond.
   Pottery is made of China clay.
   Filament, a part of the bulb is made of tungsten.

10 Air Around Us

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

B. 1. False; 2. True; 3. True; 4. False

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

D. 1. Moving air is called wind.
2. When we heat water, we can see some gas rising from the vessel. This is water vapour.
3. Air containing dust, smoke and germs is called unclean air.
4. We must grow more plants because they keep the air fresh and clean.

E. 1. Air has many uses. Some such uses are :
   It helps the clothes to dry faster.
   It helps us to fly kites.
   It helps to sail the boats.
   It helps to turn the blade of a windmill to grind grains.
   It helps the parachute to come down gently.
   It helps hot air balloons to float in the sky.
2. Air contains water vapour, dust particles, smoke and germs. When something is burnt or fire is lit, smoke is given out. Vehicles and factories also release smoke. This smoke is also mixed in the air.
3. Some properties of air are :
   Air takes up space.
   Air gives shapes to things.
   Air has weight.
4. Take a deflated tyre. Notice its shape. Now fill air into it. Observe its shape. It becomes bigger in size. It is also heavier in weight.

11 Water Around Us

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

B. 1. False; 2. True; 3. False; 4. True

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

D. 1. The Earth is also called 'Blue Planet'.
2. Rain is the ultimate source of water.

3. 1. river, 2. lake
4. 1. well, 2. hand pump

E. 1. Rain is the ultimate source of water. Besides it rivers, lakes, streams, ponds and paddles are also the other sources of water.
2. Some rainwater seeps under the ground. This water is called underground water. The underground water is brought out in the following ways : well, hand pump, tube well.
3. At homes, water is used for drinking, cooking, washing utensils and clothes, mopping floors, watering plants and bathing. Water is also used for irrigating the fields.
4. 1. Close the tap immediately after use.
2. We should not waste water while bathing or washing.

12 Forms of Water

A. 1. (a); 2. (a); 3. (b); 4. (b)

B. 1. False; 2. False; 3. True; 4. True

C. 1. 1. solid, 2. liquid, 3. gas
2. On heating, some of this water changes into water vapour and rises up in the air.
3. The other name of steam is water vapour.
4. Water changes into ice when it is frozen.

D. 1. Changing of water into water vapour is called evaporation.
2. Cooling of water vapour into water drops is called condensation.
3. The water is heated by the Sun to form clouds. These clouds again lead to rainfall.
This cycle of water forming water vapour, clouds, falling down as rain and filling up rivers, lakes and ponds is called water cycle.

13 Light and Shadow

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

B. 1. False; 2. True; 3. False; 4. True

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

D. 1. Light is needed to see things.
2. We cannot see in dark.
3. When an object blocks light, we see its shadow.
4. In dark, shadow is not formed.

E. 1. When you walk in the Sun, you notice a dark patch on the ground. This dark patch is your shadow.
2. Light cannot pass through all objects. So when any objects blocks the light, its shadow is formed.
3. Shadows cast by the Sun change during the course of a day.
Shadow is long in the morning.
Shadow is the shortest at noon. This is because the Sun is overhead.
Shadow is long again in the evening.
4. Shadows are only formed when there is light. In darkness shadows are not formed.

Science-3

1 Food Habits of Animals

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

B. 1. False; 2. True; 3. False; 4. True; 5. True

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

D.
1. Animals eat food for energy, to grow and to remain healthy.
2. Animals like cow, buffalo, goat, sheep and horse eat plants, leaves and grass. Such animals are called herbivores.
3. Animals like lion, tiger, wolf and fox eat the flesh of other animals. Such animals are called carnivores. Most carnivores are predators. They prey upon other animals for their food.
4. Animals such as bear, crow and ostrich eat both flesh and plants. Such animals are called omnivores. Humans are also omnivores.
5. Animals such as hyenas and vultures eat the flesh of dead animals. Such animals are called scavangers.

E.
1. Animals like cow and buffalo swallow their food after chewing it once. Later, at leisure, they bring it back into their mouth, chew it well for hours and swallow it again. This is called chewing the cud.
2. The sucking tube of the butterfly is called proboscis.
3. There is a vast variety of plants, leaves and grass. So herbivores have greater variety of their food.
4. Lizards have long, sticky tongues. They shoot it out on an insect and catch it. Then, they roll the tongue back into the mouth.
5. Butterfly has a long and thin tube. This tube is used to suck the liquid food into the mouth.

2 Staying Safe

A. 1. (c); 2. (c); 3. (a); 4. (a); 5. (c)

B. 1. True; 2. False; 3. False; 4. True; 5. True

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

D.
1. An accident is a dangerous incident which happens suddenly.
2. An accident may happen anytime, anywhere and to anyone.
3. To remain safe, we must follow some simple safety rules.
4. We must give first aid to the injured person and then must take him to hospital.
5. The immediate help provided to an injured person before the doctor arrives is called first aid.

E. 1. An accident is a dangerous incident which happens suddenly. It causes pain and injury. It may even cause death of the injured person.
An accident may happen anytime, anywhere and to anyone.

2. 1. Do not leave toys, bags or books on the floor. You may trip and hurt yourself.
2. Do not touch electrical switches, plugs or appliances with wet hands. You may get a shock.
3. Be careful while using sharp objects like scissors, knives, needles or nail cutter.

3. 1. Do not run up or down the stairs. Do not push other students. You might hurt yourself and others.
2. Do not jump on tables and chairs. You might fall down and get hurt.
3. Do not fight with other students in the class.

4. 1. Tell your parents where you are going out to play.
2. While running after a ball, do not push others.
3. If a stranger tries to talk to you, tell your parents or an elder immediately.

5. The box that contains things needed for first aid is called first aid box. It has many things like cotton, gauze, bandage, antiseptic lotion and scissors.

3 Housing and Clothing

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

B. 1. False; 2. True; 3. False; 4. False; 5. True

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

D. 1. We all need a house to live in.
2. Yes, the houses are of different types at different places.
3. Living in a dirty house may make us ill.
4. We wear clothes to cover our body.
5. Fibres from cotton and flax plants are plant fibres.

E. 1. An ideal house has some essential features. It must be clean, airy and well-lit.
Sunlight is good for our health. It also keeps the house free of germs. So, an ideal house must have plenty of doors, windows to let in sunlight.

2. We can adopt following measures to keep our house clean :
- ❖ Waste should be thrown into covered dustbins.
- ❖ Floors must be cleaned every day.
- ❖ House must be dusted daily.
- ❖ Bathrooms and toilets must be regularly cleaned.
- ❖ Things must be kept at their proper places.

3. Fibres from cotton and flax plants are plant fibres. Fibres that obtained from animals are called animal fibres.
4. We wear cotton clothes in summer. They absorb the sweat and keep us cool.
5. In winters, we wear woollen clothes. They prevent the loss of body heat and keep us warm.

4 Soil

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

B. 1. True; 2. False; 3. True; 4. True; 5. True

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

D. 1. Air, water and soil are the most important natural resources.
2. The thin layer which covers the surface of the earth is called soil.
3. Soil is made up of rock particles and decayed remains of dead plants and animals.
4. It is the uppermost layer of soil. It is the fertile layer.
5. This is the layer below the subsoil. It is the lowest layer of soil which lies hundreds of meters below the surface of the earth.

E. 1. Humus is made up of decayed remains of dead plants and animals. It retains water and provides nutrients to the plants. It makes the soil fertile.
2. Millions of years ago, there were huge pieces of rocks on the earth. Over time, the sun's heat, rain and wind broke these rocks into smaller pieces. This process is called weathering. This process takes thousands and thousands of years. Over time, rocks break into smaller pieces. These small pieces mix with decayed remains of dead plants and animals to form soil.
3. Take some garden soil. Heat it in a container with a lid. You will notice water drops on the inside of the lid. This proves that soil contains water.
4. Take some garden soil in a jar. Pour some water on it. You will see air bubbles forming. This shows that air is trapped between soil particles. When water is poured, the air escapes in the form of bubbles.
5. Soil is very useful to us. Two uses of soil are :
Plants grow in soil. They take water and nutrients from soil. Without soil, plants would have no place to grow. Plants provide food to humans and animals.
Soil provides home to many animals. Ants, earthworms, snails and beetles live in it. Rabbits, mice and snakes also make their homes in it.

5 Solids, Liquids and Gases

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

B. 1. False; 2. True; 3. False; 4. False; 5. True

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

D. 1. Water vapour is the gaseous form of water.
2. Things on earth exist in different forms.
3. A solid has a fixed shape and size. It does not flow and so cannot be poured into vessels or containers. Some examples are book, eraser, car, etc.
4. A liquid does not have a fixed shape. It flows easily and takes the shape of the container it is poured into. Some such examples are water, milk, oil, etc.
5. A gas has no fixed shape or size of its own. It can flow easily. Most gases cannot be seen. An example of gas is water vapour.

E. 1. Difference between solids and liquids–

Solids	Liquids
1. Solids have a fixed or definite shape.	1. Liquids do not have any definite shape. They take the shape of the container.
2. Solids do not flow.	2. Liquids flow easily.

2. Ice melts to form water. When we heat water, it begins boiling. As a result, steam rises up. Steam is gaseous form of water.
3. If we hold a plate above boiling water, the steam touches the cold plate. It then condenses into tiny water droplets. This change of vapour on cooling converting to liquid is called condensation.
4. Change of liquid into gas on heating is called boiling.
5. Change of liquid into solid on cooling is called freezing.

6 Living and Non-living Things

A. 1. (b); 2. (c); 3. (a); 4. (b); 5. (c)
B. 1. True; 2. False; 3. False; 4. True; 5. False
C. 1. (b); 2. (e); 3. (a); 4. (c); 5. (d)
D. 1. A large number of living and non-living things are found on the earth.
2. Animals move from place to place in search of food.
3. Some plants also show movement. Plants do not need to search for food so they do not move from place to place. But they move in a special way.
4. Plants and animals need food to grow.
5. Plants also feel light. A sunflower turns to face the sun. A lotus flower opens at sunrise and closes at night.

E. 1. Human beings, cows, horses, dogs, etc. move on their legs.
2. Plants breathe through tiny holes on their leaves. These tiny holes are called stomata.
3. Insects like mosquito, butterfly and cockroach breathe through air holes that are present on their bodies.
4. Animals reproduce in either way : lay eggs or give birth to babies. A woman and a cow give birth to their babies. A hen and a duck lay eggs from which chicks hatch out.
5. Animals and plants feel changes around them. Just as we feel hot and cold weather.
Most animals feel changes around them with their sense organs i.e. ears (hearing), eyes (sight), nose (smell), tongue (taste) and skin (touch).
Butterfly, cockroach and grasshopper have special organs called antennae to feel changes.

7 Parts of a Plant

A. 1. (c); 2. (b); 3. (c); 4. (b); 5. (c)
B. 1. True; 2. False; 3. True; 4. True; 5. True
C. 1. (d); 2. (e); 3. (a); 4. (b); 5. (c)
D. 1. Plants make the earth beautiful.
2. A plant consists of two main parts : the root system and the shoot system.

3. **Tap root :** It has a main, thick root. A number of smaller roots grow from this main root. Some examples are bean, mustard and balsam.
4. **Fibrous root :** It consists of many thin roots which are bunched up and bushy. There is no main root. Some examples are wheat, onion and grass.
5. Roots of the plant absorb water from the soil.

E. 1. Leaves are called the kitchen of the plant because leaf makes food for the plant.
2. Flower is a important part of plant because :
   - ❖ A flower gets converted into a fruit which has seeds inside it. Seeds grow as new plants. Thus the flower helps plants to reproduce.
3. Seeds of plants such as wheat, rice, bean, corn and gram are eaten by us. These are called edible seeds.
4. - ❖ It keeps the plant upright and straight.
   - ❖ Leaves, buds, flowers and fruits grow on the stem.
   - ❖ It carries water, nutrients and food to different parts of the plant.

8 Birds Around Us

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

B. 1. True; 2. False; 3. True; 4. True; 5. False

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

D. 1. We see different types of birds around us.
2. Birds use their beaks or bills to catch food.
3. Birds have some special body features which enable them to fly. These features are : 1. Light body, 2. Streamlined body, 3. Feather, 4. Tail,
4. When the birds wish to fly, they flutter their wings. Birds flutter their wings in two directions : 1. Upstroke, 2. Downstroke.
5. Birds build their nests mostly to lay eggs in them.

E. 1. The different types of beaks are :
   - ❖ Short, Hard and Bony Beaks
   - ❖ Hooked Beak
   - ❖ Flat and Broad Beak
   - ❖ Broad, Short and Sticky Beak
   - ❖ Strong and Sharp Beaks
   - ❖ Strong and Chisel Shaped Beak
   - ❖ Long and Thin Beak

2. Perching birds like sparrow, pigeon, parrot and crow use their feet to hold on to tree branches and perch on them.
   Flesh-eating birds like eagle and vulture have very sharp claws to catch small animals like rats, mice and toads. Such sharp claws are called talons.
3. The different types of beaks are :
   - ❖ Short, Hard and Bony Beaks
   - ❖ Hooked Beak
   - ❖ Flat and Broad Beak
   - ❖ Broad, Short and Sticky Beak
   - ❖ Strong and Sharp Beaks
   - ❖ Strong and Chisel Shaped Beak
   - ❖ Long and Thin Beak
4. Birds have some special body features which enable them to fly. These features are :
   1. **Light body :** Birds have a very light body as they have hollow bones.
   2. **Streamlined body :** A bird's body is streamlined.

3. **Feathers :** All the birds have wings to which feathers are attached.
4. **Tail :** It helps the bird to change directions while flying.
5. **Movement of wings :** When the birds wish to fly, they flutter their wings.
Upstroke : When the wings move upwards and forward, it is called an upstroke.
Downstroke : When the wings move downwards and backwards, it is called a downstroke.

5. Birds build their nests mostly to lay eggs in them. We see the nests at places which are safe from their enemies and bad weather. The nests can be seen on trees, terraces, roofs and holes. These nests are built using leaves, twigs, straws, cotton, thread and wool.
The woodpecker makes holes in tree trunks by using its sharp beak.
The weaverbird uses its beak to weave pieces of leaves, grass or twigs to build its nest.
The tailorbird uses its beak as a needle to sew leaves together and build its nest. It uses thread and wool to sew the leaves.

9 The Human Body

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

B. 1. False; 2. True; 3. True; 4. True; 5. True

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

D. 1. Just as a house is made up of bricks, our body is made up of millions of cells.
2. A cell is the smallest unit of life.
3. The cells of similar type come together to form a tissue.
4. The circulatory system comprises of heart, blood vessels and blood.
5. All the muscles of the body come together to form the muscular system. Muscles and bones combine together to move different parts of our body. An adult human body has more than 600 muscles.

E. 1. The skeletal system of our body is made up of bones. An adult human body has got 206 bones. The skeletal system provides shape and form to our body. It also protects the internal body parts.
2. The circulatory system comprises of heart, blood vessels and blood. The heart is situated between the two lungs in the chest. It pumps blood to all organs of the body. Blood brings oxygen and food to cells.
3. All functions of the body are controlled by our nervous system. The nervous system is made up of the brain, spinal cord and the nerves. The brain gives orders to different parts of our body. Nerves carry these orders to muscles, bones and other body parts. The spinal cord connects all the nerves of the body to the brain.
4. The reproductive system helps in producing young ones. Men and women have different reproductive systems.
5. The main organs of excretory system are the two kidneys, ureters and urinary bladder. Kidneys remove the waste from the blood in the form of urine. The skin too helps in removing waste materials from the body through sweating.

10 Measurement

A. 1. (a); 2. (c); 3. (a); 4. (a); 5. (a)

B. 1. False; 2. True; 3. False; 4. False; 5. True

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

D. 1. We use measurement to find out correct capacity, quantity or size of a thing.
2. In earlier times, people measured length of objects by using their body parts. Some such measures were hand span, cubit, footspan and stride.
3. The unit for measuring mass is kilogram. Smaller masses are measured in grams. Kilogram is written as kg while gram is written as g.
4. To measure different amounts of liquid, measuring cylinders of different capacities are used.
5. A clock or a watch is used to measure time. The unit for measuring time is seconds. Other units for measuring time are minutes and hours.

E. 1. The process of finding out the capacity, quantity or size of a thing is called measurement.
2. Hand and foot were used in earlier times for measurement, e.g. handspan, cubit, footspan, stride.
3. These measures were not uniform as the size of two people is not the same. Besides, the measurement of different body parts are also different. Hence, a fixed unit is needed for measuring objects and things.
4. Mass is the amount of material contained in an object. The unit for measuring mass is kilogram. Smaller masses are measured in grams. Kilogram is written as kg while gram is written as g.
5. The unit for measuring lengths is metre.
A clock or a watch is used to measure time. The unit of measuring time is second.

11 Sound, Light and Force

A. 1. (a); 2. (a); 3. (b); 4. (a); 5. (a)

B. 1. True; 2. True; 3. False; 4. True; 5. False

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

D. 1. Pleasant Sound : 1. Baby's laughter, 2. Pitter-Patter of rain
Unpleasant sound : 1. Dog bark, 2. Sound of traffic
2. Honking of horns, noise, loud music, sound of machines etc. are harsh.
3. The sun is the main source of light on the earth.
4. Light help us to see object.
5. Any loud, harsh and unpleasant sound is called noise.

E. 1. Sources of light are sun, moon, stars, bulbs, tubelights, CFLs, LEDs, diya, etc. Any object which gives out light is called a luminous object.
2. When we stand in the sun or under a lamp, we see a dark patch on the ground. This is shadow. It is formed when an object blocks the path of light.
3. We love to hear soft and pleasant sounds but dislike unpleasant sounds. Some sounds are harsh and unpleasant sounds. The continuous honking of vehicles is unpleasant.
4. Living things move on their own. Non-living things do not move on their own. They need to be pushed or pulled. This push or pull is called force. Force helps us to do many things. Force helps to move an object such as a bicycle. Force helps to stop a moving object. Force helps us to change the shape of an object.
5. A special force which slows down momentum is called friction. So when we move an object,

our push or pull should be more than friction. Things slide when friction is less. If friction is more, object will not move at all. Friction helps us to walk.

12 Air, Water and Weather

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

B. 1. True; 2. True; 3. True; 4. False; 5. True

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

D. 1. The envelope we live in is called the atmosphere.
2. Air is composed of many gases such as oxygen, carbon dioxide and nitrogen. It also has water vapour.
3. Water, ice and water vapour.
4. The process of water changing into vapour is called evaporation.
5. Cool air is called breeze while moving air is called wind.

E. 1. The air which we breathe in contains oxygen. The air we breathe out contains carbon dioxide.
2. The three forms of water – water, ice and vapour.
3. The sun heats up water in water bodies. This water vapour goes up into the air where it cools and condenses to form tiny droplets which further combine to form clouds. When these water droplets become big and heavy, clouds are unable to hold them and they fall to the earth as rain. The rainwater flows back into water bodies. When the sun shines again, the water cycle begins again. It is a continuous cycle. The changing of liquid water into water vapour and back to water again in nature is called water cycle.
4. The general conditions of air around us is called weather. The sun, wind and water vapour cause changes in weather.
   Sunny Days
   Windy Days
   Cloudy Days
5. Weather changes in every few months. These changes in weather are called seasons. There are four main seasons. These are as follows :
   Summer is the hottest time of the year. It rains during monsoon. Winter is the coldest time of the year. It is neither hot nor cold during autumn. Cool wind blows during this time. Trees shed their leaves. Change in seasons leads to changes in clothes, food, etc.

13 The Sun, Moon and Stars

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

B. 1. satellite; 2. shape; 3. The sun; 4. telescope; 5. astronomers

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

D. 1. The Sun and eight planets form the solar system. The Sun is the centre of the solar system.
2. A planet is a round body which moves around the Sun in a fixed path.
3. A satellite is a natural round body which goes around a planet.
4. We use a telescope to look closely at moon, stars and other planets.
5. Moon takes about 29 days to complete one circle around the Earth.

E. 1. Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.
2. We see a different shape of the moon every night. The different shapes of the moon are called its phases. The reason for moon's phases is that as it goes around the Earth, its different parts are seen.
3. A star is a huge ball of fire. The stars we see in the sky appear as tiny dots of light. They appear so because they are very far from us.
4. Some stars form a unique shape or pattern in the sky. Such patterns are called constellations.
5. Ancient Indians were renowned scientists. Around 1500 yrs ago, an Indian astronomer Aryabhatta said that the earth is round and rotates on its axis. Other great Indian astronomers were Bhaskara and Varahamihira.

14 The Earth

A. 1. (b); 2. (c); 3. (c); 4. (a); 5. (c)
B. 1. True; 2. False; 3. True; 4. False; 5. True
C. 1. (b); 2. (c); 3. (d); 4. (a)
D. 1. The earth is our home.
2. The people in earlier time thought that the earth was flat.
3. Just like the top, the Earth too spins on an imaginary line passing through its centre. It is called the Earth's axis.
4. This fixed path around the Sun is called orbit.

E. 1. Presence of air, water and soil on the Earth has made life possible.
2. Just like the top, the Earth too spins on an imaginary line passing through its centre. It is called the Earth's axis. This movement of the Earth on its axis is called rotation.
3. The Earth goes around the Sun in a fixed path. This fixed path around the Sun is called orbit. The movement of the Earth around the Sun is called revolution.
4. The land we live on, the air we breathe, the water we drink, animals, plants, etc. make up our environment. But we humans are the ones who are responsible for making it dirty. We cut trees and release dirty water into water bodies.
We have polluted environment by :
   - ❖ Releasing smoke from vehicles and factories into the air and make it unclean.
   - ❖ Washing clothes, bathing animals and releasing domestic and industrial waste into the water bodies and make them dirty.
   - ❖ Cutting trees to make houses and using the land for growing crops and grazing animals.

Science-4

1 Food and Health

A. 1. (c); 2. (c); 3. (a); 4. (a); 5. (c)

B. 1. True; 2. True; 3. False; 4. True; 5. False

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

D. 1. Food is made up of many substances. Such substances which are needed by our body for energy, proper growth and food health are called nutrients.
2. Nutrients help our body to grow and stay strong and healthy.
3. Vitamin A keeps our skin healthy.
4. Water helps the body to function properly and maintains the body temperature. We must drink plenty of water.
5. The diet which contains all the nutrients in the right amount, fibre and water is called a balanced diet.

E. 1. The five nutrients are proteins, carbohydrates, fats, vitamins and minerals.
Proteins
These are called body-building foods. They help to make new cells and build the body.
Carbohydrates
These are known as energy-giving foods. These provide us a lot of energy. Foods rich in carbohydrates are rice, wheat, corn, potatoes, bananas and grapes.
2. The part of the plant which cannot be digested is called fibre. It is very important as it helps to remove waste materials from the body.
3. The meaning of posture is different body positions. While sitting or standing, we must keep our backs straight. If we do not do so or maintain incorrect posture for a long period of time, it may lead to pain in the joints and muscles.
4. To stay healthy and fit, we also need to exercise regularly, besides having good food. Playing outdoor games and regular exercise keep us healthy and fit. Yoga also helps us to stay fit.
5. For functioning properly, our body needs rest at regular intervals. After work and play throughout the day, the body needs to rest. So we need to sleep for at least 8 hours in a day. Lack of sleep may result in improper functioning of body organs. It may make us fall sick.

2 Teeth and Microbes

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

B. 1. False; 2. True; 3. True; 4. False; 5. True

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

D. 1. Teeth become visible only when the child is about 6 to 12 months old.
2. Milk and fruits.
3. Tiny holes on teeth due to the attack of acid on enamel indicating tooth decay, is caused cavity.

4. Food is broken down into simpler forms so that it can be easily absorbed by the body.
5. Microbes are very small living beings. They can be seen only with a microscope. They are found everywhere like air, water, soil and food. They are also found inside and outside the body of living beings.

E. 1. As per their functions, teeth are of four types. They are :
1. Incisors, 2. Canines, 3. Premolars 4. Molars
Incisors : The incisors are the front four teeth in each jaw. They are also called cutting teeth. They have sharp straight edges. They are used for cutting and biting food.
Canines : Canines are two in each jaw. They are called tearing teeth. We have a canine each on either side of the incisors. They are very sharp and pointed. They help to tear the food.

2. When we open our mouth and look into the mirror, we can see our teeth. They are held in soft gums. Each tooth has a crown and a root. We can see the crown but not the root as it is inside the gums. The white covering on the outside of the teeth is called the enamel. Below it lies the hard dentine. The centre of the tooth is called pulp which is inside the dentine. It is very soft and full of nerves and blood vessels.
3. Digestion is the process by which food is broken down into simpler forms so that it can be easily absorbed by the body. This process is carried out by many organs which work together. All these organs together form the digestive system.
4. Microbes are very small living beings. They can be seen only with a microscope. They are found everywhere like air, water, soil and food. They are also found inside and outside the body of living beings.
Microbes are of four main types : virus, bacteria, fungi and protozoa.
5.

Microbes	Diseases caused
1. Bacteria	typhoid, diphtheria, pneumonia, tuberculosis
2. Viruses	measles, polio, smallpox, influenza (flu), common cold
3. Fungi	ringworm, athelete's foot
4. Protozoa	malaria, dysentery

3 Clothing

A. 1. (c); 2. (b); 3. (c); 4. (a); 5. (a)
B. 1. food, shelter, clothes; 2. disease causing; 3. Cotton, linen; 4. Silk, woollen; 5. woollen
C. 1. False; 2. True; 3. False; 4. True; 5. True
D. 1. (c); 2. (d); 3. (e); 4. (a); 5. (b)
E. 1. 1. Cotton, 2. Wool
2. We wear clothes to protect ourselves from heat and cold.
3. Synthetic fibres are not found naturally and are made by man. They are also called man-made fibres.
4. A dress which is worn by every student of the school to keep uniformity among them is called uniform.
5. To keep clothes in good condition and to make them last long, we must care for them.

F. 1. We need clothes to protect ourselves from heat and cold. Clothes protect us from dirt and dust. Clothes protect us from disease-causing insects. They make us look smart.

2. If we look closely at a fabric, we see that it is made up of many thin threads called yarns. Weaving yarns together forms a fabric. Each yarn is made up of very thin strands called fibres. These fibres may be natural or man-made.
3. Synthetic fibres are not found naturally and are made by man. They are also called man-made fibres. Fabrics made of synthetic fibres are strong and last long. They are also stretchable, wrinkle-free and water proof. Examples are rayon and polyester.
4. Cotton clothes absorb sweat and allow the air to pass through them and keep us cool in summer.
5. ❖ To remove the smell of sweat, dirt and stains, clothes must be washed well with a good soap and detergent.
   ❖ Silk and woollen clothes require a lot of care. They are attacked by moths and silverfish. So when we store such clothes, moth balls or dried neem leaves must be kept with them. This keeps the insects away.
   ❖ Woollen suits, coats and trousers must be taken for dry-cleaning. Plain washing damages them.

4 Circulatory System and Excretory System

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

B. 1. False; 2. True; 3. True; 4. False; 5. True

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

D. 1. Human body is a complex machine.
2. Many organs come together to form an organ system.
3. Two such organ systems are skeletal system and muscular system.
4. The excretory system is made up of a pair of kidneys, a urinary bladder, a pair of ureters and a urethra. It helps to get rid of the wastes formed inside the body.
5. The circulatory system is made up of heart, blood and blood vessels.

E. 1. The excretory system is made up of a pair of kidneys, a urinary bladder, a pair of ureters and a urethra. It helps to get rid of the wastes formed inside the body. The removal of wastes from our body is called excretion.
The urine is formed inside the kidneys. It is made up of harmful wastes produced in the body. The urine from the kidneys is carried by the ureters to the urinary bladder. Here, it is stored. It is than expelled from the body through the urethra.
2. The thin tubes which run throughout the body to transport blood are called blood vessels. The three types of blood vessels are arteries, veins and capillaries.
3. The removal of wastes from our body is called excretion. The urine is formed inside the kidneys. It is made up of harmful wastes produced in the body. The urine from the kidneys is carried by the ureters to the urinary bladder. Here, it is stored. It is than expelled from the body through the urethra.

5 States of Matter

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

B. 1. True; 2. False; 3. True; 4. True; 5. False

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

D. 1. All the things are made of matter.

2. Any thing which has weight and occupies space is called matter. All the matter exists in three states : solid, liquid and gas.

3. **Solid :** In a solid, the particles are packed very closely as they attract each other very strongly.

Liquid : In a liquid, the particles are not packed very closely as they do not attract each other strongly.

Gas : In a liquid, the particles are very loosely packed as they attract each other with a very weak force.

4. The substance which dissolves in liquid, is called the solute.

5. The liquid in which the solute dissolves is called the solvent.

E. 1. In a solid, the particles are packed very closely as they attract each other very strongly. They do not have any space between them to move. So, the solids have definite shape and volume. Solids are hard and cannot be pressed easily. Some examples are a stone and wood.

2. Matter can change from one state to another. The process in which a solid changes into a liquid is called melting. The process in which a liquid changes into a gas is called vaporization. The process in which a gas changes into a liquid on cooling is called condensation. The process in which a liquid changes into a solid on cooling is called freezing.

3. The solute and the solvent mix together to form a solution. For example :
When sugar is added to warm milk and stirred, the milk becomes sweet.

4. In filtration, a solution containing an insoluble substance is made to pass through a filter paper. The liquid passes through the filter paper while the insoluble substance remains behind. For example, chalk and water can be separated by filtration. At homes, tea leaves are separated from tea by a strainer.

5. In sedimentation, the solution is left undisturbed for some time. The insoluble substance settle down at the bottom. Sedimentation is the process in which the insoluble substances settle down. Now, the clear liquid is poured into another container without disturbing the insoluble substances. This is called decantation. Mud and water can be separated by sedimentation and decantation.

6 Soil

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

B. 1. False; 2. True; 3. False; 4. True; 5. True

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

D. 1. Soil is one of the most important natural resource.

2. Big pieces of rock are broken down by sun's heat, moving air and running water to produce a fine powder called sand. This process is called weathering.

3. Soil is made up of different types of soil particles. Sand is made up of largest soil particles. Clay is made up of smallest soil particles. Besides, soil also consists of gravel minerals and humus. It also has air and water present in it.

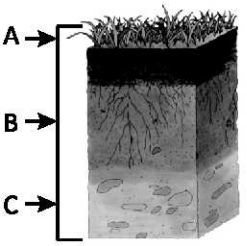
4. Such soil is found in deserts and sea shores. It consists of largest soil particles. It is yellow or light brown in colour. It does not hold much water.

5. This soil has nearly the equal amount of sand, silt and clay. It is rich in humus and nutrients. It can hold enough air and water. It is the best soil for growing plants.

E. 1. Big pieces of rock are broken down by sun's heat, moving air and running water to produce a fine powder called sand. This process is called weathering.
When this fine sand mixes with humus (remains of dead plants and animals) and minerals, soil is formed.

2. Depending upon the amount of different soil particles in it, soil is of mainly three types.
Sandy soil : Such soil is found in deserts and sea shores.
Clayey Soil : It is found in ponds and river beds.
Loamy Soil : This soil has nearly the equal amount of sand, silt and clay.

3. The different layers of soil are collectively called soil profile. In the figure given alongside, these layers are named as A, B and C.
A is the uppermost layer of soil. It is called topsoil.
B is the middle layer of soil.
C is the bottom layer of soil. It is called bedrock.



Soil profile

4. Many a times, strong winds and running water carry away this topsoil. The removal of fertile topsoil by the action of wind and water is called soil erosion.
The loss of topsoil makes the land unfit for farming.

7 Plants : Our Green Friends

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

B. 1. fruits, vegetables; 2. chlorophyll; 3. plant, tree; 4. food factory; 5. glucose

C. 1. True; 2. True; 3. False; 4. True; 5. False

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

E. 1. We see plants all around us.
2. The flat part of the leaf is called the leaf blade.
3. The stomata help the leaf to breathe.
4. The plant uses some of this food for its daily activities and the extra food is stored as starch in roots, stem, flowers and fruits.
5. The chain of organisms where each member is dependent upon the smaller member for food is called foodchain.

F. 1. The flat part of the leaf is called the leaf blade. It is also called the lamina. It may be broad in some and narrow in others. In the middle of the leaf is the main vein and many side veins come out of it. These veins help in the trasportation of water, minerals and prepared food to and from the leaf. The underside of the leaf contains millions of tiny openings. These are called stomata. The stomata help the leaf to breathe.

2. The function of a leaf are as follows :
◆ The leaf makes food for the plant. Hence, it is called the food factory of the plant.
◆ The leaf helps the plant to breathe by letting the air in and out through the stomata.

3. Green leaves prepare food for the plant through the process of photosynthesis.

4. Some roots which store food are carrot, radish and turnip. Some stems which store food are sugarcane and lotus stem (kamal kakri).
5. Plants and animals are interdependent for their survival. Green plants are producer of food. Animals depend on them for food. Thus, a chain for obtaining food exists in nature. The chain of organisms where each member is dependent upon the smaller member for food is called foodchain.
   - ❖ The food chain maintains a balance between the number of plants and animals.
   - ❖ Plants release oxygen needed by animals to breath. They, in turn, breathe out carbon dioxide which is needed by plants for photosynthesis.

8 Different Plants

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

B. 1. False; 2. True; 3. True; 4. False; 5. False

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

D. 1. Plants growing on land are called terrestrial plants.
2. For their survival in their habitat plants need to adapt.
3. These trees shed their leaves in winter to protect themselves from cold. Such trees are called deciduous tree.
4. Some plants like coconut, teak, rubber and sugarcane grow in hot and wet climate. They do not shed their leaves in winter. Such trees are called evergreen trees.
5. Plants living on or inside water are called aquatic plants.

E. 1. Different places have different climatic conditions. To live and to survive in different conditions, plant make certain changes in themselves. Such changes are called adaptations.
2. Swamps and marshes have lot of water and sticky and clayey soil. Hence the plants are unable to get air from the soil. So their roots come out of water to breathe in air. These roots are called breathing roots or aerial roots. The examples are Sundarban mangroves.
3. Such plants use water slowly and store it in their stems and leaves. Some plants grow seasonal leaves only after rains. This lack of leaves helps them to reduce water loss. Photosynthesis in such plants takes place in their green stems. Their roots go deep underground or spread wide to absorb water. In some plants, leaves change into thorns to reduce water loss. Cactus, prickly pear and date palm are some desert plants.
4. These plants are divided into three categories which are as follows :

   ❖ submerged plants, ❖ floating plants; and ❖ fixed plants.

   Submerged Plants : Some plants grow completely under water. These are called submerged or underwater plants. Examples are tape grass, pond weed, vallisneria, etc.

   Floating Plants : These plants are light and spongy so they can float on water. Their leaves have a waxy coating so water does not wet them and block the stomata. Examples are duckweed, pistia and water hyacinth.

   Fixed Plants : The roots of such plants is fixed to the soil of the pond. They have long hollow stems which help the broad leaves and flowers to float on water. The stomata are on the upper surface of the leaves. Examples are water lily and lotus.

5. Plants are very useful to us. In our daily life, we use many things made from plants.
   - ❖ We use numerous plant products such as fruits, vegetables, cereals, pulses, nuts, spices, sugar and oil as food. Tea and coffee are also obtained from plants.
   - ❖ Cotton and jute are plant fibres and are used to make clothes, carpets, ropes and sacks.
   - ❖ Wood from trees is used to make paper and furniture. Bamboo is used to make huts, baskets and mats.

9 Animals and Their Babies

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

B. 1. False; 2. True; 3. False; 4. True; 5. False

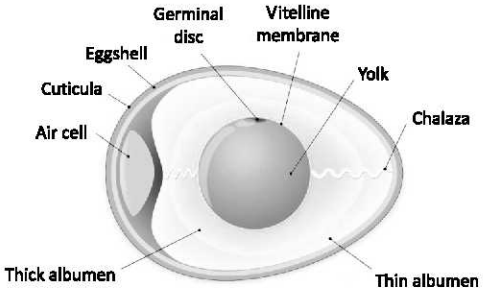
C. 1. (c); 2. (a); 3. (e); 4. (d); 5. (b)

D. 1. All the animals reproduce to form more of their kind so that their species continue on the earth.
2. Animals reproduce in two different ways. Some animals reproduce by laying eggs while others reproduce by giving birth to babies.
3. Before becoming an adult, it undergoes several changes through a process called metamorphosis.
4. The hen cares for the chick till it learns to feed itself and to fly. Caring for the babies is called parenting.
5. The pupa sheds its skin many times and changes into an adult butterfly. This process of shedding old skin is called moulting.

E. 1. Animals reproduce in two different ways. Some animals reproduce by laying eggs while others reproduce by giving birth to babies.
Animals such as insects, birds, frogs, turtles, snakes and crocodiles lay eggs. The eggs are either kept at a warm place or a parent animal sits on them to keep the eggs warm. After the egg matures, the young one hatches out. Some animals do not lay eggs. They give birth to their babies. Some such animals are cow, cat, dog, tiger and lion.

2. To be able to reproduce, a frog needs a water body. The eggs are laid in a cluster called spawn. The embryo develops into a tiny creature called tadpole. It has a tail for swimming and looks completely different from an adult frog.
Fish is an aquatic animal. It reproduces by laying a large number of eggs, called fish spawn, in water.

3. The eggs of all the animals have a similar structure.
   - ❖ The egg shell is the hard outer covering of the egg.
   - ❖ The soft jelly-like substance within the egg shell is called albumen. It is rich in protein and protects the growing embryo.
   - ❖ The yellow part of the egg is called the yolk. It is rich in vitamins, fats and minerals. It is the food for the growing embryo.



Structure of an egg

4. The young one of butterfly which hatches from the egg is called caterpillar or larva. It looks very different from the adult butterfly. The caterpillar builds a cocoon and changes into a pupa. The pupa sheds its skin many times and changes into an adult butterfly. This process of shedding old skin is called moulting.

5. Some animals do not lay eggs. They give birth to their babies. Some such animals are cow, cat, dog, tiger and lion. They feed their babies on their own milk. Such animals are called mammals. The bodies of mammals are covered with hair. They carry their babies inside the bodies till they become fully developed to be born. Once the babies are born, the parents feed them, guard them and keep them clean. Human beings are also mammals. Whale and dolphin are mammals which live in water. They do not have hair on their bodies.

10 How Animals Survive?

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

B. 1. animals; 2. Amphibians; 3. variety; 4. 6; 5. Parasites

C. 1. False; 2. False; 3. True; 4. True; 5. True

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

E. 1. Just like plants, animals too have developed some features, called adaptations, to help them survive in their environment.
2. The animals which do not do so, die out slowly. For example, dinosaurs.
3. Animals with a backbone are called vertebrates. They are further divided into reptiles, amphibians, birds, fish and mammals.
4. Animals without a backbone are called invertebrates. Some examples are insects and worms.
5. Amphibians live both on land and in water. They are also cold blooded animals. They too lay eggs. Most of them breathe through lungs and moist skin. Some examples are newt, frog and toad.

F. 1. **Reptiles :** Most of the reptiles live mainly on land. Some reptiles are lizard, snake and crocodile. They have scales on their skin and reproduce by laying eggs.
Amphibians : Amphibians live both on land and in water. They are also cold blooded animals.
Birds : Birds have a light feather covered body. They have wings to fly. Some examples are parrot, pigeon and eagle.
Fish : Fish comprise a large variety of animals living in water. They have fins which help them to swim.
Mammals : Mammals give birth to babies. Their bodies are covered with hair. The mother feeds the young ones with its own milk.
2. Animals living on land are called terrestrial animals. They have legs to walk on land. Most of them breathe through lungs. These animals have adapted themselves to the climatic conditions of the place they live in. A camel lives in the desert while a yak lives on the mountains. The polar bear lives in the polar regions.
3. Animals which can live both on land and in water, are called amphibians. Examples are newt, frog and toad. The back legs of these animals are stronger than their front legs. This helps them to jump and move on land. They have webbed feet that help them to swim in water.
4. Based on the type of food they eat, animals are divided into five main categories : herbivores, carnivores, omnivores, scavengers and parasites.
Herbivores : Plant eating animals are called herbivores. These animals have sharp teeth for biting and cutting and strong teeth for grinding.

Carnivores : Flesh eating animals are called carnivores. Most carnivores have very sharp teeth for tearing the flesh of their prey. Examples of carnivores are tiger, lion, leopard, snake and lizard.

Omnivores : Animals which eat both plants and flesh of other animals are called omnivores. Humans, bear and crow are examples of omnivores.

Scavengers : Some carnivores eat the flesh of dead animals. This way, they help to clean their surroundings. They are called scavengers. Hyena and vulture are two such examples.

Parasites : Parasites obtain their nutrition from other living beings. The other living beings are called host and the parasites may either live on or inside the bodies of the host.

5. Many animals have adapted themselves to cope with climatic conditions as well as a means to save themselves from their enemies. Some such examples are :
   - ❖ Animals like zebra, Arctic fox, Polar bear, frog and chameleon have capacity to change their body colours to blend in with their surroundings. This way, they escape their enemies. This is known as camouflaging.
   - ❖ Animals such as gazelle and deer have very strong legs which enable them to run very fast and escape from their enemies.
   - ❖ Animals like hippopotamus and elephant have very thick skin to save themselves from the heat.

11 Force, Work and Energy

A. 1. (b); 2. (b); 3. (a); 4. (b); 5. (b)

B. 1. False; 2. True; 3. True; 4. False; 5. True

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

D. 1. Books, pencil box, school bag, desks, chairs, etc. Such things do not move on their own. They need a push or pull to move.

2. A push or pull applied on a body is called force. The effects of force are as follows :
   Force can move an object at rest.

3. A simple machine is a tool which uses less energy and makes our work easier and faster.

4. The sun is the main source of energy on the earth. This energy is called solar energy.

5. Moving water also has energy. It is called hydro energy.

E. 1. When any object is in contact with a surface, friction acts between them and resists the motion of the object. Thus, it slows down or stops moving completely.
   Friction is necessary because if there were no friction, anything that starts moving will never stop. So, force of friction is essential. However, if there is too much friction, nothing will move.
   Generally, smooth surfaces like glass or ice have less friction than rough surface like a carpet.

2. **Pulley :** A pulley is a simple machine having a grooved wheel and a rope between the grooves.
   Inclined Plane : An inclined plane is any sloping surface. A simple smooth board placed at an angle is an inclined plane.
   Screw : A screw is an inclined plane wrapped around a cylinder with a sharp pointed end.

3. The ability to do work is called energy. We need energy to do anything like walking, eating, running, carrying and climbing.

4. When we throw a ball into the air, it falls back to the ground. Why does it fall down? Why doesn't it keep going up and up? This is because of the gravitational force or gravity. The force that pulls objects down towards the centre of the earth is called gravitational force (gravity).
5. The sources of energy are as follows :
Sun : The sun is the main source of energy on the earth. This energy is called solar energy.
Wind : The energy from the wind is called wind energy.
Water : Moving water also has energy. It is called hydro energy.

12 Air, Water and Weather

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

B. 1. False; 2. True; 3. False; 4. True; 5. True

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

D. 1. Weather refers to the short-term changes in the atmosphere of a place at a particular time.
2. Amount of water vapour present in the air is called humidity.
3. We are surrounded by an envelope of air called atmosphere.
4. On heating by the sun rays, water changes into water vapour (gas). The process by which liquid water changes into water vapour is called evaporation.
5. The change of water vapour into water is called condensation.

E. 1. The sun's heat causes winds to blow. As the air gets heated, it becomes lighter and rises up. The heavier and cooler air rushes to take its place. This movement of air causes winds.
2. The water vapour rises up and condense into tiny droplets of water. All these tiny water droplets come together to form clouds. Hence, the water droplets continue to get bigger and bigger. When the clouds are unable to hold these heavy droplets, it begins to rain.
3. During the day, the land gets heated which heats the air above it. This hot air rises up and the cool air from the sea moves in to take its place. This is sea breeze.
At night, the land cools down faster than the sea. The warm air above the water rises up and the cool air above the land moves into take its place. This is land breeze.
4. As the air cools, water vapour in it condenses to form liquid water. It comes down to earth as dew, frost, fog or mist and rain, etc. This is called precipitation.
5. **Dew :** It is commonly seen on cold winter mornings, settled on grass and leaves.
Frost : Frost is created when the temperature of the air drops below the freezing point and water vapour freezes into ice crystals.
Fog : When the water vapour condenses on dust particles present in air, fog is formed. It reduces visibility.
Snow : When the water vapour changes directly to ice without first becoming a liquid, it is called snow.
Hail : Hail is formed due to condensation of water in storm clouds. Hailstorms can be very dangerous.

13 The Solar System

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

B. 1. heavenly; 2. millions, billions; 3. star; 4. heat, light; 5. eight

C. 1. False; 2. True; 3. True; 4. False

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

E. 1. A star is a huge ball of burning gases which produces a huge amount of heat and light.

2. A planet does not have any light of its own. It goes around a star and reflects it's light. There are eight planets in our solar system.

3. Our solar system is made up of the Sun, the eight planets, the moons and other celestial bodies.

4. Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune are eight planet of the solar system.

5. The Sun lies at the centre of the solar system and all the planets go around it in a fixed path called the orbit.

F. 1.

Planets	Moons	Features
1. Venus	0	• Hottest; almost the same size as the Earth • Closer to the Earth • Called morning star or evening star
2. Earth	1	• Also called the blue planet as 3/4 of its surface is covered with water • Only planet known to have life
3. Mars	2	• Earth like planet in the solar system; • Half the size of the Earth; • Has four seasons and ice at poles;

2. Constellations are specific patterns formed by groups of stars. Some easily identifiable constellations are Ursa Major (The Great Bear), The Orion (The Hunter) and Scorpio (Scorpion).

3. When the earth rotates on its axis, one of its half faces the Sun. Thus, all the countries on this half have day.

   On the same time, the other half is in darkness and has night. The countries on this half have night time.

4. The revolution of the Earth causes seasons. But if the Earth's axis was not tilted, there would be no seasons. As the Earth moves, the tilt causes the Sun rays to fall more directly on either the northern hemisphere or the southern hemisphere.

   The half that receives more sunshine has summer while the other half has winter.

5. The earth's rotation causes day and night. As the Earth takes 24 hours to complete one rotation on its axis, one day is 24 hours long.

   The earth completes one revolution around the sun in nearly 365 days. This comprises one year. The revolution of the earth causes seasons.

14 Keeping the Earth Green

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

B. 1. True; 2. False; 3. True; 4. False; 5. True

C. 1. plants, animals; 2. important; 3. carbon dioxide, oxygen; 4. green; 5. faeces

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

E. 1. Our planet Earth is a very beautiful planet.

2. Both plants and animals add beauty to our charming Earth.

3. Plants are very useful to us. But man and his greed has led to large-scale and mindless cutting of trees. But he is not planting them in enough numbers. The earth's beauty has been eroded.

4. All animals and plants are interdependent for food. In fact, they form a food chain.
   If any one plant or animal is removed, the animals dependent on it will also die. This will cause a serious imbalance in nature.

F. 1. Mindless cutting of trees in large numbers is called deforestation.
   Trees are cut for land, for housing and construction activities and to make paper and furniture.
   Deforestation harms the environment. So, we must not cut too many trees at one time.

2. To keep the Earth green, we have to save trees. This can be done as follows :
   - ❖ Plant more trees than are actually being cut down. Planting trees in more and large numbers is called afforestation. Each of us must plant at least one tree.
   - ❖ Do not waste paper. Reuse it and then send it for recycling.

3. Vana Mahotsava is celebrated in India in July every year. During a period of 7 days millions of trees are planted all over the country.

4. The United Nations has declared 5th June as World Environment Day. On this day, ideas are discussed as how best to conserve the environment.

Science-5

1 Growing Plants

A. 1. (c); 2. (c); 3. (a); 4. (c); 5. (c)

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

C. 1. Photosynthesis; 2. By water; 3. Sapling; 4. Cotyledons; 5. Pesticides

D. 1. Plants provide us food. They also provide us fresh oxygen to breathe in.

2. Plants provide us food. They also provide us fresh oxygen to breathe in. So, growing plants is very important for us. We must grow more and more plants.

3. Plants increase their numbers through reproduction.
   The plant may reproduce through :
   1. Seeds, 2. Roots, 3. Stems, 4. Leaves, 5. Spores

4. Most plants bear flowers. After a flower blooms, it turns brown, its petals fall off and it changes into a fruit. This fruit has seeds inside it.

5. A seed may be a pip (apple), a nut (walnut) or a bean (pea, pulses). New plants grow from such seeds.
   Seeds have different colours, shapes and size such as gram, cumin, red chillies, kidney bean etc. Some seeds also have a smell, such as cardamom.

E. 1. The world around us is very beautiful. It is filled with green plants and colourful flowers. Plants provide us food. They also provide us fresh oxygen to breathe in. So, growing plants is very important for us. We must grow more and more plants. Plants increase their numbers through reproduction. The plant may reproduce through :
   1. Seeds, 2. Roots, 3. Stems, 4. Leaves, 5. Spores

2. Changing of a seed into a seedling under suitable conditions is called germination. A plant produces many seeds but not all seeds grow into plants. Some seeds are unhealthy and do not germinate; some are destroyed by rain and wind while some are eaten by animals, birds and insects. Some seeds do not get right conditions to germinate.

3. Scattering of seeds away from the parent plant is called dispersal.
   Different ways of seed dispersal are as follows:
   Dispersal by Wind : Some seeds are very light and have hair or wing like structures on them. Wind easily carries them away from one place to another.
   Dispersal by Water : Some seeds of plants growing in water or close to it are dispersed by water.
   Dispersal by Animals : Some seeds have special structures which help them in their dispersal by animals.
   Dispersal by Explosion : Fruits of some plants such as poppy, pea and bean burst open when they are ripe and scatter the seeds in all directions. This method of seed dispersal is called explosion.

4. The different parts of a plant from where a plant can grow are : leaves, stems, flowers, roots, seeds, etc.

5. Different crops need different types of soil, amount of water and climate to grow well.

Crops grown in winter are called Rabi crops. They are sown in November and harvested in April. They are not dependent on monsoon rains. Some such crops are wheat and legumes.
Crops grown in summer are called Kharif crops. They are sown in June and harvested in October. These are largely dependent on monsoon rains. Some such crops are rice and maize.

2 Health and Hygiene

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

B. 1. True; 2. True; 3. False; 4. False; 5. True

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

D. 1. The food we eat contains five main nutrients. They are carbohydrates, fats, proteins, vitamins and minerals.

2. Carbohydrates, fats, proteins, vitamins

3. To avoid deficiency diseases, we need to have a balanced diet. The diet we have daily must include food from all food groups. You must also ensure to drink sufficient amount of water every day.

4. Disease-causing microorganisms are called germs and they cause diseases like pneumonia, typhoid and chicken pox. Such diseases are called communicable diseases as they can be transmitted from one person to another.

5. To stay healthy and to keep diseases away, hygiene is very important.
Vaccination boosts our immunity and protects us from diseases. It is either injected or given orally.

E. 1. Germs enter our body through mosquito bite; consuming unclean water or food; through open wounds and direct contact with infected person.

2. The food we eat contains five main nutrients. They are carbohydrates, fats, proteins, vitamins and minerals. To remain healthy, our body needs all of the nutrients in correct proportions.
Carbohydrates : Carbohydrates are mainly sugar and starch. They give energy to the body and so are called energy-giving foods.
Fats : Just like carbohydrates, fats are also energy-giving foods. They keep the body warm.
Proteins : Proteins are called body-buidling foods. They are necessary for repair of injured tissues and growth of the body.
Vitamins : Vitamins keep us fit and healthy and help us to fight diseases. Hence, they are called protective foods.

3. Regular physical exercises improve our blood circulation. Some such exercises are walking, cycling and swimming. These exercises also make our muscles strong.
Walking, cycling and swimming help us to build the muscles of our hands and feet strong.
Playing sports and games regularly also help us to be physically fit and strong.

4. Vaccination boosts our immunity and protects us from diseases. It is either injected or given orally.

5. To maintain health and hygiene, following measures must be maintained.
   - ❖ House must be swept and mopped everyday.
   - ❖ Garbage should be put in covered dustbins.
   - ❖ Do not eat stale food.

- ❖ Avoid eating food from the roadside.
- ❖ Boil water before drinking as it kills germs.

3 Safety and First Aid

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

B. 1. False; 2. True; 3. False; 4. True; 5. True

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

D. 1. The first help given to an injured person before the arrival of proper medical aid is called First Aid.
2. Accidents can happen because of our carelessness.
3. One must wear a helmet while riding a two wheeler to avoid head injury.
4. Wooden spunt provide support to the fracturel part of the body.
5. A crack in the bone is called a fracture.

E. 1. We know that an accident is waiting to happen. It may happen any time, at home, school or in the playground. So, one must know what to do if some emergency comes up :
- ❖ Stay calm and do not panic. Use your common sense and only do as much as you know.
- ❖ Immediately inform an adult.
- ❖ If possible, get first aid.
- ❖ If required, call a doctor or an ambulance.

The first help given to an injured person before the arrival of proper medical aid is called First Aid. First aid in different emergencies is different.

2. ❖ Use a tweezer and pull out the insect's sting.
- ❖ Put ice cubes on the bitten part and then apply an antiseptic cream.

3. ❖ Immediately, turn off the gas regulator.
- ❖ Carry the leaking cylinder out into an open area.
- ❖ Open all the doors and windows so that the gas escapes.
- ❖ Do not light a matchstick near the cylinder.
- ❖ Do not operate any electrical switch. It may cause an explosion.
- ❖ Call the gas agency immediately to repair or replace the leaking cylinder.

4. Follow the rules of the game while playing.
Do not fight while playing.

5. Cross the road only at zebra crossing. Do not walk through vehicles which have stopped at red traffic signal. Follow all the road signs.
Wear a helmet while riding a two wheeler.

4 Solids, Liquids and Gases

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

B. 1. True; 2. False; 3. True; 4. False; 5. False

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

D. 1. We know that any substance which has mass and occupies space is called matter.
2. It is made up of very small particles.

3. In a liquid, the particles are loosely packed and so, can move and slide over each other. Hence, liquids can flow and take the shape of the container they are poured into.
4. In a solid, the particles are packed tightly and so cannot move away from each other. Hence, solids generally have a fixed shape.
5. Solid dissolved in a liquid, liquid dissolved in liquid, gas dissolved in liquid, gas dissolved in gas.

E. 1. Matter exists in three states : solid, liquid and gas. These result from the way in which the particles are arranged in a substance.

In a solid, the particles are packed tightly and so cannot move away from each other. Hence, solids generally have a fixed shape.

In a liquid, the particles are loosely packed and so, can move and slide over each other. Hence, liquids can flow and take the shape of the container they are poured into.

In a gas, particles are far apart from each other and so, can move about freely. Hence, the gases flow and take up all the available space.

2. **Evaporation**

When heat is provided to water, its particles begin to move faster. Finally, they break from the existing arrangement and escape into the air as gas, where they can move much more easily.

Changing of a liquid into its gaseous form is called evaporation.

Condensation

Cooling of a substance slows down the movement of its particles. The particles become less free to move and so, form a liquid. Changing of gas into a liquid is called condensation.

Melting

The particles of ice are packed tightly and give it a fixed shape. When ice cubes are taken out, they encounter warmth and the particles begin to move faster and finally, break the rigid pattern, become loosely packed as in a liquid and form water. Changing of a solid into a liquid is called melting.

3. When a substance is heated, its particles begin to move rapidly. Due to this increased movement, each particles takes up more space and so the substance expands. Increase in the size of matter on heating is called expansion.

When a substance is cooled, its particles begin to cool down. Due to this decreased movement, the particles take less space and so the substance contracts. Thus, cooling a substance can make it contract. Decrease in the size of matter on cooling is called contraction.

4. The type of change in which only the physical state of the substances changes and new products are formed is called a physical change.

When ice cube is taken out of freezer, it slowly changes into water. Here, only the physical state of the substance changes and no new substance is formed. Some such examples are breaking of glass, tearing of paper, melting of butter, etc.

5. The type of change in which the chemical composition of a substance changes and a new substance is formed, is called a chemical change. For example, when we burn paper, it changes into ash which is a new substance. Here, the original substance changes into a different substance. Some such changes are cooking food, setting of milk into curd, rusting of iron nails, etc.

5 Rocks and Minerals

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

B. 1. True; 2. False; 3. False; 4. True; 5. True

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

D. 1. The earth is made up of three layers : crust, mantle and core.
2. There are three type of rock : 1. Igneous rock, 2. Sedimentary rock, 3. Metamorphic rock
3. The earth's core is made up of molten rock. When a volcano erupts, this molten rock is pushed out from the earth's interior to the earth's surface. With time, it cools and solidifies to form igneous rock.
4. The topmost layer is the crust. The core is the innermost layer.
5. Minerals are chemical substances with a fixed chemical composition.

E. 1. The earth's core is made up of molten rock. When a volcano erupts, this molten rock is pushed out from the earth's interior to the earth's surface. With time, it cools and solidifies to form igneous rock.
Some examples of igneous rocks are :
Granite is formed by slow cooling of lava. It is very hard and is used as building material. It has many colours and patterns. It is used as kitchen counters and floorings.
Obsidian is formed by quick cooling of lava. It is usually black or dark coloured. It is smooth and glassy and is used to make jewellery and ornaments.
2. Metamorphic rocks are formed due to physical and chemical changes in igneous, sedimentary and metamorphic rocks themselves. Heat and pressure bring about these physical and chemical changes. The examples of metamorphic rocks are : Marble, Gneiss, Quartzite, Slate
3. Several attractive minerals like diamond, sapphire, emerald, topaz and ruby are used as gemstones. These are found in the form of crystals.
4. Iron is used to make steel, copper is used to make electrical wires and aluminium is used to make utensils and foils. Precious metals like gold, silver and platinum are used to make jewellery. Minerals like gypsum and calcite are used as building materials like mortar, cement and concrete and used at construction sites.
5. The remains of dead plants and animals, buried in the earth millions of years ago, were hardened by great pressure and temperature and are known as fossils. These are mostly found in sedimentary rocks. Fossils help the scientists to discover various forms of life which existed on earth in prehistory.

6 Animal Life

A. 1. (c); 2. (a); 3. (c); 4. (c); 5. (c)

B. 1. True; 2. False; 3. False; 4. True; 5. True

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

D. 1. The environment in which an animal lives naturally is called its habitat.
2. Forest, freshwater, desert, ocean, polar regions and mountains.

3. Yaks and mountain goats are found on the mountains
4. Lungs and gills
5. Different animals have different body coverings to help them survive in their environment. Fish have overlapping scales which are water proof. Animals such as turtle, tortoise and snail have hard shells to protect them.

E. 1. The bodies of lizards, snakes and crocodiles have their bodies covered with scales to help prevent the loss of water. Fish have overlapping scales which are water proof.

2. **Shell :** Animals such as turtle, tortoise and snail have hard shells to protect them. As soon as they sense danger, they withdraw their heads and feet into their shells. Snails are normally seen in rainy season.

   Spines : Bodies of porcupine and echidna (spiny anteater) are covered with sharp spines to protect them from their enemies.

3. There are different habitats found on the earth. These are forest, freshwater, desert, ocean, polar regions and mountains. These places have different conditions of climate, temperature, availability of food and water.
4. An animal living in a habitat develops certain unique features to survive in the given environment. These features are called adaptations. An adaptation is any change in an animal so as to give it an advantage for survival in its environment. For example, Arctic fox has thick fur on its body to protect it form extremely cold conditions.

   Breathing Apparatus

   For all living beings, breathing is necessary for survival. All animals, living in different habitats, have breathing apparatus to suit their environment.

   Lungs : Birds, reptiles and mammals breathe through their lungs. All mammals, including human beings, breathe through their nose which carries the air to the lungs.

   Gills : Fish, crabs and prawns, which live in water, breathe through their gills. These gills absorb oxygen dissolved in water.

   Spiracles : Insects like butterflies, flies, mosquitos breathe through spiracles. These spiracles are tiny holes present on their body.

   Skin : Animals like earthworms breathe through their skin or body surface.
5. The beaks of birds are suited for catching the kind of food they eat.

7 Organ Systems and Sense Organs

A. 1. (b); 2. (a); 3. (a); 4. (a); 5. (b)

B. 1. False; 2. True; 3. True; 4. False; 5. True

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

D. 1. The skeletal system is a framework of bones. It gives support to the human body. If there would be no skeleton, our body would be soft and shapeless.

2. **Parts of Skeleton**

   The human skeleton is made up of many parts. Some of these are as follows :

   Skull, Backbone, The Ribcage, Limbs, Upper Limbs, Lower Limbs
3. **The Ribcage :** The chest has a cage-like structure called ribcage inside it, to protect the important organs inside like the heart and the lungs. It is formed by 12 pairs of curved bones called ribs.

4. Cartilage is the tough, elastic tissue which holds the bones together at the joints and protects them. Without the cartilage, the bones would rub against each other and wear out. The tip of the nose is made of hard cartilage while the earlobes are made of soft cartilage.
5. The actions which do not involve the brain. Such actions are known as reflex actions.

E. 1. The human skeleton is made up of many parts. Some of these are as follows :
Skull : Skull is a bony structure which protects the brain.
Backbone : The skull rests on the backbone.
The Ribcage : The chest has a cage-like structure called ribcage inside it, to protect the important organs inside like the heart and the lungs.
Limbs : We have two pair of limbs, the upper limbs (arms) and the lower limbs (legs).
Upper Limbs : The upper limbs are divided into two parts, the upper arm and the lower arm.
Lower Limbs : The lower limb is also divided into two parts; the upper leg and the lower leg.

2. The skeletal system is a framework of bones. It gives support to the human body. If there would be no skeleton, our body would be soft and shapeless. The skeleton also protects the soft, dedicate internal organs such as heart and lungs. It also enables the movement of the body.
3. Muscles are fibrous tissues made of proteins. They are attached to the bones by special tissues called tendons. The movements of the body is possible when bones and muscles work together. Muscles also help in digestion. Muscles are of three types :
Skeletal Muscles
Cardiac Muscles
Smooth Muscles
4. The place where two or more bones meet is called a joint. The bones are held together at the joints by special tissues called ligaments. Joints allow easy movements in the body. Most joints are movable. There are four types of movable joints in the body.
Ball and Socket Joint
Hinge Joint
Pivot Joint
Gliding Joint
5. The brain is an important organ of the human body. It controls the body movements and stores all information in its memory. It has three parts: cerebrum, cerebellum and medulla. Cerebrum is the largest part of the brain. It controls the working of the sense organs. It is also responsible for learning, memory, intelligence and logic. Cerebellum is located below the cerebrum. It maintains the balance of the body. It is also responsible for muscle coordination. Medulla is also called the brain stem. It controls activities like heartbeat, breathing, swallowing and sneezing.

8 Measurement

A. 1. (c); 2. (b); 3. (b); 4. (c); 5. (a)
B. 1. True; 2. False; 3. True; 4. False; 5. True
C. 1. (b); 2. (c); 3. (d); 4. (e); 5. (a)
D. 1. There are numerous things and objects in this world. They all differ in sizes, shapes and quantities.

2. In early times, there were no standard equipment of measurement. So people used their body parts for the purpose.
3. But as the size of body parts of different persons are different, such measurements were impractical. The people realised the need to have fixed quantities to measure things and objects.
4. The measure to know how hot or cold an object is known by its temperature.
5. The period between any two events is called time.

E. 1. The size or measurement of an object from its one end to another is called length. The instruments used to measure length are a measuring tape and a metre rule. The standard unit to measure length is metre (m). Other units are millimetre, and centimetre.
2. The amount of liquid which a container can hold is called its capacity. The instrument used to measure capacity is a measuring cylinder. The standard unit of capacity is litre.
3. Mass is the measurement of how heavy and light an object is. It is measured by a beam balance or weighing balance. Its standard unit is kilogram (kg). The small mass is measured in milligram (mg) and gram (g).
4. The thermometer is a simple device made of glass with a bulb at one end and a scale. On getting heat, the mercury expands and climbs up the scaled tube and the reading is noted. In present time, the digital thermometer is used more. It shows the temperature in digital form.

9 Force and Energy

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

B. 1. True; 2. False; 3. True; 4. False; 5. False

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

D. 1. Any push or pull acting on an object is called force.
2. **Gravitational Force or Gravity :** It is the force which attracts objects to the centre of the earth. Ripe fruits from the tree fall down to the earth. This gravity keep all objects, including us, on the ground.
3. **Magnetic Force or Magnetism :** It is the force which attracts metallic objects like those of iron and nickel towards a magnet. It also helps to repel two magnets away from each other.
4. Ability to work is called energy. Energy has many forms. Some such forms are as follows:
   1. Heat energy, 2. Light energy, 3. Mechanical energy, 4. Electrical energy
5. The instruments or tools which make our work easier are called machines. They may be simple or complex. Complex machines are combination of two or more machines. Simple machines use mechanical or muscular force to work.

E. 1. Force is invisible but its effects are visible.
- ❖ A force can make a stationary object move or make it move faster.
- ❖ A force can make a moving object slow down or stop it completely.
- ❖ A force can change the direction of a moving object if it is applied at an angle to the direction of the moving object.
- ❖ A force can change the shape of an object.

2. ❖ We can walk only because friction between our feet and the ground.

- ❖ Friction between the tyres of vehicles and the road makes their movement possible.
- ❖ Friction makes it hard to slide heavy objects like furniture across the floor.
- ❖ Friction produces heat which leads to wear and tear in parts of the machines. That's why they are oiled regularly. This reduces friction.

3. **Lever**
   A lever has a rigid rod arranged in such a way that it can move freely around a fixed point. It has the following three parts.
   Fulcrum : The fixed point around which the rod moves.
   Load : The object on which work is to be performed.
   Effort : The force which needs to be applied on the rod so as to perform the task.
   Based on the position of fulcrum, load and effort, levers are classified into three types :
   First Class Lever
   Second Class Lever
   Third Class Lever :
4. **Wheel and Axle :** A wheel and axle comprise of a wheel rigidly attached to a rod (or axle). When the wheel is rotated, the axle also rotates. The example is the steering wheel of a car.
5. **Pulley :** A pulley comprises of a wheel with a grooved rim and a rope, a chain or a belt running around the groove. The wheel rotates around the stationary axle. The pulley may be of two types : fixed and movable.

10 Air and Water

A. 1. (b); 2. (b); 3. (b); 4. (a); 5. (b)

B. 1. False; 2. True; 3. True; 4. False; 5. True

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

D. 1. The earth is surrounded by an envelope of air which is called atmosphere.
2. Troposphere, Stratosphere, Mesosphere, Thermosphere, Exosphere
3. Air's weight pushes down in all directions and everything. This is called air pressure.
4. Impurities are of two kinds. Soluble impurities, Insoluble impurities
5. The substance which settle down in called sediment. This process of settling down of heavier and insoluble substances is called sedimentation.
   The clear water above the sediment is carefully poured out into another container. This process in which a liquid is carefully poured out the sediment is called decantation.

E. 1. Air's activity weight pushes down in all directions and everything. This is called air pressure.
   Take a juice can, glass and a screwdriver.
   Make a hole in the can with the screwdriver.
   Try to pour the juice into the glass.
   Now, make another hole in the can, away from the first one.
   When we first tried to pour the juice out, it came out very slowly. But after the second hole was made, the juice came out rapidly.
   We observe that as the air entered the can from the second hole, its pressure pushed the juice rapidly out of the can.
2. ❖ Atmosphere contains oxygen which is needed by living beings for breathing.

- ❖ Atmosphere maintains right temperature for the survival of human beings.
- ❖ Ozone layer, present in the atmosphere, protects us from the harmful UV rays from the sun.

3. **Removing Insoluble Substances from Water**
   Insoluble substances can be removed from water mainly by two methods : sedimentation and decantation, and filtration.
   Sedimentation and Decantation
   The process of settling down of heavier and insoluble substances is called sedimentation.
   The clear water above the sediment is carefully poured out into another container. This process in which a liquid is carefully poured out the sediment is called decantation.
   Filtration
   Filtration is the process to separate insoluble solid substances from liquids by passing the mixture through a filter. A filter has many holes in it. It may be a filter paper, a muslin cloth or a layer of sand. The water containing insoluble solid substances is poured into another container through the filter. The clear water is collected in the container and insoluble substance remains behind on the filter. The clear liquid or water is called filtrate and the insoluble solid substance left behind is called the residue.
4. **Removing Soluble Substances from water**
   Soluble substances can be removed from water by evaporation and distillation.
   Evaporation : The process of changing of liquid into its vapour is called evaporation.
   Distillation : In this process, the water is purified by boiling it and condensing its vapours. In this process, we need a heating vessel, a cooling arrangement and a collector. The process can be done on a small scale in a glass vessel called distillation flask. When the impure water is heated, it begins to boil and steam is formed. The steam rises up and enters the cooling arrangement, where it changes back into water. This water is free of impurities which are left behind in the distillation flask. Pure water is collected in the container.
5. Germs from water can be removed by the following processes :
   Boiling : It is one of the most effective methods to purify water. Boiling water for 15 minutes kills microorganisms present in it.
   Chlorination : Germs present in water can also be destroyed by treating the water with chlorine. The process is called chlorination.

11 The Sun, The Earth and The Moon

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

B. 1. False; 2. True; 3. True; 4. False; 5. True

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

D. 1. The solar system is made of the Sun and the celestial bodies which go around it.
2. These celestial bodies include planets, dwarf planets, satellites, comets and asteroids.
3. Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune are two planets of solar system.
4. The gravity of the moon causes rise and fall in sea water on the Earth. The periodic rise and fall of the water level in large water bodies like seas and oceans because of the gravitational pull of the moon are called tides.

5. An artificial satellite is a man-made satellite which goes around the Earth.

E. 1. The Earth is different from all other planets in the solar system. It has water, air, and soil . There is a blanket of air around the Earth, called the atmosphere, which protects it from the harmful ultraviolet rays of the sun. The surface of the Earth has various features such as oceans, rivers, mountains, and valleys.

2. The Sun is the closest star to the Earth. It is a huge ball of hot, burning gases. It has a thin atmosphere called corona, which is sometimes visible during a solar eclipse. It releases a lot of heat and light called solar energy. It is the most important source of light on the Earth.

3. The surface of the moon is rocky, dry and dusty. It is covered with craters, mountains and valleys. These craters were formed when meteorites crashed onto the moon's surface. The moon has no atmosphere. It has gravity but it is only about one-sixth of the Earth.

4. Moon has no light of its own. It shines as it reflects the sun's light. It revolves round the Earth, so we see portions of the moon lit up by the Sun at different times in a month. The changing shapes of the moon are called phases of the moon.

5. As the moon goes round the Earth, the surface of the Earth facing the moon experiences the maximum gravitational pull. As the water rushes up on the side facing the moon, the water level on the shores rises and causes high tides. At the same time, a high tide is also caused in the opposite direction. This is caused due to combined efforts of rotation of the Earth and the gravitational pull of moon on Earth. Between the two high tides, the ocean water level falls causing low tides.

12 Light and Shadow

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

B. 1. False; 2. True; 3. False; 4. True; 5. False

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

D. 1. Objects which have their own light are called luminous objects.

2. The sun is a luminous object or body. Candles, bulbs, CFLs and LEDs are also luminous objects.

3. The objects which do not have their own light are called non-luminous object.

4. Light is a form of energy.

5. The dark spot formed by a translucent or an object when it blocks light is called a shadow.

E. 1. The materials or objects which allow the light to pass through them are called transparent materials. For example, plain glass, cellophane paper, clean water, etc.

2. The materials or objects which allow only some amount of light to pass through them are called translucent materials. For example, coloured glass, butter paper, dirty water, etc.

3. The materials or objects which do not allow any light to pass through them or block it completely are called opaque materials. For examples, mud, wood, brick, steel, mirror, etc.

4. The Earth's shadow has two parts: One part where the sunlight is completely blocked is called the umbra.

5. Where the sunlight is only partially blocked is called penumbra.

13 Natural Disasters

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

B. 1. False; 2. True; 3. True; 4. True; 5. False

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

D. 1. Some natural events are so sudden and powerful that they cause a great damage to life and property. Such events are called natural disasters or calamities.

2. A volcano is a crack or an outlet on the earth's surface, out of which hot molten magma comes out.

3. An earthquake is the sudden movement of a part of the earth's surface. It is caused by severe shock waves which move from under the ground, travel through solid rocks and reach the surface.

4. According to level of activity, volcanoes are of three types : active, dormant and extinct.

5. The strength of earthquake is measured by an instrument called seismograph

E. 1. Planting of trees helps the ground water to be restored and hence reduce the effects of drought.

2. The point deep below the ground where the earthquake begins is called the focus and the point immediately above it on the earth's surface is called the epicenter. After the first big quake, smaller quakes or shocks may occur. These are called aftershocks.

3. Landslides are common in hilly and mountainous areas. They are caused when large rocks, stones and mud slide down a slope during rainy season. It may also be caused due to an earthquake.

4. When a natural disaster strikes a particular region, the first priority is the removal of people from such regions. Helicopters are pressed into service to supply relief in the form of food, clothing, water and medical services. People are airlifted and rehabilitation of displaced persons is done by finding shelter, clothing, jobs and rebuilding their lives.

5. ❖ Be calm and do not panic.
   ❖ Help people and do not spread rumours.
   ❖ Seek help from any available source. Approach relief and rescue workers as soon as possible.
   ❖ Contribute and donate clothes, food and medicines to help others.

14 Our Environment

A. 1. (b); 2. (a); 3. (b); 4. (a); 5. (a)

B. 1. True; 2. False; 3. False; 4. True; 5. True

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

D. 1. Air, water, sunlight, plants and animals all make up our environment.

2. Pollution is damaging the environment.

3. The mixing of harmful substances into the environment due to human activities is called pollution.

4. A greenhouse is a large house, made of glass, which is used to grow crops in cold regions. The sunrays enter this house and the heat is trapped inside.

5. 1. Air pollution, 2. Water pollution, 3. Land pollution, 4. Noise pollution

E. 1. Vehicles, factories and industries are the main source of air pollution. Burning of garbage, both domestic and industrial, also contribute to it. It may cause a number of diseases such as asthama, lung infections, etc.

2. Loudspeakers and vehicles are main sources of noise pollution. Exposure to loud sounds for a long period of time may even cause loss of hearing.

3. A greenhouse is a large house, made of glass, which is used to grow crops in cold regions. The sunrays enter this house and the heat is trapped inside.

   Similarly, greenhouse gases like carbon dioxide, methane and water vapour, etc. trap the heat and do not let it escape. Without the greenhouse effect, the earth would become too cold for life to exist.

4. Global warming is another headache. It is causing Polar icecaps to melt and the sea levels to rise. In the future, it would have a catastrophic effect on plants, animals and other living beings on the coastlines.

   The best way to counter all these problems is conservation of forests and wildlife.

5. Conservation of forests would lead to protection of animals.

   Conservation of Wildlife

   Human passion for hunting has led to many animals becoming extinct. Many more are on the verge of extinction while many others are on the endangered list.

   This has happened due to loss of habitat of the animals and poaching. It also affects the food chains and consequently, the food web. This affects the balance of nature.

Notes