



**Exercises**

**Section-I**

**A. Oral Questions :**

1. Germination is the growth of a plant from a seed.
2. Organic fertilizers are natural fertilizers obtained from cow dung or made from dead and decaying plants.

**B. Fill in the blanks :**

1. **Potato** and **onion** can grow from stems.
2. Ferns, mosses and mushrooms do not bear **flowers**.
3. **Cotyledons** supply food to the baby plant.
4. Seeds of **mangrove** plants are carried away by water.
5. Farmers use chemicals to kill **pests** that harm crops.

**C. Write true or false :**

1. true                      2. true                      3. false                      4. true                      5. false.

**Section-II**

**A. Very short answer questions :**

1. Embryo, seed coat and seed leaves or cotyledons are the parts of a seed.
2. Cotton and dandelion are the two seeds dispersed by wind.
3. Wind, water, animals and explosion are the four agents of dispersed of seeds.
4. Rabi crops are those which grow in winter.

**B. Short answer questions :**

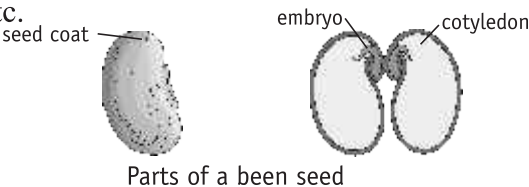
1. Seed germination is a process by which a seed grows into a young plant. A seed germinates only when it gets the right condition for germination such as :
  - the soil should be rich in nutrients.
  - there should be enough light, air and water.
2. Stem cutting is done to grow new plants from the stem.
3. The process by which seeds and fruits are scattered away from the parent plant is called dispersal. Seeds can be dispersed through wind, water, animals and explosion.
4. Some fertilizers are obtained from natural things such as cowdung or made from dead and decaying plants. These are known as organic fertilizers.

**C. Long answer questions :**

1. As humans start their life as an infant, grow into an adult and become old, the life of a plant begins with a small seed which grows into an adult plant,

reproduces and finally dies. This is a continuous process that happens over and over again. Most plants reproduce through seeds, but in some plants, growth of a new plant can also take place from different parts of the plant like root, stem, leaf, etc.

2. Take a soaked bean seed. Carefully, break open the outer brown layer. This is the seed coat. Take a needle and break the seed.



Inside the seed, you will find a baby plant (embryo). The pointed white portion you find in the sprouted seed will give rise to the root.

The yellowish green portion will form the future shoot. The thick yellow fleshy parts are the cotyledons. They supply food to the baby plant.

3. Farmers protect their crops in many ways :
  - Farmers keep their crop safe from animals by making fences around the fields.
  - They use chemicals to kill pests that harm crops. Caterpillars, grasshoppers and locusts are some such pests.
  - When the grain is ripe, the crops are harvested and stored. Farmers keep them safe from moisture and small animals like rats, moles, squirrels, birds and insects.

#### D. Higher Order Thinking Skills (HOTS) :

- All seeds do not grow into new plants because some are eaten by animals and some do not get favourable conditions.

### Unit-II : Animal Life

## 2

## Amazing World of Animals



### Exercises

#### Section-I

##### A. Oral Questions :

1. The place where an animal lives, feeds, and reproduces is called its habitat.
2. Animals migrate to avoid harsh climate, in search of food and for breeding purposes.

##### B. Fill in the blanks :

1. **Amphibians** can live both on land and in water.
2. Amoeba and paramecium breathe through their **body surface**.
3. Humans are the most common examples of **Omnivores**.
4. Birds have **light** and **hollow** bones to aid their flight.
5. The **Siberian Cranes** migrate from Siberia to India during winters.

#### Section-II

##### A. Very short answer questions :

1. Arboreal animals are those who spend most of their life on trees.

2. Respiration is a process in which animals take in oxygen from the air and give out carbon dioxide. Different animals have different organs for respiration.
3. Birds move with the help of their wings.

**B. Short answer questions :**

1. Omnivores are animals that eat both plants and the flesh of other animals.
2. Birds have wings, which help in flying. The forelimbs at front of birds are converted into wings, which have feathers. Their wings are attached to their strong chest muscles. They have light and hollow bones to aid their flight.
3. Most animals usually have four limbs. The two in the front are called forelimbs and the two at the back are called hindlimbs.

**C. Long answer questions :**

1. There are two main type of habitats—water (ocean, freshwater) and land (forest, desert, polar regions, and mountains).  
Animals that live on land are called terrestrial animals. Animals living in water are called aquatic animals. Some animals can live both on land and in water. They are called amphibious animals. Animals that live on trees are known as arboreal animals. Animals that can fly are called aerial animals.

2. The body coverings of animals help them to protect themselves and also to keep cool or warm.

**Fur or hair :** Mammals have fur or hair on their bodies which protects them from extreme cold and keeps them warm. For example, fur coverings of polar bear, tigers, bears and kittens.

**Feathers :** The feathers of birds help them to fly and also protect them against the dust and cold.

**Scales :** Animals like fish and snakes have scales on their skin to protect themselves.

**Shell :** Animals like snail, tortoise, and turtle are protected by a shell. When these animals sense danger, they withdraw their head and feet into the shell.

3. Animals move from one place to another for various purposes. Some animals move to distant places to avoid harsh climate and in search of food. Some animals move at the time of breeding. Animals move both short and long distances. They move by swimming, flying, walking, hopping and burrowing. The mass movement of animals from one place to another is called migration. Some fishes such as salmon, chilsa migrate from oceans or deltas to rivers for laying eggs. Eel fishes on the contrary, live in rivers but migrate to the oceans for laying eggs. After laying eggs fishes die and their young ones migrate to the ocean water and live there like their parents.

**D. Higher Order Thinking Skills (HOTS) :**

- This is so because it cannot take oxygen directly from air. It can only take oxygen dissolved in water.



**Exercises**

**Section-I**

**A. Oral Questions :**

1. Circulatory system transport nutrients, wastes and gases in blood.
2. Tendons are strong strips of tissues which join muscles to bones.

**B. Fill in the blanks :**

1. The framework of bones in our body is known as the **skeleton**.
2. The **Vertebral column** protects the delicate spinal cord.
3. Hinge joint allows only **back** and **forth** to produce movement.
4. Muscles can be **tightened** and **loosened** to produce movement.
5. **Cardiac** muscles are not attached to any bone.

**C. Match the following :**

<b>Joint</b>	<b>Movement</b>
1. Ball and socket joint	• <b>Allows circular movement</b>
2. Pivot joint	• <b>Allows rotatory movement</b>
3. Sliding joint	• <b>Allows movement of bones over each other</b>
4. Hinge joint	• <b>Allows movement of bones through 180°</b>

**Section-II**

**A. Very short answer questions :**

1. A joint is a place where two bones meet.
2. Hinge joint.
3. Skeleton gives shape and support to our body.

**B. Short answer questions :**

1. Spine extends from the skull to the pelvis. It holds our head and body upright and allows us to bend, turn and twist our body.
2. There are three different types of muscles :
  - (i) **Voluntary muscles** : Muscles that are joined to the bones are called voluntary muscles. They are under our control.
  - (ii) **Involuntary muscles** : These muscles are not under our control. They work automatically.
  - (iii) **Cardiac muscles** : The muscles of the heart are called the Cardiac muscles. These muscles also work automatically.
3. In ball and socket joint joint, the ball like end of one bone fits into a cup-like cavity (socket) of the other bone. It allows movement in all directions. Shoulder and hip joints are of this type.



### C. Long answer questions :

1. The main organ systems in our body are given in the table below :

System	Major parts involved	Functions
Circulatory	Heart, blood vessels, blood, lymph nodes	Transport nutrients, wastes and gases in blood
Digestive	Mouth, throat, oesophagus, stomach, liver, pancreas, small and large intestines	Extracts and absorbs nutrients from food; maintains the body's water-balance
Excretory	Kidneys, urinary bladder, ureters, urethra, skin, lungs	Removes wastes from blood; regulates concentration of body fluids
Muscular	Skeletal, smooth and cardiac muscle tissues	Movement of limbs, heart, digestion of food and provides structure and support to the body
Nervous	Brain, spinal cord, nerves, sense organs	Regulates behaviour and other organ systems; controls sensory and motor functions
Reproductive	Testes, penis (in males); Ovaries, uterus (in females)	Produces gametes and also responsible for producing babies
Respiratory	Lungs, nose, mouth, trachea	Breathing and release of energy from food
Skeletal	Bones and joints In this chapter, you will study the skeletal system and nervous system in detail.	Gives shape, structure and support to the body.

2. The different types of movable joints in our body are as follows :
- Hinge Joint** : This joint is like a hinge in a door. It allows only back and forth movement. Elbows, knees, fingers and toes have this type of joint.
- Ball and Socket Joint** : In this joint, the ball like end of one bone fits into a cup-like cavity (socket) of the other bone. It allows movement in all directions. Shoulder and hip joints are of this type.
- Gliding Joint** : This joint is found in the bones of wrists and ankles. It allows these bones to slide against each other in a gliding motion.
- Pivot Joint** : This joint allows rotation only. In this joint, the rounded surface of one bone fits into a ring formed by the other bone. The joint between the neck and the head is a pivot joint.
3. Muscles work with the help of strong bands of fibres called tendons. Muscles pull the bones and thus produce movement. Muscles can contract and relax. When the muscles contract or shorten, the bones come closer. Most of the muscles work in pairs. When you raise your lower

arm, bicep muscles in your upper arm contract and pull the bones in the lower arm upwards. At the same time, the tricep muscles, relax. When you strengthen the lower arm, the reverse happens. The biceps relax and the tricep contract.

**D. Higher Order Thinking Skills (HOTS) :**

- No, that would not be better. This is so because we need voluntary muscles in the legs to run, walk or stop at our own will.

**4**

## The Nervous System



### Exercises

#### Section-I

**A. Oral Questions :**

1. Stimulus is something that produces a reaction.
2. The nervous system comprises of the brain, the spinal cord and a network of nerves.

**B. Fill in the blanks :**

1. Our **brain** is the main control centre of all our actions.
2. The medulla connects the **brain** to the **spinal cord**.
3. **Sensory** nerves are mostly connected to the brain through the spinal cord.
4. Reflex actions are controlled by the **spinal cord**.
5. The skin is the organ of **touch** and **sensitivity**.

**C. Write true or false :**

1. false                      2. true                      3. false                      4. true                      5. true.

#### Section-II

**A. Very short answer questions :**

1. Cerebrum forms the largest part of the brain.
2. Cerebellum helps in balancing our body.
3. Sensory nerves carry messages from the sense organs to the brain.
4. Blinking of the eye and watering of mouth are two examples of reflex actions.

**B. Short answer questions :**

1. The medulla is a stem-shaped structure. It connects the brain to the spinal cord. The medulla controls all our involuntary activities such as breathing, heartbeat and blood circulation.
2. The brain is the main control and coordination centre of the human body. It coordinates all the actions and reactions of the body by receiving different messages through the nerves to different parts of the body to respond as required. The brain helps a person to think, remember, feel and control body movements.
3. The nervous system is the control centre of our body. The brain, the spinal cord and the network of nerves form the nervous system.
4. The sensory nerve sends signals from the sense organs to the brain or the spinal cord. The motor nerve carries 'orders' from the brain or spinal cord

to the muscles and glands and tell them what should they do.

**C. Long answer questions :**

1. The work of all the three parts of the brain is as follows :

**Cerebrum :** It is the topmost and the largest part of the human brain. It receives message from the sense organs and decides what the body should do. It is responsible for learning, memory, intelligence and logic. It also controls our voice.

**Cerebellum :** The cerebellum or the small brain is situated at the back of the head. It controls and coordinates the movement of the voluntary muscles. It helps to balance the body while walking, running, cycling and even helps to keep you in an upright position.

**Medulla Oblongata (or Medulla) :** The medulla is a stem-shaped structure. It connects the brain to the spinal cord. The medulla controls all our involuntary activities such as breathing, heartbeat and blood circulation. The medulla works even while we are asleep.

2. There are three kinds of nerves.

**Sensory nerves :** These nerves send signals from the sense organs to the brain or the spinal cord. They are mostly connected to the brain through the spinal cord.

**Motor nerves :** These nerves link the muscles and the glands with the brain and the spinal cord. The motor nerves carry 'orders' from the brain or spinal cord to the muscles and the glands and tell them what should they do.

**Mixed nerves :** These nerves send signals from the sense organs to the brain as well as carry messages from the brain to the sense organs.

3. Our eyes help us to see. Each eye consists of an eyeball, set in a hollow socket. The eyeball is filled with a fluid that protects the eye from shocks and minor jerks. The eyelids protect the eyeball from dust. The cornea is in the front of the eye. It is a circular, transparent area. The coloured part is the iris. The iris has an opening in the centre called the pupil. Light enters the eye through the pupil. At the back of the eye is the retina. Cells in the retina are sensitive to light and colour. The optic nerve connects the eye to the brain. Messages from the retina pass to the brain through this optic nerve.

**D. Higher Order Thinking Skills (HOTS) :**

- If the brain of a person gets damaged in an accident, he would not be able to live his life normally.

5

Food and Health



**Exercises**

**Section-I**

**A. Oral Questions :**

1. Deficiency of vitamin D causes rickets.
2. Germs are harmful organisms.

**B. Fill in the blanks :**

1. **Food** provide the body with the energy it needs for everything.
2. Fats give us more energy than **carbohydrates**.
3. We need **vitamins** and **minerals** in small quantities.
4. **Non-communicable** diseases are also called deficiency diseases.
5. Exercise keeps us **healthy** and **fit**.

**Section-II**

**A. Very short answer questions :**

1. Nutrients are those materials present in the food which help us to remain healthy.
2. Jaggery and iodized salt are two food rich in iodine.
3. The deficiency of vitamin D is the main cause of rickets.
4. We should eat a balanced diet to keep ourselves healthy.

**B. Short answer questions :**

1. We should include carbohydrates in our diet because they provide us energy to do all kinds of work.
2. A diet that includes all the nutrients in their right proportion is called a balanced diet.
3. Deficiency of vitamin D causes rickets in children and osteomalacia in adults. In this the affected persons bones become soft and they bend. This can be prevented by taking foods rich in butter, ghee, groundnut, oil, eggs, meat, etc.
4. The condition, when your body or a part of it, does not function properly, is called a disease.

**C. Long answer questions :**

1. The diseases which can be transmitted from one person to another through a living agents are called communicable diseases. Communicable diseases can be caused by living agents like viruses, bacteria, protozoa, fungi, insects, etc.

Some examples are given below :

- (i) **Diseases caused by viruses** : AIDS, rabies, mumps, measles, etc.
  - (ii) **Diseases caused by bacteria** : Typhoid, TB, tetanus, cholera, leprosy etc.
  - (iii) **Diseases caused by fungi** : Skin infections.
  - (iv) **Diseases caused by protozoans** : Malaria, sleeping sickness.
  - (v) **Diseases caused by insects** : Housefly-typhoid fever, cholera, Rat flea-plague.
2. For preventing non-communicable diseases we can take following type of preventive measures :
    - (i) **Night blindness** : Should take diet rich in green leafy vegetables, mango, milk, sweet potato, butter, fish, etc.
    - (ii) **Beri-beri** : Should take a diet rich in unpolished rice, fish, meat, and cereals
    - (iii) **Scurvy** : Should take lots of green vegetables, tomatoes, and citrus

- fruits like oranges.
- (iv) **Rickets** : Should take a diet rich in milk, fish, butter, and eggs.
  - (v) **Anaemia** : Should take a diet rich in green leafy vegetables like spinach, and fruits like apples and bananas.
  - (vi) **Osteoporosis** : Should take a diet rich in milk and green leafy vegetables.
  - (vii) **Goitre** : Should take a diet rich in fish and iodised salt.
3. Hygiene is the maintenance of health and cleanliness. Some habits to maintain good hygiene are as follows :
- Take a bath daily using soap to wash away dirt and germs.
  - Wash hands thoroughly before eating anything.
  - Wash hands after going to the toilet.
  - Trim fingernails and keep them short and clean.
  - Rinse mouth well after every meal and brush teeth at least twice a day.
  - Keep combs, toothbrushes, handkerchief, undergarments, socks and other such personal items clean.

#### D. Higher Order Thinking Skills (HOTS) :

- This is so because more fat rich food can make us obese as fats have a tendency to accumulate in the body.

## 6

## Safety and First Aid



### Exercises

#### Section-I

##### A. Oral Questions :

1. Our carelessness and ignorance of safety rules can cause an accident.
2. A fire extinguisher is a simple device to put the fire out. It mostly uses carbon dioxide for this purpose.

##### B. Fill in the blanks :

1. Accidents often cause **injury** to people.
2. **First aid** can save the life of the victim.
3. Do not try to prick any **blisters**.
4. The poison ejected by the **snake affects the heart** and the **nervous system**.
5. A **sprain** is a twist in the ankle or the wrist.

#### Section-II

##### A. Very short answer questions :

1. We can avoid accidents by obeying safety rules.
2. First aid is the medical help given to the injured person before the doctor arrives.
3. While giving first aid one should always remain calm.
4. Sling is a loop or band placed round a fractured hand or arm to support or lift it.

## B. Short answer questions :

1. First aid is very helpful for us. It can help us to save a person's life in case of an accident.
2. Phenyl, detergent, rat poison, medicines, cosmetics, creams, lotions are some household objects containing poison.
3. The safety rules for fire safety are as follows :
  - One must be very careful while handling fire.
  - Electrical appliances and wiring should be checked regularly for faults or breaks in the plastic covering of the wires.

## C. Long answer questions :

1. A fracture is a broken bone which requires immediate medical attention. It can take place due to a fall or a twist. A fracture is always very painful and take some time to heal. A sprain occurs when a part of your body turns or twisted and swells up. In a sprain, tissues around a joint get injured and swell up. Sprains can be very painful.
2. In case of an animal bite wash the wound with soap and water and put an antiseptic cream. The patient should be taken to a doctor. In case of snake bite a tight bandage should be tied between the wound and the heart to slow down the spread of the poison by reducing the flow of blood. The patient should be rushed to a doctor.
3. Common causes of fire are as follows :
  - Carelessness while handling burning matchsticks, candles, etc.
  - Electrical faults
  - Accidents while cooking and gas leaks in the kitchen

## D. Higher Order Thinking Skills (HOTS) :

- This is so because water being heavier than petrol settles down and increases the intensity of fire.

## Unit-IV : Nature, Environment and the Universe

# 7

## Air and Water



### Exercises

#### Section-I

##### A. Oral Questions :

1. Air is a mixture of gases. It is present everywhere.
2. Nitrogen, oxygen, carbon dioxide, argon, ozone, helium are the major gases present in the air.

##### B. Fill in the blanks :

1. The Earth is wrapped in a layer of **air**.
2. Air has **weight** and exerts **pressure**.
3. **Water** is called the universal solvent.
4. **Sedimentation and decantation** and **filtration** are the two methods of separating soluble impurities.
5. We can also get purified water from **electrical water purifier**.



## Section-II

### A. Very short answer questions :

1. Atmosphere is the blanket of air surrounding the Earth.
2. The exosphere is the uppermost limit of our atmosphere.
3. While drinking through a straw we make use of air pressure.
4. Filtration is the process of separating insoluble impurities in a liquid using a filter paper.

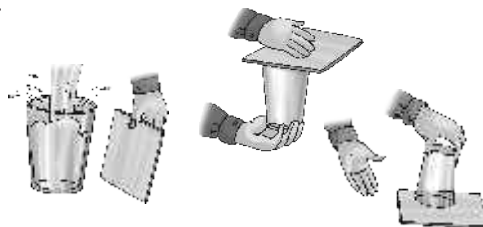
### B. Short answer questions :

1. Air is a mixture of many gases. It contains about 78 per cent nitrogen, 21 per cent oxygen and the remaining, 1 per cent other gases like carbon dioxide, argon, ozone, neon, etc. It also contains dust, smoke and water vapours which vary according to the environment.
2. The air in the atmosphere is made up of a number of gases. These gases press down on the Earth's surface, exerting force that we call air pressure.
3. When a mixture of water and insoluble solid impurities is left to stand undisturbed, the heavy impurities settle down at the bottom. This is called sedimentation.

### C. Long answer questions :

1. The different properties of air are :
  - (i) **Air is needed for burning** : Air is a supporter of fire. This is so because of oxygen present in it.
  - (ii) **Air has weight** : Air like all other things that occupy space has weight.
  - (iii) **Air takes space** : Air is matter. Since all matter take up space, air also takes up space.
  - (iv) **Air exerts pressure** : We can perform the following activity to show that air exerts pressure.

Take a glass and fill it with water up to the brim. Make sure that there are no air bubbles. Take a thick, stiff piece of cardboard and put it over the glass. Place your hand over the card and quickly



turn the glass upside down. Now, slowly remove your hand.

What do you observe?

You will observe that the water does not flow out because air exerts pressure on the card from below and keeps it in place. The upward pressure exerted by air is more than the downward pressure exerted by water. But if there were air bubbles in the glass, the water would have exerted a greater downward pressure. The card then would have fallen off and water would have come rushing out.

2. Evaporation is a method in which the solution containing soluble impurities is heated. The water evaporates and leaves the impurities



behind. By this method we get the solute (impurities) and lose the solvent (water).

**D. Higher Order Thinking Skills (HOTS) :**

- The swimming pool water is chlorinated to remove the impurities present in it.

**8**

**Moon and Shadow**



**Exercises**

**Section-I**

**A. Oral Questions :**

1. The moon is 3,84,400 km away from the Earth.
2. An eclipse is a shadow of the Earth or the moon produced because of sunlight.

**B. Fill in the blanks :**

1. The moon reflects the light of the **Sun** falling on it.
2. The moon does not have **heat** and **light** like the Earth.
3. Apollo 11 was launched from the **Kennedy Space Center**.
4. An **eclipse** is a shadow.
5. **Spring** tides are the highest tides.

**Section-II**

**A. Very short answer questions :**

1. Satellites are the small bodies that revolve around a planet.
2. The moon takes  $27 \frac{1}{3}$  days to complete one revolution around the Earth.
3. Tides are periodic rise and fall of large bodies of water caused by the gravity of the moon and the Sun.

**B. Short answer questions :**

1. The surface of the moon is made up of rocks, mountains and plains. Its surface has big, round and hollow craters. These are formed due to the hitting of big rocks from space on its surface called meteorites.
2. When viewed from the Earth, the moon looks different at different times. These varying appearances are called phases. Sometimes the moon looks like a full circle. At other times it appears as only a thin slice or looks completely dark.
3. During a solar eclipse the Sun is hidden from our view. A solar eclipse occurs when the moon comes between the Sun and the Earth. The moon casts its shadow on a part of the Earth by blocking the light of the Sun. People living in this area of darkness cannot see the Sun and so experience a solar eclipse.
4. When water in the oceans rises up due to the gravitational force of the moon it is termed as high tide.

**C. Long answer questions :**

1. The moon does not have its own light. It reflects the light of the Sun.

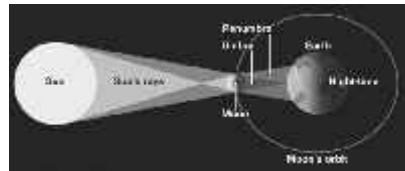
When the moon passes between the Earth and the Sun, sunlight falls on the part turned away from us and so the moon is not visible to us.

This happens on the new moon night. Every night, the illuminated part grows in size till we see the full moon on the 15th day. From the next day, the illuminated part decreases in size, and becomes completely invisible on the 15th day. This is known as the new moon day.



Phases of the moon

2. When the water level rises, it is called high tide and when the water level falls, it is called low tide. It takes about six hours for the rising water to reach high tide. It takes another six hours for the falling water to reach low tide.
3. The solar eclipse occurs during day. In a solar eclipse, the moon moves between the Earth and the Sun. The sky slowly gets dark as the moon moves in front of the Sun. When this happens, the moon blocks the Sun's light from reaching the surface of the Earth. When the moon hides the whole bright surface of the Sun, it is called a total solar eclipse and when the moon partially hides the Sun, it is called a partial solar eclipse. The solar eclipse lasts for a few minutes.



Lunar eclipse

**D. Higher Order Thinking Skills (HOTS) :**

- Solar eclipse.

**9**

**Natural Calamities**



**Exercises**

**Section-I**

**A. Oral Questions :**

1. Seismogram is a pattern or graph obtained on a seismograph.
2. Tsunami is a tidal wave that is caused by an undersea earthquake or by a severe hurricane or cyclone.

**B. Fill in the blanks :**

1. The **inner** core of the Earth is very hot and molten.
2. Richter scale was invented by **Charles Richter**.
3. **Tsunamis** can cover the land surrounding the water body.
4. **Mount Kilomanjaro** in **Africa** is an extinct volcano.
5. During a drought there is a shortage of **drinking water**.

**Section-II**

**A. Very short answer questions :**

1. Movement of the plates of upper crust is one of the cause of an earthquake.

2. When the water from rivers spill over their banks on to the surrounding areas, it results in floods.
3. We should prevent water from stagnating because it encourages the breeding of insects.

**B. Short answer questions :**

1. Natural calamity is an event caused by the forces of nature that often adversely affect the human life and environment.
2.
  - When an earthquake is felt, come out of the house or school building immediately and rush towards an open area.
  - Avoid standing near tall buildings, trees, poles and electric wires.
3. Active volcanoes are those that have erupted in the last 10,000 years and can erupt again.

**C. Long answer questions :**

1. The Earth's crust looks like a single piece of rock. But actually it is made of a number of big and small pieces called tectonic plates. These plates float on the mantle, the molten magma layer of the Earth. The plates keep moving slowly past each other.

As these plates move slowly, they slide smoothly against each other, they bump into each other or move away from each other.

Earthquakes takes place when the tectonic plates move away from each other. The edges of these plates are rough. These edges get stuck while rest of the plate keeps moving. Finally, when the plate moves free enough, the edges get released. It forms waves like repples in a pond. These waves are called seismic waves. It sends shivers through the ground making it quiver. This causes on earthquake.

2. Tidal or storm waves are also known as Tsunamis (pronounced sun-nami). A tsunami is caused by an undersea earthquake or by a severe hurricane or cyclone. Storm waves from the sea come rolling towards the shore. They cause destruction on the seashore within seconds.

Tidal waves as high as 15 metres have been recorded. These giant waves travel at a speed of 800 km/h. This results in destruction of life and property in the area.

3. The consequences of natural disasters are devastating for all living organisms. But human beings are affected most by these calamities.

(i) **Loss of life and injury :** Millions of people and animals die every year due to natural calamities. Some people suffer from serious injuries which make them permanently handicapped.

(i) **Loss of property :** Natural disasters cause damage and destruction of crops, houses, roads, dams, monuments and many other things. Sometimes, natural disasters wipe out entire settlements. People who survive the disasters are left homeless. Business and properties worth hundreds of crores are lost every year due to natural calamities.

- (iii) **Emotional Trauma** : The survivors suffer from emotional trauma due to loss of their loved ones, belongings and property. They feel helpless and take long time to get back to their normal life.
- (iv) **Disruption of services** : Transport, electricity, water supply and other facilities of the affected area are destroyed. People in these areas are cut off from the rest of the world because of the damage to these facilities. It becomes even more difficult for them to get help from different quarters in the absence of these facilities.

**D. Higher Order Thinking Skills (HOTS) :**

- When there is a chance of volcanic eruption, we should immediately move from that area.

**10**

## Our Environment



### Exercises

#### Section-I

**A. Oral Questions :**

1. Addition of any unwanted and harmful substances to the environment changes its quality is called pollution.
2. Air becomes dirty when smoke, dust particles and other harmful gases such as sulphur dioxide and carbon monoxide are added to it. This air is called polluted air.

**B. Fill in the blanks :**

1. A change in any component of the **environment** can affect normal life.
2. **Oil spills** from ships also causes water pollution.
3. Excessive noise can cause **noise** pollution.
4. The area of landfill is used as a **park** or **storehouse**.
5. The **organic** fertilizers are better than **chemical** fertilizers.

#### Section-I

**A. Very short answer questions :**

1. Everything that surrounds us forms our environment.
2. Any undesirable change that takes place in the air and brings down the quality of air is called air pollution.
3. When excessive noise is produced, it causes noise pollution.
4. Compost, biogas plants, landfills, incineration and vermi-composting are some effective methods of waste disposal.

**B. Short answer questions :**

1. Air became polluted when smoke from fire and burning of fuels is released. Burning of wood, coal, petrol, and diesel releases smoke and fumes in the air. Smoke from automobiles, factories, power, plants and waste incinerators causes air pollution.
2. The main sources of land/soil pollution are— solid wastes, refuse from mines, forests and agriculture.

3. Some sources of noise pollution are machines in factories, vehicles, loudspeakers and entertainment gadgets, such as television and radios.
4. Dead leaves fall from trees, rot and slowly mix with the soil. Most natural things rot and break down in this manner. The Sun, rain, air and small living things like insects, worms and tiny microbes work on these natural things and tiny microbes work on these natural things and cause them to mix with the soil. This is called composting.

**C. Long answer questions :**

1. Water pollution is the contamination of any water body from chemicals or bacteria that degrades the quality of water and its purity. It has many causes.

The chemical wastes that are produced in the factories are directly thrown into the water bodies. These wastes make the water unfit for human consumption. It affects plants and other animals.

Bathing of animals, washing clothes, throwing garbage or household wastes in the water bodies also pollute water. Oil spill from ship also causes water pollution.

2. Landfills are very useful. They help us in getting rid of waste materials. By using landfills we collect all our solid wastes at one place. This has an advantage for us. It also prevent the unhygienic conditions.

3. **Benefits of Composting**

- (i) Composting ensures that the waste that is produced in the kitchens is not carelessly thrown and left to rot.
- (ii) Apart from being clean, cheap and safe, composting can significantly reduce the amount of disposal garbage.
- (iii) The organic fertilizers are better than chemical fertilizers, especially when used for vegetables.

**D. Higher Order Thinking Skills (HOTS) :**

- Factories should be separated from houses by many trees because trees are natural noise absorbers.

**11**

## Rocks, Minerals and Soil



### Exercises

#### Section-I

**A. Oral Questions :**

1. Rocks are the solid mineral substances found on the surface of the Earth.
2. Gemstones are beautiful cut and polished stones.

**B. Fill in the blanks :**

1. Rocks are the solid **mineral** substances found on the surface.
2. Igneous rocks are formed from **lava**.
3. **Sand** is used in glass and ceramic industries.
4. Basalt is made up of **feldspar** and **pyroxene**.

5. **Wind** and **water** are the main agents of weathering.

## Section-II

### A. Very short answer questions :

1. The rocks are hundreds of million years old.
2. Lava is the magma that reaches the surface of the Earth by volcanic eruption.
3. Topsoil, subsoil and bedrock are the three layers of the soil.
4. Soil is made up of tiny pieces of rocks and remains of plants and animals.

### B. Short answer questions :

1. Granite is generally used for making statues and flooring of the houses.
2. Wind and water carry small bits of rocks into lakes and oceans. The bits of rocks that settle on the ocean floor are known as sediments. Sedimentary rocks are formed when layers of sediments pile up over many thousands of years and harden.
3. Igneous and sedimentary rocks sometimes change because of great heat and pressure over them. These rocks are called metamorphic rocks.

### C. Long answer questions :

1. When rocks are melted at high temperatures inside the Earth, magma is formed. When it reaches the surface of the Earth by volcanic eruption it is called lava. Igneous rocks are formed from lava, which comes out from deep inside the Earth through volcanoes.
2. Minerals are chemical substances. They are found naturally on the Earth. Rocks may be formed by one type of mineral such as gold, or a mixture of many minerals such as basalt.

Magnesium, mica, calcite, aluminium, copper, iron, and silver are all minerals. Minerals are used in making jewellery, as fuel, and for manufacturing construction materials for buildings.

3. Soil is made of three layers :

**Top Soil :** It is the topmost layer of soil and has sand and clay. It is rich in humus. It has many nutrients and holds water. It also contains air.

**Sub Soil :** This layer contains pieces of rock and less humus. It has less water and air than topsoil.

**Bed Rock :** This layer (also called parent rock) is mainly made up of large pieces of rock. Bedrock supports the upper layers of the soil.

### D. Higher Order Thinking Skills (HOTS) :

- Pumice rocks can float on water because it is formed from lava that is frothy with a lot of air within it.



Soil Profile





### Exercises

#### Section-I

##### A. Oral Questions :

1. All things that occupy space and have weight are called matter.
2. In solids, there is a strong force of attraction between the molecules. The molecules in solids are closely packed together.

##### B. Fill in the blanks :

1. All **non-living** and **living** things are made of matter.
2. Water and carbon dioxide are **compounds**.
3. **Solids** are hard and have a clear shape.
4. Liquids flow from a **higher** level to a **lower** level.
5. **Heating** a substance can make it expand.

#### Section-II

##### A. Very short answer questions :

1. Atoms are called the building blocks of matter.
2. Carbon, oxygen, nitrogen, hydrogen etc. are elements.
3. Objects which are found hard or firm and have a clean shape, are called solids.
4. Gases do not have any shape or size.

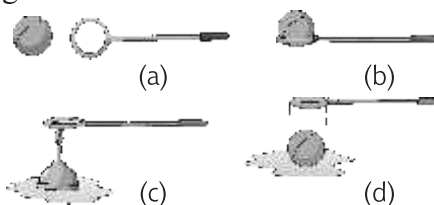
##### B. Short answer questions :

1. In liquids particles are arranged loosely. They have some space in between them. The particles in gases are very loosely packed. They move freely in all directions and fill the entire space available to them.
2.
  - Solids do not flow as liquids can.
  - Solids have a definite, shape, size and volume.
3. When a material is cooled, the particles slow down. They take less space as their movements has decreased. This is why the material contracts.
4. A tight metal lid of a glass jar can be opened when dipped in warm water. The heat of the water causes the lid to expand a little and open out easily.

##### C. Long answer questions :

1. To show that matter expands on heating

Take a rubber ball and an iron ring as shown in figure (a). The size of the ball should be slightly more than the ring so that it could not pass through the ring. See figure (b).



Now heat the ring without ball for few minutes. See figure (c).

Now, try to pass out the ball from the ring again. What do you notice? The ball which was initially tight in the ring now passes easily through the ring. See figure (d).



**Conclusion :** Matter expands on heating.

2. In liquids, the force of attraction between the molecules is less than that in solids. There is some space between the molecules. This allows some movement of the molecules. That is why liquids do not have a definite shape. They flow from a higher level to a lower level when left in the open or take the shape of the vessel in which they are kept. The space occupied by the molecules remains the same. So, liquids have a definite volume.

**D. Higher Order Thinking Skills (HOTS) :**

- No, the level of water will remain same. This is so because the molecules of water have space in between them. The molecules of salt will occupy that space.

**Unit-IV : Force and Some Simple Machines**

**13**

**Force and Energy**



**Exercises**

**Section-I**

**A. Oral Questions :**

1. A push or pull acting on an object is called force.
2. Simple machines help us change the direction of the force applied and also overcome a larger force using a smaller force.

**B. Fill in the blanks :**

1. A force can stop a **moving** object.
2. **Friction** opposes the motion.
3. Mechanical energy can be either **potential** or **kinetic**.
4. The **temperature** of an object show how much thermal energy it has.
5. A **Pulley** is a simple machine used to lift heavy objects.

**C. Match the following :**

- |                      |                             |
|----------------------|-----------------------------|
| 1. Third-Class lever | • <b>Forceps</b>            |
| 2. First-Class lever | • <b>A pair of scissors</b> |
| 3. Inclined plane    | • <b>A sloping plane</b>    |
| 4. Wedge             | • <b>Knife</b>              |

**Section-II**

**A. Very short answer questions :**

1. Magnetic force is the force exerted by the magnet in the form of push or pull towards other magnets or metals like iron, nickel and cobalt.
2. When things are rubbed with each other, they become charged as a force of attraction is produced. This force is called electrostatic force.
3. Lightning is an example of electrical energy in nature.
4. A lever is a simple machine which consists of a rigid rod and can turn about a fixed point called the fulcrum (F).

**B. Short answer questions :**

1. Gravitational force, magnetic force, electrostatic force and frictional

force are the different types of forces.

2. An inclined plane is a slope used to do any work.
3. A pulley is a simple machine used to lift heavy objects.

**C. Long answer questions :**

1. A force can be used to :
  - move a stationary object.
  - stop a moving object.
  - make a moving object move faster.
  - slow down a moving object.
  - change the direction of a moving object.
  - change the shape and size of an object.
2. The force that tries to stop the movement of objects across a surface is called frictional force. It is important for motion in the following ways :
  - (i) Friction between your foot and ground help you to move on the ground.
  - (ii) It helps to make the movement of vehicles possible on the road.
3.
  - a. **Solar energy** : The Sun is the main source of light and heat. The energy we get from the Sun is called solar energy. It is the most valuable natural source of energy. Solar energy is used to dry up our clothes and other things. Apart from this, solar panels absorb the energy of the Sun to provide heat for cooking.
  - b. **Wind energy** : Wind energy is the power of the moving air (wind) utilized with the help of windmills, which are used to generate electrical energy. Wind energy is available in abundance. Wind energy can be used to move the blades of a wind mill. Wind power is the conversion of wind energy into a useful form, such as electricity, using wind turbines.

**D. Higher Order Thinking Skills (HOTS) :**

- This is because screw grooves it can hold things for a very long period of time.



