

New Science Power 5

Plant Reproduction

1

ANSWERS

Checkpoint 1

Name two each of the following:

- | | | |
|--|---------------|---------------|
| 1. Monocotyledonous seeds | <u>Rice</u> | <u>Wheat</u> |
| 2. Dicotyledonous seeds | <u>Bean</u> | <u>Pea</u> |
| 3. Seeds dispersed by wind | <u>Madar</u> | <u>Cotton</u> |
| 4. Seeds dispersed by explosive method | <u>Balsam</u> | <u>Castor</u> |

Checkpoint 2

Answer in one word.

- | | |
|--|-----------------------------|
| 1. Plants which do not bear seeds. | <u>Non-flowering plants</u> |
| 2. Moulds and mushrooms produce this for reproduction. | <u>Spores</u> |
| 3. Carrot stores food in this plant part. | <u>Root</u> |
| 4. Rose plant is grown from this part of plant. | <u>Stem</u> |

Checkpoint 3

Fill in the blanks.

1. Growing crops in the fields by farmers is called cultivation.
2. Kharif crops are grown in summer season.
3. Fertilisers are obtained from chemical substances.
4. Watering the plants is called irrigation.

EXERCISES

A. Fill in the blanks.

1. Roots , stems , buds and leaves are vegetative parts of a plant.
2. A seed is protected by a seed coat .

- Water, air and warmth are needed for seed germination.
- The small shoot emerging from a germinating seed is called a plumule.
- Plants which are grown in the fields are called crops.

B. Tick (✓) the correct answer.

- The small root emerging from a germinating seed is called a
 (a) plumule (b) seed coat (c) cotyledon (d) radicle
- Which of these is not a dicotyledonous seed?
 (a) Bean (b) Maize (c) Rajma (d) Pea
- The seed with a small root and a small shoot is called a
 (a) radicle (b) plumule
 (c) seedling (d) cotyledon
- Which of these is a rabi crop?
 (a) Wheat (b) Rice (c) Maize (d) Jowar
- Which of these grow from spores?
 (a) Mushrooms (b) Potato
 (c) Carrot (d) Sweet potato

C. Give one word for the following.

- Structure formed by flowering plants to produce new plants Seed
- An agent that helps disperse light-weight seeds Air
- A method of growing plants from their parts other than seeds Vegetative propagation
- Planting of healthy seeds Sowing
- Watering of crops in the fields Irrigation
- Cutting down of a ripe crop Harvesting

D. Give two examples of each of the following.

- | | | |
|---|--------------------|------------------|
| 1. Plants that reproduce by seeds | <u>Mango</u> | <u>Tomato</u> |
| 2. Plants with two cotyledons | <u>Bean</u> | <u>Pea</u> |
| 3. Seeds which are dispersed by water | <u>Lotus</u> | <u>Coconut</u> |
| 4. Plants that disperse seeds by explosive method | <u>Pea</u> | <u>Castor</u> |
| 5. Plants which reproduce by spores | <u>Mushroom</u> | <u>Mould</u> |
| 6. Plants which reproduce by roots | <u>Carrot</u> | <u>Radish</u> |
| 7. Plants which reproduce by stem cuttings | <u>Rose</u> | <u>Sugarcane</u> |
| 8. Plants that reproduce by leaves | <u>Bryophyllum</u> | <u>Begonia</u> |
| 9. Rabi crops | <u>Wheat</u> | <u>Barley</u> |
| 10. Kharif crops | <u>Rice</u> | <u>Maize</u> |

E. Answer the following questions.

- What are the different ways by which reproduction takes place in plants?**

Ans. In plants, reproduction takes place by seeds, spores and plant parts such as roots, stem, buds and leaves.

2. What is the function of a cotyledon?

Ans. A cotyledon stores food for the baby plant inside the seed.

3. How do animals help in seed dispersal?

Ans. Animals eat fruits and throw their seeds here and there. Some seeds get hooked to fur, skin of animals, clothes of people and are carried away to far-off places. In this manner, they help in the dispersal of seeds.

4. What are the features of the seeds dispersed by (a) wind (b) water?

Ans. (a) The seeds dispersed by wind are light and hairy so that they are easily carried away by the wind.

(b) The seeds dispersed by water remain in their fruits. These fruits are either spongy or have fibrous covering which makes them light so that they are carried away by flowing water over long distances.

5. What is germination of seeds?

Ans. The growing of seeds into new plants is called germination of a seeds.

6. What are spores?

Ans. Spores are small, spherical and light structures which help in reproduction. They are found in fungi such as mushrooms and moulds.

7. What is weeding?

Ans. The removal of weeds from the crop is called weeding.

8. What is harvesting?

Ans. Cutting down of a ripe crop is called harvesting.

9. Why are grains stored in godowns?

Ans. Grains are stored in godowns to protect them from getting spoilt by moisture or eaten by rats, birds or insects.

Think Zone

1. Why are seeds usually produced by flowering plants in large numbers?

Ans. Flowering plants usually produce large number of seeds because not all seeds but only those which get suitable conditions for growth are able to grow into new plants.

2. Why do cotyledons fall off after the plants grow?

Ans. Cotyledons provide food to the growing seedling. When all the food stored in them is used up and seedling grows into a new plant, they fall off.

3. Amit grows vegetables in his field. He prefers to use manure instead of chemical fertilisers. Is he right in doing so?

Ans. Yes. Manures are made naturally, whereas chemical fertilisers are prepared from chemicals in factories. Excessive use of fertilisers can make the soil less fertile.

2

Animals and Their Varying Lifestyles

ANSWERS

Checkpoint 1

Name the following:

1. Breathing organs of fish Gills
2. Small air holes on the sides of an insect's body Spiracles
3. When on land, a frog breathes through this Lungs
4. Hair like structures which help *Paramecium* move Cilia
5. Long, sucking tube of a butterfly with which it sucks nectar Proboscis

Checkpoint 2

Write the native place of the following birds and the months during which they visit India.

	Native place	Months of visit
1. Siberian crane	<u>Russia, Siberia</u>	<u>November to February</u>
2. Rosy pastor	<u>Eastern Europe, Central Asia</u>	<u>August to April</u>
3. White stork	<u>Central Europe, West Asia</u>	<u>September to April</u>
4. Spotted sandpiper	<u>Europe, Northern Asia</u>	<u>September to April</u>
5. Brown-headed gulls	<u>Central Asia, Tibet</u>	<u>September to April</u>

EXERCISES

A. Fill in the blanks.

1. Insects breathe through spiracles.
2. The fastest flying insect is dragonfly.
3. Humans who do not eat meat are called vegetarians.
4. A butterfly feeds on nectar with the help of a proboscis.
5. An eel migrates to the Sargasso sea to lay eggs.

B. Write True or False.

1. A fish is an amphibian. False
2. A tiger is a carnivore. True
3. Breathing organs of dogs are gills. False

4. Birds have heavy bones.

False

5. Snakes move with the help of scales and legs.

False

C. Tick (✓) the correct answer.

1. *Amoeba* breathes through

(a) body surface

(b) gills

(c) lungs

(d) spiracles

2. A *Paramecium* moves with the help of

(a) legs

(b) cilia

(c) paws

(d) fins

3. An emu is a/an

(a) flying bird

(b) flightless bird

(c) reptile

(d) insect

4. This is a migratory bird.

(a) Crow

(b) Sparrow

(c) Parrot

(d) White stork

D. Name the breathing organs in each of the following animals.

1. Frog

Skin, Lungs

2. Mosquito

Spiracles

3. Man

Lungs

4. Cat

Lungs

5. Earthworm

Skin

E. Define the following.

1. Habitat

Ans. The place where an animal lives, eats, grows and reproduces is called its habitat.

2. Adaptation

Ans. A special feature which an animal develops in order to survive in its habitat is called an adaptation.

3. Herbivores

Ans. The animals which eat only plants are called herbivores.

4. Carnivores

Ans. The animals which eat flesh of other animals are called carnivores.

5. Omnivores

Ans. The animals which eat both plants and flesh of other animals are called omnivores.

6. Migration

Ans. The two-way movement by animals from one place to another to escape harsh weather conditions, in search of food or for reproduction and back again to their place is called migration.

7. Locomotion

Ans. The movement of animals from one place to another is called locomotion.

8. Spiracles

Ans. Small holes on the sides of the body of insects for breathing are called spiracles.

F. Find the odd one out.

1. Locusts, grasshoppers, butterflies, **lizards**
2. Gills, trachea, **legs**, spiracles
3. **Incisors**, fins, flippers, paddles
4. **Cassowary**, parrot, crow, pigeon
5. Eel, rosy pastor, **cat**, salmon

G. Answer the following questions.

1. How do single-celled animals breathe?

Ans. Single-celled animals breathe through their body surface.

2. How do gills help a fish breathe?

Ans. Gills take oxygen from water and pass it into the blood. They take carbon dioxide from blood and give out into the water. In this way, gills help a fish breathe.

3. What kind of movement do earthworms show?

Ans. Earthworms show crawling movement by changing their body shape.

4. How do different fins of a fish help it swim?

Ans. The paired fins of a fish help it in moving forward and in maintaining balance while tail fin helps in changing the direction while swimming.

5. Explain how birds take off and land while flying.

Ans. Birds take off by flapping their wings in downward and backward directions. This lifts their body upwards and makes them move forwards. Birds use their tail feathers and hindlimbs for landing. Tail feathers act as brakes slowing down their speed and the birds come down on their legs.

6. How are the teeth of herbivores different from those of carnivores?

Ans. Herbivores have large incisors and broad molar teeth that help them cut the grass and leaves, and grind and chew well. Carnivores have sharp canines for tearing the flesh.

7. How does a frog catch its food?

Ans. Frogs have long, sticky tongue folded on the floor of their mouth. It is flipped at the prey. The prey gets stuck and then it is pulled into the mouth.

8. How is a salmon different from an eel?

Ans. A salmon lives in sea and migrates to lay eggs in river water, while an eel lives in river and migrates to Sargasso sea to lay eggs.

9. Write the function of each type of tooth.

Ans. (a) Incisors are used to cut food.
(b) Canines are used to tear flesh.
(c) Premolars and molars are used to chew and grind the food.

10. Name three migratory birds. Why do birds migrate?

Ans. Three migratory birds are Siberian crane, Arctic tern and white stork. Birds migrate to get plenty of food, water and favourable conditions of temperature and for breeding.

Think Zone

Give reasons for the following:

1. A cockroach will die if put in water.

Ans. Cockroach breathes through small air holes called spiracles on its body. In water, all the spiracles on its body will get blocked and no exchange of gases would take place. This will stop breathing and the cockroach will die ultimately.

2. A fish dies when taken out of water.

Ans. A fish breathes oxygen dissolved in water through its gills. Outside water, its gills dry up and exchange of gases stops. Hence it dies.

3. Emus and rheas are the exceptions among birds.

Ans. Like other birds, Emus and Rheas have wings but they cannot fly because they have heavy body and weak wings.

4. Birds are like sailors.

Ans. Birds are like sailors because they find their path and direction with the help of the position of sun, moon and stars.

5. Geese fly in a V-shape.

Ans. In V-shape group, geese fly with less efforts. This saves their energy.

6. Snakes do not possess legs.

Ans. Snakes move with the help of plates and scales attached to the underside of their body. This helps them move through their narrow burrows.

ANSWERS**Checkpoint 1**

Change the underlined words to make correct statements. Rewrite the correct statements in the space provided.

1. We have 306 bones in our body.
We have 206 bones in our body.
2. The vertebral column is made up of 12 small ring-shaped bones called vertebrae.
The vertebral column is made up of 33 small ring-shaped bones called vertebrae.
3. There are 24 pairs of ribs in human body.
There are 12 pairs of ribs in human body.
4. Knees and elbows are formed of ball and socket joints.
Knees and elbows are formed of hinge joints
5. Tibia is the longest bone in our body.
Femur is the longest bone in our body.

Checkpoint 2

Fill in the blanks.

1. Our body has three different types of muscles.
2. Muscles are made up of muscle fibres.
3. Smooth muscles do not have bands.

EXERCISES

A. Fill in the blanks.

1. Bones are held together at a joint by a tissue called ligament.
2. A fatty substance called bone marrow is present inside some bones.
3. The cranium is made up of 8 flat bones.
4. Pivot joints allow the rotating movement from side to side.
5. Striated muscles are also called voluntary muscles.

B. Which joints of the body help us perform the following functions?

1. Running Knee joints, Ankle joints, Hip joints
2. Bending Gliding joints of backbone
3. Jumping Hip joints, Knee joints, Ankle joints
4. Swimming Shoulder joints, Elbow joints, Hip joints, Knee joints
5. Writing Wrist joint and Finger joints

C. Tick (✓) the correct answer.

1. The number of bones in our skull is
(a) 36 (b) 33
(c) 26 (d) 22
2. Our nose and ears are made of
(a) bones (b) muscles
(c) cartilage (d) ligaments
3. Hinge joint is found in
(a) shoulders (b) knees
(c) hips (d) wrists
4. These muscles work under our control.
(a) Voluntary muscles (b) Involuntary muscles
(c) Cardiac muscles (d) Smooth muscles

D. Answer the following questions.

1. What are the main parts of the skeletal system?

Ans. There are five main parts of the skeleton system. They are the skull, vertebral column, ribcage, limbs and girdles.

2. What are the functions of the skull?

- Ans.** (a) The skull gives shape to the face.
(b) It gives space to eyes, nose, ears and mouth to fix in it.
(c) It protects the brain, eyes, inner parts of ear and nose, and tongue.
(d) The lower jaw of the skull enables us to talk and eat food.

3. What are the functions of the vertebral column?

- Ans.** (a) The vertebral column supports the back of our body.
(b) It protects the delicate spinal cord passing through it.

4. What is a joint? Name different types of joint present in the body.

Ans. The joining place of two bones is called a joint. Joints are of two types:

- (a) Immovable joints such as joints of bones of skull and pelvis.
- (b) Movable joints such as ball and socket joints of hips and shoulders, hinge joints of knees and elbows, pivot joints between first and second vertebrae and gliding joints of wrists and ankles.

Think Zone

Give reasons.

1. Movement of food from the foodpipe to the stomach is involuntary.

Ans. The foodpipe is made up of involuntary muscles. Its alternate contraction and relaxation movements pass food to the stomach.

2. The heart keeps working day and night, all through your life.

Ans. This is because the heart is made up of strong cardiac muscles which work continuously without getting retired.

3. We can move our neck in all directions but not our knee.

Ans. The pivot joint found between the skull and first vertebra of backbone allows neck to move in all directions while the hinge joint found in the knee allows the movement of bones in one direction only.

ANSWERS

Checkpoint 1

State True or False.

- | | |
|--|--------------|
| 1. The spinal cord is the control centre of our body. | <u>False</u> |
| 2. Motor nerves carry messages from the sense organs to the spinal cord and the brain. | <u>False</u> |
| 3. Medulla controls involuntary actions like breathing and heartbeat. | <u>True</u> |
| 4. Cerebellum is the largest part of the brain. | <u>False</u> |
| 5. Reflex actions are involuntary actions. | <u>True</u> |

Checkpoint 2

Fill in the blanks.

1. Eyelids and eyelashes protect eyes from dust.
2. The eardrum is connected to middle ear.
3. The taste buds have nerve endings in them.
4. Waste through skin comes out as sweat.
5. The hair in nose act as filter to clean the breathed in air.

EXERCISES

A. Fill in the blanks.

1. Cerebrum is the biggest part of the brain.
2. Cerebellum controls our voluntary movements.
3. Each nerve cell has a cell body, dendrites and an axon.
4. The black spot in the centre of eye is called pupil.
5. The motor nerves carry messages from the brain to the muscles.

B. Name the following.

- | | |
|---|----------------------|
| 1. The largest part of the brain responsible for thinking | <u>Cerebrum</u> |
| 2. The automatic actions performed without thinking | <u>Reflex action</u> |
| 3. A part of eye through which light enters the eye | <u>Pupil</u> |

4. A nerve which carries messages from the nose to the brain
5. A nerve which carries messages from the eye to the brain
6. The coloured part of the eye
7. The structure which protects spinal cord

Olfactory nerve

Optic nerve

Iris

Vertebral column

C. Tick (✓) the correct answer.

1. Which of these is not a part of the nervous system?

(a) nerves	(b) brain
(c) eyes <input checked="" type="checkbox"/>	(d) spinal cord
2. Reflex actions are controlled by the

(a) nose	(b) brain stem
(c) spinal cord	(d) both (b) and (c) <input checked="" type="checkbox"/>
3. Which part of the eye controls the amount of light entering the eye?

(a) cornea	(b) pupil <input checked="" type="checkbox"/>
(c) iris	(d) optic nerve
4. The external ear consists of

(a) pinna <input checked="" type="checkbox"/>	(b) cochlea
(c) eardrum	(d) tiny bones
5. Which nerve carries sound waves to the brain?

(a) optic nerve	(b) auditory nerve <input checked="" type="checkbox"/>
(c) olfactory nerve	(d) none of these

D. Answer the following questions.

1. What are the functions of the nervous system?

Ans. Nervous system makes us aware of our surroundings. It controls and coordinates the working of all the other systems of the body.

2. Name the three types of nerves. What functions do these nerves perform?

Ans. Three types of nerves are sensory nerves, motor nerves and mixed nerves.

- (a) Sensory nerves carry messages from the sense organs to the spinal cord and brain.
- (b) Motor nerves carry messages from the brain and spinal cord to the muscles and glands.
- (c) Mixed nerves carry messages to the brain and spinal cord and also bring messages from the brain and spinal cord.

3. Explain reflex action with the help of an example.

Ans. An action that happens automatically without our thinking is called reflex action.

For example, when we touch a hot object, the sensory nerves from skin convey the message of hotness to the spinal cord. The spinal cord sends instructions through the motor nerves to the muscles of hand to withdraw the hand.

4. What are the three main parts of our ears?

Ans. The three main parts of our ears are external ear, middle ear and internal ear.

5. How can you take care of your eyes?

Ans. We can take care of the eyes as follows:

- (a) Wash the eyes regularly every morning and evening.
- (b) Do not read in moving vehicles.
- (c) Do not read in dim or very bright light.
- (d) Do not watch television for long, and sit at least ten feet away from it.
- (e) Never lie down while watching the television.
- (f) Do not rub eyes with dirty hands.
- (g) Never wipe the eyes with a dirty handkerchief.

6. Name the different parts of the eye. What are their functions?

Ans. Different parts of the eye and their functions are as follows:

- (a) **Cornea:** Light enters the eye through cornea.
- (b) **Iris:** It controls the amount of light that enters our eyes and gives colour to the eyes.
- (c) **Pupil:** It is an opening through which light enters.
- (d) **Optic Nerve:** This nerve carries messages from the eye to the brain.

7. How can we take care of our ears?

Ans. We can take care of ears as follows:

- (a) Avoid hearing loud music.
- (b) Never use a matchstick or a hairpin to clean ears.
- (c) Use earbuds to clean ears regularly.
- (d) Consult a doctor in case of an earache.

8. How can we take care of our skin?

Ans. We can take care of skin as follows:

- (a) Bathe daily. This removes dirt and sweat from the skin.
- (b) Wear clean and comfortable clothes. Very tight fitted clothes do not allow fresh air to pass through them when the weather is warm.
- (c) An antiseptic cream or lotion should be applied to a cut or a scratch on skin to avoid infection.

Think Zone

1. Why should a pin not be used to clean the ears.

Ans. Using a pin to clean the ears can damage the eardrum. Also, it can lead to infections.

2. What will happen if the cerebrum of a person gets affected?

Ans. If the cerebrum of a person gets affected, he will not be able to think, learn, remember, speak, feel, decide and remember the things.

3. Vartika happened to touch a hot plate accidentally and dropped it immediately. Why did this happen? Which part of the nervous system is playing a role in this? Explain.

Ans. This happened because of an automatic reaction which takes place in our body without our thinking. It is called reflex action. Spinal cord is involved in this reaction.

For example, when we touch a hot object, the sensory nerves from skin convey the message of hotness to the spinal cord. The spinal cord sends instructions through the motor nerves to the muscles of hand to withdraw the hand.

4. Aadya was finding it difficult to read what her teacher had written on the blackboard. Her teacher advised her to go for an eye-checkup. Why?

Ans. Aadya is not able to read, so her teacher advised her to go for an eye-check up to get treated for her defective eyesight.

ANSWERS

Checkpoint 1

Give two examples each of the following:

- | | | |
|----------------------------|---------------------|------------------|
| 1. Energy-giving nutrients | <u>Potato</u> | <u>Butter</u> |
| 2. Protective nutrients | <u>Mango</u> | <u>Tomato</u> |
| 3. Fat-soluble vitamins | <u>Vitamin A</u> | <u>Vitamin D</u> |
| 4. Water-soluble vitamins | <u>Vitamin B</u> | <u>Vitamin C</u> |
| 5. Sources of roughage | <u>Whole grains</u> | <u>Nuts</u> |

Checkpoint 2

Write True or False.

- | | |
|---|--------------|
| 1. A balanced diet mainly contains energy-giving foods. | <u>False</u> |
| 2. Balanced diet is same for everyone. | <u>False</u> |
| 3. Exercise keeps us healthy. | <u>True</u> |
| 4. We need rest and sleep to keep our body fit. | <u>True</u> |

EXERCISES

A. Fill in the blanks.

1. Glucose, a carbohydrate, gives instant energy.
2. Proteins are required for growth and repair of the body.
3. Fats contain double the amount of energy as carbohydrates.
4. Vitamin K is required for clotting of blood.
5. Iron is present in haemoglobin which carries oxygen.

B. Write True or False.

- | | |
|--|--------------|
| 1. Lemon is a rich source of vitamin A. | <u>False</u> |
| 2. Calcium is required for strong bones, teeth and muscles. | <u>True</u> |
| 3. Vitamins A, D, E and K are water-soluble vitamins. | <u>False</u> |
| 4. Vitamin D keeps the skin healthy. | <u>False</u> |
| 5. Water helps in the transport of substances within the body. | <u>True</u> |

C. Tick (✓) the correct answer.

- Which of the following is not a nutrient of food?
(a) Fat (b) Carbohydrate
(c) Roughage (d) Protein
- It is an energy-giving food.
(a) Potato (b) Onion
(c) Carrot (d) Fish
- This is the richest source of vitamin C.
(a) Milk (b) Egg
(c) Gooseberry (d) Butter
- To keep bones and teeth healthy we should drink
(a) Water (b) Cola
(c) Tea (d) Milk
- Water removes waste in the form of urine and
(a) Sweat (b) Heat (c) Oil (d) Salt

D. Answer the following questions.

1. What are nutrients? Name different nutrients.

Ans. Nutrients are the substances, found in food, which keep our body healthy. They are carbohydrates, fats, proteins, vitamins and minerals.

2. How are carbohydrates and fats useful to us?

Ans. Carbohydrates and fats provide energy to our body to do work.

3. Proteins need to be present in the food we eat. Why?

Ans. Proteins help the body to grow, build new cells and tissues, and to repair them when damaged.

4. What is a balanced diet?

Ans. A diet which contains all the nutrients in right amount is called a balanced diet.

5. Why should we drink 6–8 glasses of water every day?

Ans. We should drink 6–8 glasses of water every day to enable the body to carry out all the functions properly.

6. Why is exercise important for us?

Ans. Exercise is important to maintain a healthy body. It keeps us energetic and active.

7. How are vitamins classified? How are they useful to us?

Ans. Vitamins are classified as fat-soluble vitamins such as vitamins A, D, E and K and water-soluble vitamins such as vitamins B and C. Vitamins help us to fight and protect ourselves from diseases. They help in keeping our bones, teeth, gums and eyes healthy.

8. What is the importance of roughage in our diet?

Ans. Roughage is an essential part of our diet because it helps in bowel movement and prevents constipation.

Think Zone

Give reasons.

1. Ramu, a labourer, eats eight chapatis for dinner while Radhu, a clerk, eats only two.

Ans. Ramu does more physical work so he needs more carbohydrates in his diet to get more energy. On the other hand, Radhu does not have to do physical work, so he needs less energy and hence, eats only two chapatis.

2. Salma's mother insists that she eat pulses every day for lunch.

Ans. Pulses are rich source of proteins. Proteins help in the growth of the body, building new cells and tissues. As Salma is a child, she needs more proteins for the growth of her body.

3. Peter goes to sleep at ten at night and gets up at five in the morning.

Ans. Proper rest and sleep are important for a healthy body because during sleep, our body repairs its wear and tear.

4. Atharv's mother makes sure that he drinks milk every day.

Ans. Milk contains carbohydrates, fats, proteins, minerals and all the vitamins except vitamin C. It gives energy and helps in the growth of the body. It also makes bones and teeth strong and healthy, and helps to fight against diseases.

Health and Diseases

ANSWERS

Checkpoint 1

State True or False.

- | | |
|--|--------------|
| 1. Cholera and jaundice are spread through air. | <u>False</u> |
| 2. Immunity is the ability of the body to fight and kill germs. | <u>True</u> |
| 3. Malaria is caused by a protozoan which is carried by <i>Aedes</i> mosquito. | <u>False</u> |
| 4. Vaccine contains dead or weakened germs. | <u>True</u> |
| 5. Meningitis is caused by a virus. | <u>False</u> |

Checkpoint 2

Fill in the blanks.

1. Non-communicable diseases are not caused by germs.
2. Deficiency diseases can be avoided by eating a balanced diet.
3. Eating excess of fats causes obesity.
4. Hypervitaminosis affects liver and kidneys.

EXERCISES

A. Fill in the blanks.

1. Diseases can be grouped as communicable and non-communicable diseases.
2. Disease-causing microorganisms are called germs.
3. Malaria spreads through insect (mosquito) bite.
4. Sunlight is a natural disinfectant.
5. Vaccination for chickenpox can be given at any age.

B. Match the following deficiency diseases with the nutrients.

- | | |
|--------------------|-----------------------|
| 1. Anaemia | (a) Vitamin B complex |
| 2. Scurvy | (b) Iodine |
| 3. Beri-beri | (c) Vitamin A |
| 4. Night blindness | (d) Vitamin C |
| 5. Goitre | (e) Iron |

C. Find the odd one out.

1. Chickenpox, tuberculosis, typhoid, scurvy
2. Typhoid, cholera, pneumonia, malaria
3. Scurvy, rickets, beri-beri, obesity
4. Malaria, dengue, measles, polio

D. Tick (✓) the correct answer.

1. Which of these is a bacterial disease?
(a) cholera (b) common cold (c) polio (d) dengue
2. Which of these diseases is caused by a protozoa?
(a) measles (b) AIDS (c) malaria (d) dengue
3. Which of these diseases is spread through direct contact?
(a) malaria (b) dengue (c) chickenpox (d) typhoid
4. Which of these symptoms may occur due to the deficiency of vitamin C?
(a) loss of appetite (b) bleeding gums
(c) weak bones (d) ulcers in the eye
5. Overeating of fats may lead to
(a) chickenpox (b) rabies (c) obesity (d) ringworm

E. Answer the following questions.

1. What is a disease?

Ans. Disease is an unhealthy condition of the body in which the affected person is not able to carry out normal life activities.

2. Differentiate between communicable and non-communicable diseases.

Ans.

Communicable Diseases	Non-communicable Diseases
1. These are caused by germs.	1. These are caused due to deficiency of some nutrient or over-nutrition or malfunction of a body part.
2. They spread from one person to other persons.	2. They do not spread from one person to other persons.

3. How are infectious diseases spread?

Ans. Infectious diseases spread through direct contact, air, contaminated food and water, animal bite and insects.

4. Give any five ways to prevent communicable diseases.

Ans. Ways to prevent communicable diseases are as follows:

- (a) Keep the surroundings clean.
- (b) Throw garbage into dustbins. Use only covered bins.
- (c) Take bath regularly and wear clean clothes.

- (d) Wash hands before and after meals.
- (e) Do not eat uncovered food from roadside stalls.

5. How does malaria spread?

Ans. When a female *Anopheles* mosquito bites an infected person, malaria-causing protozoa are sucked up along with blood. When this mosquito bites a healthy person, the protozoa are transferred into the blood of the person. This causes malaria to the healthy person.

6. What is vaccination?

Ans. The process of injecting or introducing a vaccine into the body for protection against a disease is called vaccination.

7. What is immunity?

Ans. Immunity is the ability of the body to fight and kill the germs.

8. State three wrong food habits.

Ans. Three wrong food habits are as follows:

- (a) Taking too much of common salt in diet which may lead to high blood pressure or even obesity.
- (b) Taking excessive fat-soluble vitamins A, D, E and K in the form of pills which can lead to hypervitaminosis.
- (c) Eating excess of fried and fatty foods which leads to obesity.

F. Solve the crossword with the help of given clues.

1. A disease caused by a protozoan
2. Ringworm is caused by this microorganism
3. A viral disease
4. Living organisms which transmit germs
5. Ability of the body to fight and destroy germs
6. A disease caused due to the deficiency of iodine
7. A process of injecting dead or weakened germs into the body of a healthy person

	¹	M	A	L	A	R	I	A				
²	F	U	N	G	I							
		³	A	I	D	S						
		⁴	V	E	C	T	O	R	S			
⁵	I	M	M	U	N	I	T	Y				
⁶	G	O	I	T	R	E						
	⁷	V	A	C	C	I	N	A	T	I	O	N

Think Zone

Give reasons.

1. Rehan is suffering from rickets. The doctor has advised him to sit in the sun for an adequate period of time.

Ans. Rickets is caused due to the deficiency of vitamin D. Our body prepares vitamin D in the presence of sunlight.

2. Anu's mother changes the water of the cooler every two or three days.

Ans. Changing of the water of cooler every two or three days prevents the breeding of mosquitoes.

3. Tushaar eats burgers and chips every day but does not eat fresh fruits and green vegetables. He gets tired very soon and looks pale.

Ans. Not eating fresh fruits and green vegetables leads to mineral and vitamin deficiencies. This makes the body weak and sick.

4. Mohan and Rohan are brothers. They share their clothing, handkerchief and food. If Mohan suffers from common cold, Rohan too suffers from common cold.

Ans. Common cold is an infectious disease. Sharing towel and handkerchief with a common cold patient spreads the germs and makes a healthy person sick.

5. Your parents do not allow you to meet your friends when you are sick.

Ans. Staying away from a sick person stops the spread of disease.

ANSWERS

Checkpoint 1

Tick (✓) the correct word.

1. We should follow the traffic rules sometimes/strictly (✓).
2. We should wear nylon/cotton (✓) clothes while cooking.
3. Fire caused by petrol should be put out by throwing water/sand (✓).

Checkpoint 2

Write True or False.

1. First aid helps in saving a life. True
2. A burn damages the skin. True
3. Snake poison affects digestive system of the body. False
4. Insect bite causes sprain in the body. False

EXERCISES

A. Fill in the blanks.

1. Sudden events which cause pain, injury or even death are called accidents.
2. We should follow road signs to avoid road accidents.
3. High beam headlights should be avoided at night.
4. Never throw water on fire caused by electricity.
5. Apply antiseptic cream to a wound to prevent infection.

B. Give one word for the following.

1. First help given to the victim before the doctor arrives. First aid
2. Condition when the tissue around a joint gets torn due to a sudden jerk. Sprain
3. Toxic substances harmful to the body Poisons
4. Support used to prevent movement of a fractured bone Splint
5. Watery eruptions on the skin formed as a result of burns Blisters

C. Write True or False.

1. Blisters due to burning should be pricked. False
2. In case of a cut, keep the wound at a level higher than the rest of the body. True

3. Medicines should be accessible to all the family members.

False

4. Cotton clothes should be worn while cooking food.

True

D. Tick (✓) the correct answer.

1. Road accidents can be caused due to

- (a) cooking gas (b) electricity (c) overspeed (d) petrol

2. Which of the following should not be followed by pedestrians?

- (a) They should play on the road.
(b) They should always walk on the footpath.
(c) If there is no footpath, they should walk on the right side of the road.
(d) They should not run on the road.

3. In case of a gas leakage, which of the following should not be done?

- (a) Open all doors and windows.
(b) Do not light any matchstick.
(c) Switch on all electrical appliances.
(d) None of these

4. Which of the following should not be done while driving a vehicle?

- (a) Drive within speed limit (b) Avoid overtaking
(c) Use mobile phones (d) Wear seat belt

E. Answer the following questions.

1. **What is first aid?**

Ans. The first help given to a sick or an injured person before the medical treatment is available is called first aid.

2. **What rules should one follow while driving on the road?**

Ans. One should follow the following safety rules:

- (a) Follow the traffic rules strictly.
(b) Do not use mobile phones while driving.
(c) Wear the seat belt while driving.
(d) On a two-wheeler, the driver as well as the pillion rider should wear a helmet.
(e) Avoid zig-zag driving.
(f) Avoid overtaking. If required, it should be done from the right side.

3. **How will you put out a fire caused by faulty wiring?**

Ans. Fire caused due to faulty wiring can be put out by throwing sand over it.

4. **What will you do if your friend's clothes catch fire?**

Ans. When clothes catch fire, make the person roll on the floor or cover with a blanket as it would cut the air supply and extinguish the fire.

5. **What first aid should be given in the following cases?**

- (a) nose bleed (b) a fracture (c) a sprain (d) cuts and wounds

Ans. (a) • Let the person sit upright.

- Tilt his/her head slightly forward.
 - Press the soft part of the nose for some time.
 - Place an ice-pack or a wet cloth on the nose till the bleeding stops.
 - Ask the person to breathe through the mouth for some time.
- (b)
- Do not move the patient.
 - Use an ice pack on the affected area.
 - Use a splint to prevent further movement of fractured arm or leg.
 - Do not let the fractured arm to hang down straight. Use a sling to give support to the broken limb.
- (c) In case of sprain, apply an ice pack followed by pain relieving cream on sprained area and tie a crepe bandage or clean cloth giving complete rest to the affected part.
- (d) In case of cuts and wounds, wash the wound with soap and water, apply an antiseptic cream and tie a bandage or clean cloth over the wound.

6. Write down some precautions for handling poisonous substances at home.

Ans. Poisonous substances should be kept with labels on them, tightly closed and out of the reach of children.

F. Solve the crossword puzzle with the help of given clues.

1. A crack or a break in a bone
2. To make something free from germs
3. An injury when the tissue around a joint gets torn
4. Chemical applied to wounds to kill germs
5. Watery eruptions on the burnt skin
6. This should get done to check for a fracture
7. A substance which is toxic and harmful to the body
8. A person walking on the road

				¹					F	R	A	C	T	U	R	E							
²		S	T	E	R	I	L	I	S	E													
				³				S	P	R	A	I	N										
⁴		A	N	T	I	S	E	P	T	I	C												
⁵		B	L	I	S	T	E	R	S														
				⁶				X	R	A	Y												
				⁷						P	O	I	S	O	N								
				⁸										P	E	D	E	S	T	R	I	A	N

Think Zone

Give reasons.

1. Micky put sand on fire caused due to an electric short circuit.

Ans. Since water is a good conductor of electricity and one may get an electric shock, the fire caused due to electric short circuit should be extinguished by throwing sand over it.

2. Tarun saw a 'No Smoking' board at a petrol pump.

Ans. Petrol is a highly inflammable substance. A single drop of petrol can catch fire and become hazardous.

3. Your school bus conductor instructs you not to put your hand out of the window.

Ans. Putting a body part out of the window of a moving bus can cause injury.

4. Rajiv's mother asks him not to play on the road.

Ans. Playing on the road may cause an accident and may also put others' life in danger.

5. Sumit saw a person's clothes catching fire. He immediately wrapped a blanket around him.

Ans. Wrapping a blanket around a fire would cut the air supply and the fire will be extinguished.

6. If an animal bites someone, the wound should be washed with soap and lots of water.

Ans. The saliva of animals contains deadly germs. Washing the wound with soap and lots of water will wash away saliva and stop the entry of germs into the body.

7. Shreya is in class 3. Her mother keeps all the medicines locked in a cupboard.

Ans. Shreya's mother keeps the medicines in locked cupboard so that she may not consume any medicine as she is a small child.

ANSWERS

Checkpoint 1

Rewrite the following statements correctly.

1. Moving air is called atmosphere.
Moving air is called wind.
2. The most abundant gas in air is oxygen.
The most abundant gas in air is nitrogen.
3. Water from water bodies condenses to form water vapour.
Water from water bodies evaporates to form water vapour.
4. All living things breathe in air to get nitrogen.
All living things breathe in air to get oxygen.
5. Carbon dioxide is used to make fertilisers.
Nitrogen is used to make fertilisers.

Checkpoint 2

Tick (✓) the correct word.

1. Air has **colour** / **mass** (✓).
2. Air exerts pressure in **all** (✓) / **sideways** directions.
3. Forest fire **cleanses** / **pollutes** (✓) air.
4. Acid rain **polishes** / **weakens** (✓) iron structures.

EXERCISES

A. Fill in the blanks.

1. The atmosphere extends upto a height of 800 km.
2. Oxygen is needed for burning.
3. Plants get nitrogen from soil.
4. Air exerts pressure in all directions.

B. Write True or False.

1. We can live without air. False
2. Air consists of only oxygen and nitrogen. False

3. Air has mass and occupies space. True
4. The most plentiful gas in the atmosphere is carbon dioxide. False
5. The percentage of oxygen in the air keeps changing. False

C. Tick (✓) the correct answer.

1. Which of these gases is present in the highest amount in air?
(a) Nitrogen (b) Oxygen
(c) Carbon dioxide (d) Helium
2. Which of these gases controls fire?
(a) Nitrogen (b) Oxygen
(c) Both nitrogen and oxygen (d) None of these
3. What is the percentage of oxygen gas in the air?
(a) 71 (b) 21 (c) 78 (d) 0.03
4. Air pollution can
(a) cause irritation of eyes, nose and throat
(b) lead to depletion of ozone layer
(c) damage the leaves of plants
(d) all the above
5. Which of these is the property of air?
(a) Air has no mass (b) Air does not occupy space
(c) Air exerts pressure (d) None of these

D. Answer the following questions.

1. What is the composition of air?

Ans. Air is a mixture of 78 per cent nitrogen, 21 per cent oxygen, 0.03 per cent carbon dioxide, 0.97 per cent water vapour and other gases.

2. How is oxygen useful to us?

Ans. All living things breathe in oxygen to live. Oxygen is also needed for burning fire.

3. How is carbon dioxide useful to plants?

Ans. The carbon dioxide present in the air is used by green plants to prepare food by the process of photosynthesis.

4. How is nitrogen useful?

Ans. All living things need nitrogen for making proteins. Nitrogen is used to make fertilisers which help in the growth of plants. Nitrogen does not help in burning of a substance but it helps in controlling fire.

5. What are the properties of air?

Ans. Air has following properties:

- (a) Air has mass.
(b) Air occupies space.
(c) Air exerts pressure in all directions.

6. What is air pollution? Write two main man-made causes of air pollution.

Ans. The presence of unwanted and harmful materials in air is called air pollution. Its main causes are smoke and harmful gases released due to burning of fossil fuels in automobiles and industries.

7. Write four effects of air pollution.

Ans. Four effects of air pollution are as follows:

- (a) Air pollution causes diseases like asthma, bronchitis and lung cancer.
- (b) It causes irritation of eyes, nose and throat.
- (c) It damages the ozone layer which protects us from harmful rays of the sun.
- (d) It causes acid rain which damages buildings, monuments and iron structures such as bridges, pillars, etc.

8. Write four ways to reduce air pollution.

Ans. We can reduce air pollution by following four ways:

- (a) We should plant more trees as they remove carbon dioxide from the air and release oxygen into the atmosphere.
- (b) Vehicles should be checked regularly to prevent release of harmful gases.
- (c) We should not burn dry leaves. Instead, we should make compost out of them.
- (d) We should use non-polluting fuels like CNG for cars and buses.

E. Find and encircle the words in the wordsearch with the help of given clues.

1. Blanket of air surrounding the earth – *Atmosphere*
2. Moving air – *Wind*
3. Gas needed for burning – *Oxygen*
4. A disease caused due to air pollution – *Asthma*
5. An instrument used to measure air pressure – *Barometer*
6. The component of air used to make fertilisers – *Nitrogen*

Y	D	W	W	I	N	D	O	N	C	E
F	U	I	S	T	R	B	X	L	O	S
R	T	L	B	D	J	O	Q	A	X	R
E	A	X	A	K	O	E	L	D	Y	L
T	S	D	R	C	R	W	A	K	G	I
A	T	M	O	S	P	H	E	R	E	T
I	H	T	M	E	A	M	I	E	N	D
N	M	A	E	R	N	P	L	O	Y	K
A	A	I	T	V	O	C	E	R	A	Q
K	R	A	E	T	E	X	T	M	R	N
N	I	T	R	O	G	E	N	J	F	O

Think Zone

Give reasons.

1. When you blow up a balloon on which a notebook is kept, the notebook gets lifted.

Ans. On blowing, air takes the space inside the balloon and makes it bigger in size. This lifts the notebook.

2. Your mother asks you to burn less crackers on Deepawali.

Ans. Burning of crackers is harmful to our environment, health and animals. They cause loud noise and release poisonous gases and a lot of smoke into the air. This causes noise as well as air pollution resulting in many respiratory problems. Animals are very sensitive to loud noise. They cannot bear the sounds produced by crackers. Crackers may also cause fire accidents.

3. You can drink juice using a straw.

Ans. We drink juice using a straw because when we suck through the straw, the air pressure inside the straw becomes low and the air pressure exerted on the surface of juice is more. Due to this pressure difference, the juice is pushed inside the straw and reaches our mouth.

4. You cannot drink juice using a straw having a small hole in it.

Ans. A straw having a hole in it will have same air pressure inside and outside. In this case, the juice will not be pushed when we suck through the straw.

5. Maria can make bubbles from chewing gum.

Ans. The chewing of chewing gum makes it soft. When air is blown into the gum, it takes the space inside the gum making it in bubble shape.

ANSWERS**Checkpoint 1****Fill in the blanks:**

1. Anything that occupies space and has mass is called matter.
2. Matter exists as solid, liquid and gas.
3. A cup is a solid, whereas milk is a liquid matter.
4. Atoms combine to form a molecule.
5. Molecules in a liquid are loosely packed as compared to solids.
6. Hydrogen is an element, whereas water is a compound.
7. Air is a mixture of gases.

Checkpoint 2**Name the process.**

1. Change of state from solid to liquid
2. Changing a liquid into a solid
3. A temporary change
4. The property of dissolving of a substance in water

Melting
Freezing
Physical change
Solubility

EXERCISES**A. Fill in the blanks.**

1. Everything in nature is made up of matter.
2. Solids have a definite shape and volume.
3. Gases flow in all directions.
4. Oil and water are immiscible liquids.
5. A new substance is formed in a chemical change.

B. Write True or False.

1. Molecules of gases are very loosely arranged.
2. There are only 105 elements known in nature.
3. Gases cannot dissolve in water.

True
False
False

4. Physical changes are permanent changes. False
 5. Making of curd from milk is a chemical change. True

C. Tick (✓) the correct answer.

- Which of these are pure substances?
 (a) element (b) compound
 (c) mixture (d) both (a) and (b)
- Copper is
 (a) an element (b) a compound (c) a mixture (d) none of these
- Water is
 (a) an element (b) a compound
 (c) an atom (d) none of these
- The process of changing of a liquid into a solid is called
 (a) melting (b) freezing (c) evaporation (d) condensation
- A mixture of lemon juice mixed in water is an example of
 (a) miscible liquids (b) immiscible liquids
 (c) chemical change (d) None of these

D. Classify the following into elements, compounds and mixtures.

SALT IRON SUGAR WATER AIR SOIL CARBON GOLD
 BAKING SODA SODA WATER HYDROGEN SEA WATER

Elements	Compounds	Mixtures
<u>Iron</u>	<u>Salt</u>	<u>Air</u>
<u>Carbon</u>	<u>Sugar</u>	<u>Soil</u>
<u>Gold</u>	<u>Water</u>	<u>Soda water</u>
<u>Hydrogen</u>	<u>Baking soda</u>	<u>Sea water</u>

E. State whether each of the following is a chemical change or a physical change.

- Boiling of water Physical change
- Melting of ice cream Physical change
- Lighting of a matchstick Chemical change
- Burning of gas in a stove Chemical change
- Rusting of a nail Chemical change
- Tearing of clothes Physical change

F. Answer the following questions.

- What do you understand by matter? Write its different forms.

Ans. Anything that occupies space and has mass is called matter. The different forms of matter are solid, liquid and gas.

2. Explain any three characteristics of solids.

Ans. Three characteristics of solids are:

- (a) Solids have a definite shape and volume.
- (b) Molecules in a solid are very tightly packed.
- (c) Solids cannot flow.

3. Explain any three characteristics of liquids.

Ans. Three characteristics of liquids are:

- (a) Liquids do not have definite shape but have a definite volume.
- (b) Molecules in a liquid are loosely packed.
- (c) Liquids can flow.

4. Explain any three characteristics of gases.

Ans. Three characteristics of gases are:

- (a) Gases neither have a definite shape nor a definite volume.
- (b) Spaces between molecules are very large.
- (c) Gases flow in all directions.

5. Give any four examples of the most abundant elements in the earth's crust.

Ans. The elements that are most abundant in earth's crust are oxygen, silicon, aluminium and iron.

6. Name two gases that are soluble in water? How are they useful?

Ans. Oxygen and carbon dioxide gases are soluble in water. Aquatic animals and plants use oxygen gas dissolved in water for respiration. Aquatic plants use carbon dioxide gas dissolved in water for photosynthesis.

7. Give two examples of

- (a) Miscible liquids
- (b) Immiscible liquids

Ans. (a) Milk and water, Lime juice and water
(b) Oil and water, Petrol and water

8. Explain the two types of changes with examples.

Ans. (a) **Physical changes:** They are reversible changes without forming new products.

Examples: Tearing of page, boiling of water.

(b) **Chemical changes:** They are irreversible changes that form new products.

Examples: Burning of wood, cooking of rice.

Think Zone

Give reasons.

1. Air is a matter.

Ans. Air is considered a matter because it has weight and occupies space.

2. Carbon dioxide gas is a compound.

Ans. Carbon dioxide gas is a compound because it has carbon and oxygen combined in a fixed ratio.

3. Breaking of a stick is a physical change but burning of a stick is a chemical change.

Ans. Breaking of a stick is a physical change because after breaking of the stick no new substance is formed. Burning of stick is a chemical change because on burning, smoke, ash and gases are formed as new substances.

4. Shweta mixed vinegar with baking soda in a bowl. She heard a hissing sound and saw a gas coming out. Mixing of vinegar with baking soda is a chemical change.

Ans. It is a chemical change because on mixing of vinegar and baking soda, a gas is formed as a new substance.

Rocks and Minerals

ANSWERS

Checkpoint 1

Tick (✓) the correct answer.

1. Which of these is an igneous rock?

(a) granite <input checked="" type="checkbox"/>	(b) sandstone
(c) gypsum	(d) scoria
2. Gneiss glitters because of

(a) slate	(b) mica <input checked="" type="checkbox"/>
(c) granite	(d) shale
3. Limestone is formed from

(a) sulphate	(b) calcite <input checked="" type="checkbox"/>	(c) granite	(d) quartz
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4. Which of these is not a metamorphic rock?

(a) quartzite	(b) basalt <input checked="" type="checkbox"/>	(c) slate	(d) marble
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Checkpoint 2

Write True or False.

- | | |
|--|--------------|
| 1. Minerals are found in the earth's crust. | <u>True</u> |
| 2. Bauxite is the ore of aluminium. | <u>True</u> |
| 3. Gems are used as fuel. | <u>False</u> |
| 4. Coal is also called crude oil. | <u>False</u> |
| 5. Fossil fuels are reserved for a limited time. | <u>True</u> |

EXERCISES

A. Fill in the blanks.

1. The outermost layer of the earth is crust.
2. Igneous rocks are also called fire rocks.
3. The oldest rocks on the earth are igneous rocks.
4. Diamond is the hardest non-metallic mineral.
5. Coal, petroleum and natural gas are fossil fuels.

B. Classify the following into igneous, sedimentary and metamorphic rocks.

GNEISS MARBLE LIMESTONE SANDSTONE PUMICE SHALE
SLATE CONGLOMERATE OBSIDIAN GYPSUM GRANITE

Igneous rocks	Sedimentary rocks	Metamorphic rocks
<u>Pumice</u>	<u>Limestone</u>	<u>Gneiss</u>
<u>Obsidian</u>	<u>Sandstone, Shale</u>	<u>Marble</u>
<u>Granite</u>	<u>Conglomerate</u>	<u>Slate</u>
_____	<u>Gypsum</u>	_____

C. Tick (✓) the correct answer.

- Rocks formed from magma are
 - igneous rocks
 - metamorphic rocks
 - sedimentary rocks
 - both a and b
- Igneous rocks were formed due to
 - earthquakes
 - volcanoes
 - tides
 - storms
- Basalt rocks are also called
 - scoria
 - granite
 - pumice
 - obsidian
- Which is a gemstone?
 - scoria
 - ruby
 - pumice
 - obsidian
- Which fossil fuel is used for generating electricity?
 - kerosene
 - petroleum
 - natural gas
 - coal

D. Match the following rocks with the minerals they contain.

- | Rocks | Minerals |
|-----------------|--------------|
| 1. Granite | (a) Sulphate |
| 2. Gypsum | (b) Calcite |
| 3. Conglomerate | (c) Quartz |
| 4. Limestone | (d) Silica |

E. Answer the following questions.

1. How do igneous rocks form?

Ans. Igneous rocks form by the cooling of magma underground or that of lava on the ground.

2. What are metallic minerals and non-metallic minerals? Give three examples of each.

Ans. Minerals which contain metals are called metallic minerals.

For example: iron, copper and aluminium.

Minerals which do not have metals in them are called non-metallic minerals.

For example: talc, Plaster of Paris, chalk.

3. How was coal formed? Write its two uses.

Ans. Coal was formed by the breakdown of dead remains of plants that got buried in swamps 400 million years ago.

(a) Coal is mainly used as a fuel to run steam engines, in thermal power plants for generating electricity and for cooking food and heating homes.

(b) It is used in the production of steel and cement.

4. How was petroleum formed? What is it used for?

Ans. Petroleum was formed by the breakdown of organisms that lived millions of years ago in water and got buried under ocean or river sediments.

Petroleum is used to obtain petrol, diesel, kerosene, lubricating oil, wax and medicinal oils.

5. What is the full form of CNG?

Ans. Compressed Natural Gas.

6. Why do we need to conserve fossil fuels?

Ans. We need to conserve fossil fuels because they are available in limited amount and take millions of years to be formed. If not conserved, they may last only for a limited time.

7. How can we conserve fossil fuels?

Ans. We can conserve fossil fuels by following ways:

(a) Switch off the engine of vehicles at traffic lights.

(b) Walk down or use cycle to go to the nearby market instead of going by a scooter or a car.

(c) Car pool is a good way to reduce the use of fossil fuels.

8. Give the uses of the following:

(a) Granite (b) Sandstone (c) Diamond (d) Kerosene

Ans. (a) Granite is used for building monuments, decoration on buildings, making statues and flooring.

(b) Sandstone is used as building stone.

(c) Diamond is used in making jewellery, cutting glass, and for making cutting and polishing tools.

(d) Kerosene is used for cooking and lighting lamps.

Think Zone

Give reasons.

1. Why do you think the Earth is called the 'third rock' from the sun?

Ans. Earth is called the 'third rock' from the sun because it is the third planet in order of distance from the sun and is mainly made of rocks.

2. Why does pumice have a sponge-like structure?

Ans. Pumice has a sponge-like structure because it has many small holes.

3. Why does a gneiss rock show alternating patterns?

Ans. Gneiss rocks have been formed by tremendous heat and pressure, due to which, minerals get arranged in alternating patterns.

4. Which of these is a better way to save fuel – using a public transport or an individual self-driven vehicle?

Ans. Using a public transport is a better way to save fuel.

Soil Erosion and Conservation

ANSWERS

Checkpoint 1

State True or False.

- | | |
|--|--------------|
| 1. Soil contains water but no air. | <u>False</u> |
| 2. Soil supports the growth of plants. | <u>True</u> |
| 3. Weathering of rocks is a fast process. | <u>False</u> |
| 4. Water and wind help in weathering of rocks. | <u>True</u> |
| 5. Subsoil is the most fertile layer of soil. | <u>False</u> |

Checkpoint 2

Write SE against the activities which cause Soil Erosion and SC against those which help in Soil Conservation.

- | | |
|---|-----------|
| 1. A land left bare after harvesting a crop | <u>SE</u> |
| 2. Farming by cutting steps | <u>SC</u> |
| 3. Covering land by planting grass | <u>SC</u> |
| 4. Building embankments on rivers | <u>SC</u> |
| 5. Grazing by cattle in the same area | <u>SE</u> |

EXERCISES

A. Fill in the blanks.

- The uppermost layer of soil is called topsoil.
- Breaking up of rocks into tiny pieces forms soil.
- Settling of soil at the bottom of rivers is called silting.
- Soil erosion on hill slopes is prevented by terrace forming.
- Soil erosion causes water pollution.

B. Write True or False.

- | | |
|---|--------------|
| 1. Deforestation causes soil erosion. | <u>True</u> |
| 2. The protection of soil against erosion is called weathering. | <u>False</u> |
| 3. Soil erosion increases fertility of the soil. | <u>False</u> |

4. Wind does not cause soil erosion. False
 5. Cutting down of trees increases soil erosion. True

C. Name the following.

- | | |
|---|--------------------------|
| 1. Cutting down of trees on large scale | <u>Deforestation</u> |
| 2. Carrying away of the topsoil from one place to another by natural agents | <u>Soil erosion</u> |
| 3. Moving of loose rocks down a slope of a hill | <u>Landslide</u> |
| 4. Protection of soil from erosion | <u>Soil conservation</u> |
| 5. Slow, gradual process of soil formation | <u>Weathering</u> |

D. Tick (✓) the correct answer.

1. Decayed remains of plants and animals in the soil is called

(a) afforestation	(b) deforestation
(c) humus <input checked="" type="checkbox"/>	(d) soil erosion
2. Planting trees in large numbers is called

(a) deforestation	(b) soil erosion
(c) weathering	(d) afforestation <input checked="" type="checkbox"/>
3. Which of these causes soil erosion?

(a) wind	(b) water
(c) excessive ploughing	(d) all of these <input checked="" type="checkbox"/>
4. Which of these statements is correct?
 - (a) The uppermost layer of the soil is least fertile.
 - (b) Topsoil is light in colour.
 - (c) Topsoil is rich in humus.
 - (d) Bedrock is the uppermost layer of soil.
5. Soil erosion can be controlled by

(a) overgrazing	(b) keeping the land barren
(c) dumping waste material	(d) growing grass <input checked="" type="checkbox"/>

E. Answer the following questions.

1. What is weathering of rocks? How do rocks break and wear away?

Ans. Weathering of rocks is a process by which rocks are broken into fine particles by wind and water. The large rocks are initially broken down into small pieces by natural events like earthquakes. This process is carried further by agents like temperature changes, frost, water, wind and living organisms.

2. Name and explain the different layers of soil.

Ans. Different layers of soil are the topsoil, the subsoil and the bedrock.

- (a) Topsoil is the uppermost dark and most fertile layer of soil. It is rich in humus.
- (b) Subsoil is found just below the topsoil. It is light coloured because it contains less amount of humus as compared to topsoil.
- (c) Bedrock is hard and non-porous layer of soil. It is formed of parent rock.

3. Which human activities cause soil erosion? Explain.

Ans. Following human activities cause soil erosion:

- (a) **Deforestation:** When trees are cut down, soil becomes loose and is easily carried away by water or wind.
- (b) **Overgrazing:** Overgrazing by animals in a particular area makes the land barren and causes soil erosion.
- (c) **Excessive ploughing:** Ploughing of farmland loosens the soil which is easily carried by wind or water.
- (d) **Unprotected soil:** Sometimes soil is left bare for a long time after harvesting. This unprotected soil can be easily blown away by water and wind.

4. What is silting?

Ans. Silting is the deposition of soil at the bottom of a river.

5. What are the effects of soil erosion?

Ans. Soil erosion makes the land barren. It causes floods, water pollution, famines, and landslides in hilly areas which can result in the loss of life and property.

6. What do you understand by soil pollution?

Ans. The accumulation of harmful chemicals, polythene bags, etc. in soil is called soil pollution.

7. What are the different ways by which soil gets polluted?

Ans. Soil gets polluted by following ways:

- (a) Dumping of wastes into open areas.
- (b) Releasing industrial wastes into the soil.
- (c) Excessive use of pesticides, insecticides and chemical fertilisers by farmers.
- (d) Dirty water seeps into the soil from wastes.

8. What is soil conservation? In what ways can soil be conserved?

Ans. The protection of soil from erosion is called soil conservation. Soil can be conserved by following ways:

- (a) **Planting trees or afforestation:** Roots of plants hold the soil particles together and protect the soil from being carried away by wind or water.
- (b) **Terrace farming:** On hill slopes, terrace farming is done. This reduces the speed of water and prevents the soil from being flown downhill.
- (c) **By growing grass:** The grass has spreading roots. It covers the topsoil quickly and holds it firmly. This controls soil erosion.
- (d) **Constructing dams and embankments:** Dams and embankments are built on rivers to check soil erosion by floods or running water.

Think Zone

Give reasons.

1. Briju was advised not to leave his cattle in the same forest area for grazing regularly.

Ans. Cattle should not be made to graze at the same place regularly because this would make the land loose and bare leading to soil erosion.

2. Humans are responsible for soil erosion.

Ans. Humans are responsible for soil erosion because human activities such as deforestation, overgrazing by farm animals, too much ploughing of farmland and leaving land bare after harvesting cause soil erosion.

3. Vanmahotsava is celebrated in schools.

Ans. Vanmahotsava is celebrated in schools to encourage children to grow more plants to prevent soil erosion and to conserve soil. It also makes them aware about the importance of plants.

4. Soil erosion is a cause of concern.

Ans. Soil erosion is a cause of concern because it makes land barren, leads to floods, water pollution, famines, landslides, etc. These calamities result in loss of life and property.

5. We need to protect our soil.

Ans. We need to protect our soil because it is important for all living things. Plants grow in the soil. We all are dependent on plants for food, clothing and shelter. Burrowing animals such as rabbit, rat, etc. and many other organisms like bacteria, fungi, worms and insects live in soil. We also build our houses on the soil. Soil is also used for making bricks, pottery, toys, etc. Thus, living things cannot live without soil.

ANSWERS

Checkpoint 1

Rewrite the following statements correctly.

1. The force of friction makes a coin move in the downward direction.
Gravity makes a coin move in the downward direction.
2. Machines apply muscular force to do something.
Machines apply mechanical force to do something.
3. The downward push of water on an object is called buoyant force.
The upward push of water on an object is called buoyant force.

Checkpoint 2

Fill in the blanks.

1. Wind energy is used to run a windmill.
2. The energy possessed by an object due to its position is called potential energy.
3. The energy of the sun is called solar energy.

Checkpoint 3

Fill in the blanks.

1. A machine makes our work easier.
2. There are three types of levers.
3. A fishing rod is an example of third class lever.
4. A screw is an inclined plane wrapped around a rod.
5. A pulley helps us by changing the direction of the force.

EXERCISES

A. Tick (✓) the correct answer.

1. A force can
 - (a) change the shape of an object
 - (b) change the speed of an object
 - (c) stop a moving object
 - (d) all of these
2. A moving car slowly stops when its engine is turned off. Which force is responsible for this?
 - (a) muscular force
 - (b) magnetic force
 - (c) electrostatic force
 - (d) frictional force

3. The engine of a train pulls the coaches attached to it. Which force is responsible for this?
 (a) mechanical force (b) gravitational force
 (c) magnetic force (d) electrostatic force
4. Which energy is used to run a computer?
 (a) heat energy (b) solar energy
 (c) electrical energy (d) wind energy
5. The energy possessed by an object due to its position is called
 (a) hydro energy (b) sound energy
 (c) potential energy (d) solar energy

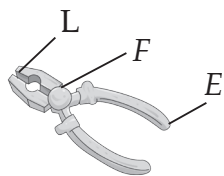
B. Fill in the blanks.

- Buoyant force is also known as upthrust.
- The force caused due to charged objects is called electrostatic force.
- A solar cell converts solar energy into electrical energy.
- Sound energy is produced due to vibrations.
- The point of support on a lever that does not move is called Fulcrum.
- A pulley is a small wheel with a groove around its edge.

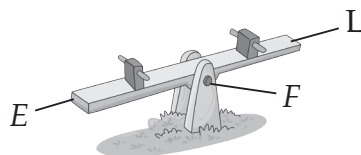
C. Given below is a list of activities. Identify the simple machines which are used to do these activities.

- | | | | |
|---------------------|----------------|------------------------------------|-----------------|
| Shaving | - <u>Razor</u> | Cutting an apple | - <u>Knife</u> |
| Splitting a log | - <u>Wedge</u> | Fixing two planks of wood together | - <u>Screw</u> |
| Sharpening a pencil | - <u>Blade</u> | Drawing water from a well | - <u>Pulley</u> |
| Lifting an ice cube | - <u>Tongs</u> | Pushing a heavy box up a truck | - <u>Ramp</u> |

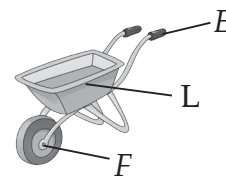
D. Identify the kinds of levers given below. Also mark the fulcrum (F), load (L) and effort (E).



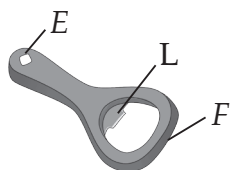
First class lever



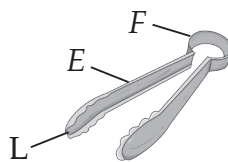
First class lever



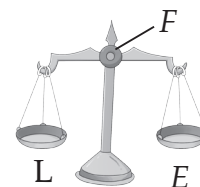
Second class lever



Second class lever



Third class lever



First class lever

E. Answer the following questions.

1. What is a force?

Ans. A force is a pull or push applied on an object.

2. What are the effects of force?

Ans. Following are the effects of force:

A force can

- make an object move.
- stop a moving object.
- change the direction.
- slow down or speed up a moving object.
- change the shape and size of an object.

3. What do you understand by the following forces? Give one example where these forces are used.

(a) muscular

(b) frictional

(c) buoyant

Ans. (a) The force applied by muscles is called muscular force. Muscular force is applied when we push, pull or lift something.

(b) A force which opposes the motion of an object and acts in the opposite direction of motion is called frictional force or friction. Friction is used when a ball rolling on the ground moves some distance and finally stops.

(c) An upward push of a liquid on an object which keeps the object afloat is called buoyant force. Buoyant force is used when something floats on water.

4. What is energy?

Ans. The ability to do work is called energy.

5. Name different forms of energy.

Ans. Different forms of energy are electrical energy, wind energy, solar energy, kinetic energy, potential energy, hydro energy, sound energy and heat energy.

6. Define lever. How many types of levers are there and what is the difference between them?

Ans. A lever is a rigid rod which can turn about one fixed point.

Depending on the position of the fulcrum, load and effort, levers are of three types– first class levers, second class levers and third class levers.

(a) In a first class lever, fulcrum is between load and effort.

(b) In a second class lever, load is between fulcrum and effort.

(c) In a third class lever, effort is between fulcrum and load.

7. What is an inclined plane? What is it used for?

Ans. A sloping surface that reduces the effort required to lift a load is called an inclined plane. It is used as a ramp in hospitals, hotels, airports, etc., to drive the vehicles up, for loading and unloading heavy goods from trucks and on mountains as slopy roads for vehicles to climb up easily.

8. What is a wedge?

Ans. A wedge is a simple machine having two inclined planes joined back to back with a sharp edge. It has both a blunt end and a sharp end.

9. What is a screw? Why is it called the modification of an inclined plane?

Ans. A screw is a simple machine that resembles a nail with grooves in it. It is called the modification of an inclined plane because it is actually an inclined plane wrapped around a rod.

Think Zone

Give reasons.

1. Carpenters use screws instead of nails to join two pieces of wood. Why?

Ans. A screw fixes two pieces of wood better than a nail. It is because a screw has grooves in it.

2. A man wants to move a big boulder. As a passerby what would you suggest him?

Ans. The man can use a lever (i.e., a strong rod) to move the big boulder.

3. The soles of our shoes wear out after some time. Why?

Ans. The force of friction acts between the soles of shoes and ground. It opposes the motion of the shoes and the shoes get rubbed against hard surface of ground.

4. Which force enables you to hold a paper in your hand?

Ans. Frictional force helps to hold a paper in the hand.

ANSWERS

Checkpoint 1

Answer in one word.

1. It is at the centre of solar system. Sun
2. Earth's only natural satellite. Moon
3. Type of objects which form shadows. Opaque
4. A phenomenon when one celestial body blocks the light of another. Eclipse
5. The regular rise and fall of ocean water on the earth. Tide

Checkpoint 2

Name these.

1. First artificial satellite launched Sputnik-1
2. First Indian satellite launched Aryabhata
3. First person to go into space Yuri Gagarin
4. First Indian to go into space Rakesh Sharma

EXERCISES

A. Fill in the blanks.

1. The large circular hollows on the moon are called craters.
2. A total solar eclipse occurs when the moon covers the sun completely.
3. During a lunar eclipse, the earth comes between the sun and the moon.
4. The highest tides occur at new moon and full moon day.
5. Military satellites are often called spy satellites.

B. Write True or False.

1. The universe is a wide-open space. True
2. There is evidence of water at the poles of the moon. True
3. We can live on the moon because it has an atmosphere. False
4. We can jump higher on the moon than on the Earth. True
5. The highest tides are caused on a no moon day. True

C. Name the following.

1. First woman of Indian origin to go into the space
2. Second woman of Indian origin to go into the space
3. A weather satellite
4. A scientific research satellite
5. A communication satellite
6. A military satellite

Kalpana Chawla
Sunita Williams
METSAT
Rohini
APPLE
CARTOSAT

D. Tick (✓) the correct answer.

1. The natural satellite of the earth is the
(a) sun (b) moon
(c) planet (d) star
2. Which of the following is not present on the moon?
(a) craters (b) atmosphere
(c) gravity (d) heat
3. What is the gravity on the moon as compared to that of the earth?
(a) one-eighth (b) one-fifth
(c) one-sixth (d) one-fourth
4. Which type of objects form shadows?
(a) opaque (b) translucent
(c) transparent (d) both (a) and (b)
5. Tides are caused by the gravitational pull of the
(a) stars (b) moon
(c) earth (d) moon and earth

E. Answer the following questions.

1. **What is the sun? How is heat and light produced in the sun?**

Ans. The sun is a star. It is a huge hot ball of burning gases.

Inside the sun, hydrogen gas changes into helium gas producing a lot of heat and light.

2. **What causes the moon to shine?**

Ans. The moon shines when the sun's light falls on its surface and is reflected back to the earth.

3. **What is the moon made up of?**

Ans. The moon is made up of rocks and has fine dirt on its surface.

4. **What are the solar and lunar eclipses?**

Ans. Solar eclipse: When the moon comes between the sun and the earth, it casts a shadow on the earth. To the people who fall under this shadow, the sun gets blocked. This is called solar eclipse.

Lunar eclipse: When the earth comes between the sun and the moon, the light from the sun to the moon is blocked. The shadow of the earth falls on the moon due to which the moon gets darkened. This is called lunar eclipse.

5. What is a tide? How are high and low tides caused?

Ans. A tide is a regular rise and fall of ocean water due to gravitational pull by moon on the earth. High tides are caused when ocean water on the moon-facing side of the earth is attracted upwards. Low tides are formed when the ocean water on the side of the earth facing away from the moon rushes towards the moon-facing side of the earth.

6. What is an artificial satellite?

Ans. An artificial satellite is a man-made object that continuously moves in the orbit of the earth or some other body in the space.

7. What are the types of artificial satellites? Give one example of each.

Ans. Following are the types of artificial satellites.

- (a) **Weather satellites** – Example: METSAT (KALPANA-1)
- (b) **Scientific research satellites** – Example: Rohini.
- (c) **Communication satellites** – Example: APPLE.
- (d) **Military satellites** – Example: CARTOSAT.
- (e) **Navigation or GPS satellites** – Examples: IRNSS1I.
- (f) **Earth observing satellites** – Example: RESOURCESAT-1.

F. Draw the diagrams showing solar eclipse and lunar eclipse.

Ans. Do it yourself.

Think Zone

Give reasons.

1. We cannot live on the moon.

Ans. We cannot live on the moon because there is no atmosphere on it. Due to which, there are extremes of temperature ranging from 123°C to -233°C .

2. You cannot have conversation with your friend on the moon.

Ans. Sound waves need air (a medium) to travel and there is no air on the moon.

3. The sky always looks dark on the moon.

Ans. As there is no atmosphere on the moon, its sky appears dark.

4. Satellites are a great help to sailors.

Ans. Sailors get help from the navigation or GPS satellites for knowing their location on the earth.

5. Birds go back to their nests when there is a total solar eclipse.

Ans. It becomes completely dark during a total solar eclipse, and hence, birds go back to their nests thinking it to be night.

ANSWERS

Checkpoint 1

State True or False.

- | | |
|---|--------------|
| 1. A natural disaster may occur at any time. | <u>True</u> |
| 2. The crust is the hottest layer of the earth. | <u>False</u> |
| 3. The earthquakes that measure 5 or 6 on the Richter Scale cannot be felt. | <u>False</u> |
| 4. The study of volcanoes is called seismology. | <u>False</u> |
| 5. Volcanoes that have not erupted in recent years but may erupt in the future are called active volcanoes. | <u>False</u> |

Checkpoint 2

Fill in the blanks.

- Tsunami waves are also known as tidal waves or storm waves.
- Floods are caused due to heavy rains.
- Floods cause soil erosion.
- Droughts can be prevented by harvesting the rainwater.

EXERCISES

A. Fill in the blanks.

- The sudden shaking of the ground is called an earthquake.
- The earth's crust is made up of many rock plates.
- The tunnel of a volcano is known as vent.
- Hot molten rock that comes out on the ground is called lava.
- Tsunami causes destruction in coastal areas.

B. Match the columns.

- | Column A | Column B |
|---------------|--|
| 1. Tsunami | (a) Eruption of lava |
| 2. Earthquake | (b) Water overflowing from rivers |
| 3. Floods | (c) Absence of rains for a long period |
| 4. Drought | (d) Tidal waves |
| 5. Volcano | (e) Shaking of the earth's surface |

C. Tick (✓) the correct answer.

- An earthquake is measured on a
(a) Metre scale (b) Richter scale ✓
(c) pH scale (d) Mohs scale
- The molten rocks under the earth's crust are called
(a) Magma ✓ (b) Lava (c) Seismogram (d) Vent
- Seismograph is an instrument that measures
(a) Tsunamis (b) Floods
(c) Earthquakes ✓ (d) Droughts
- These are caused due to heavy rainfall.
(a) Earthquake (b) Drought (c) Floods ✓ (d) Volcanoes
- Which of these can lead to drought-like conditions?
(a) No rain for a long period (b) Very high temperature
(c) Hot and dry winds (d) All these ✓

D. Name the following.

- Huge storm waves caused in the sea in coastal regions Tsunami
- A device used to measure the intensity of an earthquake Seismograph
- The mass of molten rocks under the surface of the earth Magma
- Absence of rains over a long period of time Drought
- The only active volcano in the Indian subcontinent Barren island

E. Answer the following questions.

1. What do you understand by a natural disaster?

Ans. A natural event that causes harm to human life, property, animals and the environment is called a natural disaster.

2. What is an earthquake? On which scale is it measured?

Ans. An earthquake is the sudden shaking of ground due to vibrations deep inside the earth. It is measured on Richter Scale.

3. What are the different layers of the earth? Explain.

Ans. The different layers of the earth are the crust, the mantle, the outer core and the inner core.

- The crust is the outer layer where we live. It is made up of many rock plates.
- The next layer is mantle which is made up of semi-molten rocks.
- The outer core is very hot and consists of molten metals such as iron and nickel.
- The inner core is the hottest layer of the earth and is made up of solid iron. It forms the centre of the earth.

4. What is a seismograph? What is it used for?

Ans. A seismograph is an instrument which is used to detect and record seismic waves generated due to an earthquake.

5. What is a volcano? What are its types?

Ans. A volcano is an opening on the earth's surface through which hot and molten rocks, ash and gases erupt from inside the earth. There are three types of volcanoes. They are active, dormant and extinct volcanoes.

6. Give two examples of each (a) active volcano, (b) dormant volcano, (c) extinct volcano.

Ans. (a) Active volcano – Barren Island, Mount Fuji
 (b) Dormant volcano – Mount Kilimanjaro, Mount Edziza
 (c) Extinct volcano – Mount Buninyong, Mount Kulal

7. How are tsunamis caused? What are its effects?

Ans. Tsunamis are caused by an undersea earthquake or by a severe hurricane or cyclone. They cause destruction of life and property in the area near the seashore.

8. Define flood. Write two harmful effects of flood.

Ans. The condition of continuous heavy rains for many days, causing rivers to overflow and submerge nearby areas is called flood.

Two harmful effects of flood are:

- Floods damage the crop fields, submerge many areas causing great loss to life and property.
- Floods wash away the upper fertile layer of soil causing soil erosion.

9. How can floods be prevented?

Ans. Floods can be prevented by growing more trees, building dams and embankments on the rivers.

10. What is a drought? Why is a drought caused?

Ans. A condition of less or no rains over a long period of time is called drought.

A drought is caused by a large-scale cutting of trees, grazing animals on the same land and overploughing of a crop land.

F. In the following wordsearch, find eight terms that you have read in this lesson.

B	U	M	A	J	Q	C	L	V	R	T
V	C	R	U	S	T	X	M	W	F	S
E	A	R	T	H	Q	U	A	K	E	U
N	T	Q	F	N	O	R	G	L	G	N
T	D	Y	T	P	E	J	M	X	P	A
L	Q	M	L	B	S	L	A	V	A	M
N	F	L	O	O	D	S	V	B	R	I
K	Z	U	J	I	T	A	H	W	A	Q
S	E	I	S	M	O	G	R	A	P	H

Think Zone

1. How can you say that floods cause soil erosion?

Ans. The upper fertile layer of soil gets washed away with flood water. This causes soil erosion.

2. Growing more and more trees can prevent droughts. How?

Ans. Growing more and more trees can prevent droughts because trees give out water vapour and help in bringing rains.