

Science Booster 5

1

Plant Reproduction

CHECK POINT 1

1. Oxygen
2. Cotyledons
3. Water

CHECK POINT 2

1. Coconut, lotus
2. Cotton, madar
3. Urea
4. Rabi crops

PRACTICE TIME

A. 1. (T) 2. (F) 3. (T) 4. (F) 5. (F)

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

C. 1. summer

2. stem

3. seed germination

4. plumule

5. crop

D. 1. A plant produces too many seeds because all seeds do not get a chance to grow into new plants.

2. The process of a seed growing into a new plant is called germination of seed.

3. Animals eat fruits and throw their seeds here and there. Some animals like squirrels collect and bury nuts in winter and they forget them. Some seeds are sticky and some bear hooks and spines. They stick to the beaks of birds and reach far-off places with them. Such seeds also get stuck to the fur of animals and clothes of people and get scattered.

4. Seeds dispersed by wind are very light and have special structures like hair, wings, etc. These structures help them float in air and reach far-off places.

5. Rabi crops are grown in winter season while kharif crops are grown in summer season.

E. 1. It is because all the seeds do not get suitable or required conditions to germinate and grow.

2. No. It is because these animals feed on plants.

- F.** It is because plants give us oxygen to breathe in and food to eat. All life depends on plants for food, directly or indirectly.
- G.** Excessive use of fertilisers makes the soil infertile. Excessive fertilisers also get washed with rainwater, reach the waterbodies and pollute the water.

2

Animals and Their Varying Lifestyles

CHECK POINT 1

1. body surface
2. spiracles
3. cilia
4. flippers
5. flightless

CHECK POINT 2

1. Small digestive system
2. Lays eggs in river bank
3. Eats grass
4. Hops on land

PRACTICE TIME

A. 1. Habitat 2. Adaptations 3. Amphibians 4. Gills 5. Tail fin

B. 1. (a) 2. (a) 3. (a)

C. 1. spiracles 2. pangolin 3. proboscis 4. strong

D. 1. *Paramecium* moves with the help of cilia.

2. The two pairs of paired fins help move the fish forward while unpaired fins help in maintaining the balance in water. The tail fin helps in changing the direction.

3. Herbivores have large incisor teeth for cutting, broad molars for chewing and grinding and a long alimentary canal to digest the plant food.

4. Flies, beetles and small worms are the main food of frogs. Frogs catch their prey by flipping their sticky tongue on prey quickly and then pulling it into the mouth with prey sticking to it.

5. Ability of animals to blend with their surroundings due to their natural colours is known as camouflage.

6. Octopus and cuttlefish release a cloud of black ink-like substance to protect themselves from their enemies.

7. Birds migrate in search of food, water and favourable condition of temperature and for breeding.

E. 1. It is because a cockroach cannot breathe in water as water gets filled in the spiracles and stops gaseous exchange.

2. A fish cannot breathe when taken out of water as its gills dry up and no gaseous exchange occurs. Hence, it dies.

F. LUNGS, GILLS, SPIRACLES, CLAW, PADDLE, CILIA, FANG, STING, FLIPPER, PROBOSCIS

G. Caterpillars live and feed on green leaves. Their green colour helps them hide among green leaves. This protects them from their enemies.

3

The Skeletal System

CHECK POINT 1

1. At the lower end of vertebral column
2. Ribcage (chest)
3. Upper arm
4. Thigh

CHECK POINT 2

1. Voluntary
2. Involuntary
3. Involuntary
4. Involuntary

PRACTICE TIME

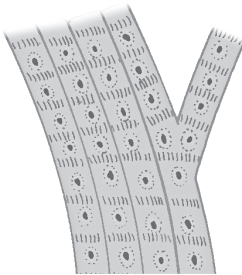
A. 1. (T) 2. (F) 3. (T) 4. (F)

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

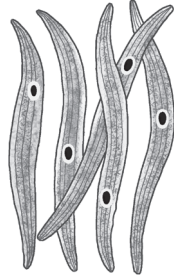
C. 1. skeletal system 2. skull 3. ribs 4. limbs 5. vertebral column 6. girdles 7. movable 8. immovable

- D. 1. ● Skeletal system gives shape and support to the body.
- It protects the soft organs of the body such as brain, heart, lungs, etc.
 - It provides movement to our body parts.
2. A place where two bones join together is called a joint. Joints are of two main types—immovable joints and movable joints. Movable joints are of four types—hinge joint, ball and socket joint, pivot joint and gliding joint.
3. The lower jaw enables us to chew and to speak.
4. Voluntary muscles work under our control, whereas involuntary muscles do not work under our control.
5. The muscle fibres present in the heart are called cardiac muscle fibres.

6.



Striated muscles



Smooth muscles



Cardiac muscles

- E. 1. We cannot bend our knees and elbows backward because they have hinge joints which move in one direction only.
2. The heart is made up of cardiac muscles which are involuntary in nature and

never get tired. They keep working throughout life.

- 3.** If there were no bones in our body, we would not be able to stand straight and would not have the body shape like that we have.
- F.** All living beings do not have skeleton. Some insects have hard body covers and legs made of hard protein. Some animals have strong muscles to crawl on the ground.

4

The Nervous System

CHECK POINT 1

1. Cerebrum 2. Reflex action 3. Sensory nerve 4. Motor nerve

CHECK POINT 2

1. Bone 2. Pupil 3. Hot

PRACTICE TIME

A. 1. (F) 2. (T) 3. (F) 4. (F) 5. (T)

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

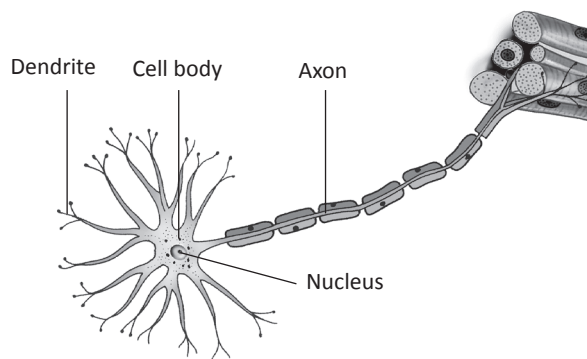
C. 1. cerebrum 2. smell 3. motor 4. iris

D. 1. Brain, spinal cord and nerves are three main parts of our nervous system.

2. The brain controls all our body functions.

- The cerebrum part of brain controls thinking, learning, feeling, etc.
- The cerebellum part controls walking, running, dancing, painting, etc. and maintains body balance.
- The medulla part controls breathing, heartbeat and muscle movement in digestive system.

3. Each nerve cell has a cell body. Small fibres called dendrites extend out from the cell body. A long fibre called axon extends from one end of the cell body.



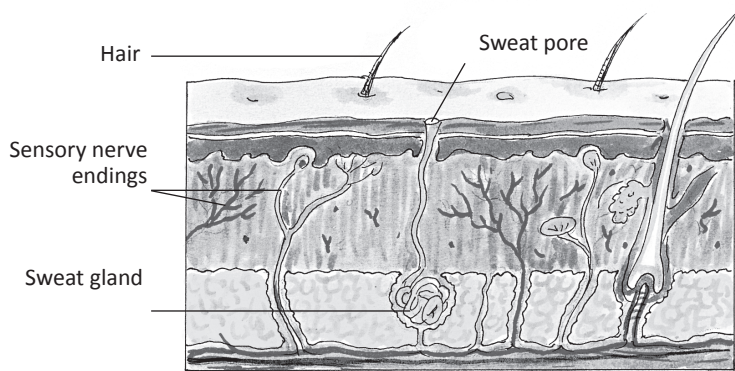
A nerve cell

4. Tongue is the organ of taste. It has four types of taste buds. They are sweet, bitter, salty and sour. These taste buds have nerve endings which carry the message to brain and help us to taste different types of food.

5. We can take care of our eyes by

- Washing the eyes regularly every morning and evening.
- Not reading in moving vehicles and in dim or very bright light.
- Not watching television for long, and never lying down while watching the television.
- Not rubbing eyes with dirty hands.
- Never wiping the eyes with a dirty handkerchief.

6.



Structure of the skin

E. 1. This is due to reflex action.

2. We should not use a pin to clean the ears because it can damage the ear drum, as it has sharp end.

F. When we are in light, our eye muscles narrow the pupil. When we move into a dark room, the pupil takes some time to widen to allow more light to enter the eye.

CHECK POINT 1

1. Glucose 2. Proteins 3. twice 4. Vitamin B and C

CHECK POINT 2

1. Yes 2. No 3. Yes 4. Yes

PRACTICE TIME

A. 1. (F) 2. (T) 3. (T) 4. (F)

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

C. 1. iron 2. balanced 3. vegetables; fruits 4. instant

D. 1. Carbohydrates provide energy to our body to do various works.

2. Fats provide more energy as compared to carbohydrates.

3. Proteins are called body building foods because they help build new cells and tissues, and repair the damaged tissues.

4. Vitamins are classified as fat-soluble and water-soluble vitamins. Vitamins A, D, E and K are fat-soluble vitamins, whereas vitamins B and C are water-soluble vitamins.

5. Roughage is important for us because it helps the food move smoothly through the digestive system. Cabbage, spinach, pumpkin, lady's finger, fruits, oats and whole grains are roughage rich foods.

E. 1. This is because in his age, he needs more vitamins and minerals than fats and proteins.

2. Rest and sleep help the body repair its wear and tear, and become active again.

F. **Across:** 1. SUNLIGHT 3. ROUGHAGE 5. MILK

Down: 1. SLEEP 2. IRON 4. AMLA

G. If we do not get the proper amounts of nutrients in our diet, we may suffer from various deficiency diseases.

H. Kavita may suffer from nutrient deficiency diseases. To avoid these problems, she must have fruits and green leafy vegetables in her diet.

6

Health and Diseases

CHECK POINT 1

1. Direct contact
2. Air
3. Contaminated water and food
4. Insect bite (mosquito)
5. Animal bite (dog)

CHECK POINT 2

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

PRACTICE TIME

A. 1. (F) 2. (T) 3. (T) 4. (T) 5. (T)

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

C. 1. communicable; non-communicable 2. germs 3. malaria 4. Sunlight

D. 1. Communicable diseases spread through direct contact, air, contaminated food and water, animal and insect bite and through vectors.

2. Diseases caused due to lack or deficiency of some nutrients in the body are called deficiency diseases. For example, scurvy, beriberi, rickets, etc.

3. Vaccination is the process of injecting vaccine into the body of a person. It helps to develop immunity against diseases.

4. Obesity is the storage of extra fat under the skin in our body. It is caused due to overeating of carbohydrates and fats.

5. Some wrong food habits are:

- Eating too much salt in diet.
- Eating more fat-soluble vitamins in the form of pills.
- Eating more fried and fatty food.

E. 1. The grandfather needs less fats and proteins, but more fibres, vitamins and minerals in his diet because in old age digestive system becomes weak and it cannot digest fats and proteins easily.

2. It can spread flu to us as these things contain germs of flu from the patient.

F. 1. Calcium; D 2. Vitamin C

G. Disinfectants help to kill the germs and keep the house safe for living. This helps us stay healthy.

7

Staying Safe

CHECK POINT 1

1. falling
2. sand
3. roll on the floor

CHECK POINT 2

1. First aid
2. Blisters
3. Splint

PRACTICE TIME

A. 1. (F) 2. (T) 3. (F) 4. (T)

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

C. 1. accident 2. antiseptic 3. first aid 4. traffic

D. 1. Road signs are important because they give information about what lies ahead.



School ahead



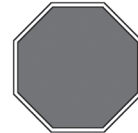
No horn



No stopping or standing



U-turn



Stop

2. A fire caused by petrol can be put out by throwing sand on it or by using a fire extinguisher.

3. **First aid for sprain:**

- Apply an ice pack to the sprained area and pain relieving ointment.
- Tie a crepe bandage or any other clean cloth on the affected area.
- Give complete rest to the affected part.

First aid for animals bite:

- Wash the wound with soap and lots of water.
 - Apply an antiseptic and tie a bandage to prevent infection.
4. Poisonous substances should be stored with labels on their containers and out of reach of children.
5. As a pedestrian, I will
- walk on the footpath or right side of the road.
 - look carefully right and then left before crossing the road.
 - avoid using mobile phone.

- E. 1.** Petrol will float over water and keep on burning if we use water. But, sand will not affect this way. So, we should use sand.
- 2.** Use of mobile phones while driving distracts from driving and causes lack of attention which may cause accident.
- F.** If I were there, I would try to stop bleeding by pressing the cut area and covering it with a handkerchief, and will take her to first-aid room to get her first aid.
- G.** Petrol catches fire easily and smoking at petrol pumps may cause fire accidents.

CHECK POINT 1

1. 800 2. oxygen 3. soil 4. pressure

CHECK POINT 2

1. CNG 2. Malaria 3. Tree 4. Ozone

PRACTICE TIME

A. 1. (F) 2. (F) 3. (F) 4. (T)

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

C. 1. oxygen 2. bacteria 3. evaporation 4. pressure

D. 1. Air consists of 78% nitrogen, 21% oxygen, 0.03% carbon dioxide, some water vapour and other gases.

2. Uses of air pressure are:

- Air pressure is used to fill a pitchkari, a fountain pen and a doctor's syringe.
- Moving liquids from one container to other using a siphon is also due to air pressure.

3. Mixing of unwanted and harmful substances in the air is called air pollution. Causes of air pollution are:

- Burning of fossil fuels releases carbon dioxide and other harmful gases into the air.
- Industries and automobiles release smoke containing many harmful gases.
- Aeroplanes and spacecrafts release lots of smoke in the air.

4. Effects of air pollution are:

- Air pollution causes allergies and diseases like asthma, bronchitis and respiratory disorders.
- It may lead to irritation of eyes, nose and throat.
- It has reduced the thickness of the ozone layer of the atmosphere.
- Polluted air kills plants and trees by damaging their leaves.
- Excess carbon dioxide in air increases the temperature of the atmosphere and causes global warming.

Air pollution can be reduced by following ways:

- Planting more and more trees.

- Automobiles should be checked regularly.
 - We should use solar energy by using solar cookers, solar cells, solar heaters, etc. for cooking and heating water.
 - We should use non-polluting fuels like CNG for cars and buses.
 - We should use only eco-friendly sprays, cosmetics and perfumes.
- E.**
1. It is because CNG is a non-polluting fuel and reduces air pollution.
 2. A straw helps to drink cold drink easily because of the air pressure acting on cold drink inside the bottle.
- F.**
1. Use of non-polluting fuels such as CNG.
 2. Use of solar energy-run vehicles.
 3. Regular pollution check of vehicles.
 4. Keeping engine off when not moving in traffic.
 5. Planting more and more trees along roadsides and in and around neighbourhood.
 6. Use of solar energy-based appliances such as solar cooker for cooking and solar water heater for heating water.
 7. Use of eco-friendly sprays, cosmetics and perfumes.
 8. Making less use of air conditioners.
 9. Encouraging car pooling.
 10. Covering bare land in and around neighbourhood by growing grass and plants.

9

Matter

CHECK POINT 1

1. Matter 2. Mass 3. Gas 4. Gas

CHECK POINT 2

1. Carbon dioxide 2. Nitrogen 3. Mixing salt into water 4. Burning petrol

PRACTICE TIME

A. 1. (F) 2. (T) 3. (T) 4. (T)

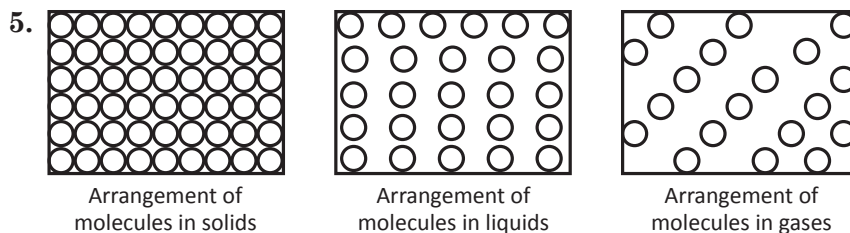
B. 1. (a) 2. (b) 3. (b) 4. (c)

C. 1. solid 2. changes 3. boiled 4. cool 5. physical

D. 1.

Solid	Liquid	Gas
Solids have a definite shape and volume.	Liquids have no definite shape but definite volume.	Gases neither have definite shape nor a definite volume.
Molecules in solid are very close to each other. They move very slow. The molecules attract each other very strongly.	Molecules in liquid are not close to each other as in solids. They move faster as compared to solids. The molecules do not attract each other so strongly.	Molecules in gas are far apart from each other. They move much faster as compared to solids and liquids. The molecules attract each other with very weak force.
Solids cannot flow.	Liquids can flow from a higher level to a lower level.	Gases flow in all directions.

2. A chemical change is a change in which the original substance cannot be obtained from the final product. There is a chemical change when rice is cooked.
3. Carbon dioxide, water vapour and carbon are produced after burning a candle wick.
4. Physical changes are temporary, reversible and no new substance is produced in them, whereas chemical changes are permanent and irreversible with the formation of new substances.



- E.** 1. Because chemical changes cannot be reversed. Hence, they are called permanent changes.
2. The molecules in solids are closely packed and they cannot move at all. This gives a definite volume and shape to solids.

F.

	Solid	Liquid	Gas
Arrangement of particles	Closely packed	Loosely packed	Far apart
Attraction between the particles	Strong	Weak	Very weak
Shape	Definite	Indefinite	Indefinite
Volume	Definite	Definite	Indefinite
Flow	Cannot flow	Flow from higher to lower levels	Flow in all directions

- G.** Molecules of gases have very weak force of attraction among them. So they move around freely and even leave the gas.

CHECK POINT 1

1. Granite 2. Pumice rock 3. Sandstone 4. Gneiss 5. Limestone

CHECK POINT 2

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

PRACTICE TIME

A. 1. (F) 2. (T) 3. (F) 4. (T)

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

C. 1. wind 2. water 3. bottom 4. lakes 5. oceans 6. eroded 7. compressed
8. sedimentary

D. 1. Igneous rocks are the fire rocks formed either on the ground by cooling of lava or underground by cooling of magma.

2. Metamorphic rocks are formed by the transformation of igneous or sedimentary rocks due to extreme pressure and heat.

3. Five varieties of sedimentary rocks are:

(a) **Sandstone:** It is a soft rock made of quartz and feldspar minerals.

(b) **Limestone:** It is a soft rock formed of calcite mineral.

(c) **Conglomerate:** It is made of sand and pebbles which are held together with silica and calcium carbonate minerals.

(d) **Gypsum:** It is a soft rock made of sulphate mineral.

(e) **Shale:** It is a layered rock made of clay.

4. Minerals are natural elements or compounds found in the earth's crust. Quartz and feldspar are minerals.

5. Coal was formed from the decomposition of dead remains of trees, ferns and other plants that lived 300 to 400 million years ago in swampy forests.

6. Petrol, diesel, kerosene, lubricating oil, wax and medicinal oils are obtained from petroleum.

E. 1. Because granite is a very hard and shiny rock. It does not wear out easily.

2. A pumice stone has many air-holes which make it light and help float on water.

F. **Igneous rocks:** Granite, pumice and obsidian

Sedimentary rocks: Sandstone, limestone, conglomerate, gypsum and shale

Metamorphic rocks: Marble, slate and gneiss

CHECK POINT 1

1. Weathering
2. Humus
3. Soil erosion
4. Silting
5. Deforestation

CHECK POINT 2

1. Afforestation
2. Terrace farming
3. Soil conservation
4. Soil pollution

PRACTICE TIME

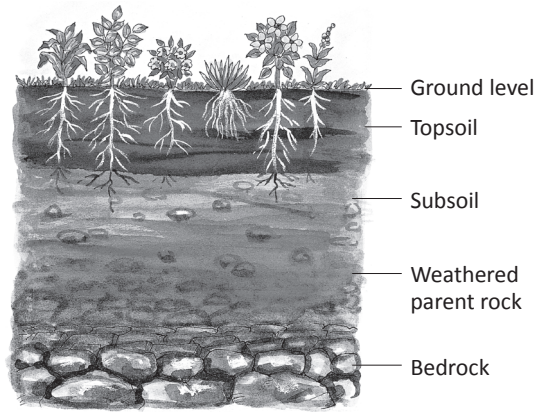
A. 1. (F) 2. (T) 3. (T) 4. (F) 5. (T)

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

C. 1. topsoil 2. hilly 3. faster 4. soil 5. slows 6. bottom

- D. 1. Weathering of rocks is a slow natural process by which rocks are broken into small particles by wind, water and temperature changes.
2. Soil is formed by the weathering of rocks.
3. The loss of top fertile layer of soil due to wind or running water is called soil erosion. The main factors that cause soil erosion are wind, water and human activities like deforestation and overgrazing.
4. The protection of soil against soil erosion is called soil conservation. It is important to maintain soil fertility.
5. Deforestation is cutting down of trees on a large scale, whereas afforestation is the planting of trees in large number of bare land.
6. The major sources of soil pollution are plastics, polythenes and excessive use of pesticides and chemical fertilisers.

7.



Layers of soil

- E.** 1. Solid, nonbiodegradable wastes remain on land intact for many years and make the soil infertile.
2. Excessive grazing at the same place causes soil erosion.
- F.** 1. WEATHERING 2. TOPSOIL 3. BEDROCK 4. SILTING

CHECK POINT 1

1. Muscular force
2. Gravity
3. Frictional force
4. Elastic force

CHECK POINT 2

1. complex
2. three
3. changing
4. wedge

PRACTICE TIME

- A. 1. (F) 2. (T) 3. (F) 4. (T)
- B. 1. (b) 2. (d) 3. (b)
- C. 1. second 2. lever 3. third 4. screw 5. wedge
- D. 1. The push or pull is called force.

Effects of force: A force can

- make an object move
 - stop a moving object
 - change the direction of a moving object
 - slow down or speed up a moving object
 - change the shape and size of an object
2. When in water, the upward force acting on a body due to water is called buoyant force. The force acting between two surfaces in contact is called frictional force.
 3. An inclined plane is a sloping surface that reduces the effort required to lift a load. It is used in hospitals, hotels, footover bridges and airports to go up easily and for loading and unloading heavy goods from trucks.
 4. The four major groups of simple machines are lever, pulley, inclined plane and their modifications. For examples, wheel and axle, wedge and screw are modifications of these simple machines.
 5. The wheel and axle arrangement helps us turn or move something across a

surface more easily. For examples, the direction of a car is changed by using the steering wheel which is attached to axle.

- E. 1.** Pulley is a simple machine which helps lift a load with less force by changing the direction of force applied on the rope. Hence, lifting a bucket of water with the help of pulley is easier.
- 2.** When a ball rolls, a force called friction acts between it and the surface on which it rolls. This friction stops the rolling ball.
- 3.** Swimming tubes do not sink in water as these are filled with air. Hence, they prevent the swimmer from drowning.

CHECK POINT 1

1. Venus 2. Moon 3. Great dark spot 4. Jupiter

CHECK POINT 2

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

PRACTICE TIME

A. 1. (T) 2. (F) 3. (F) 4. (T)

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

- C. 1. The different shapes of the moon that we see are called the phases of the moon.
2. During the course of revolution of the earth and the moon around the sun, when all the three come in straight line, the light of the sun is blocked either by the moon or the earth and one casts the shadow on the other. This makes an eclipse to occur.

Solar eclipse: Sometimes during the revolution of the moon, it comes between the sun and the earth and casts its shadow on the earth by blocking the light of the sun falling on the earth. This makes a solar eclipse to occur.

3. The upward movement of water from the surface of the earth due to gravitational pull of the moon is called tide.
- The low tides occur when the water of the seas on the side of the earth facing away from the moon rushes towards the moon-facing side of the earth.
 - The high tides occur when the water from the moon-facing side of the earth rushes upwards.

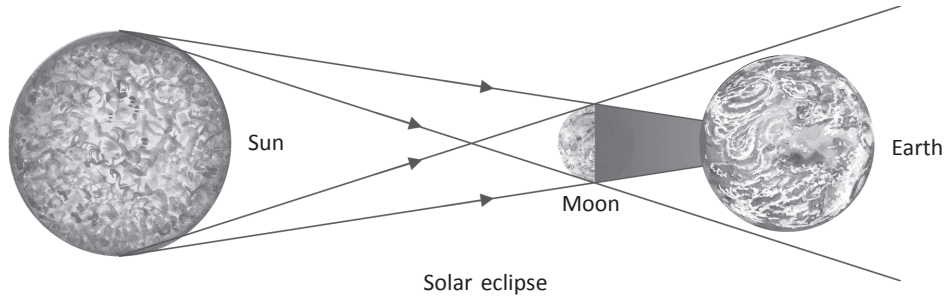
4. The main function of artificial satellites is to collect informations for various purposes.

The first artificial satellite launched by India was Aryabhata.

5. **Lunar eclipse:** The lunar eclipse occurs when the earth comes between the sun and the moon and it casts its shadow on the moon by blocking the light of the sun falling on the moon.

Solar eclipse: The solar eclipse occurs when the moon comes between the earth and the sun and it casts its shadow on the earth by blocking the light of the sun falling the earth.

6.



7. Mercury:

- It is the smallest planet.
- It is the nearest planet to the sun.
- It is made up of rocks and metals.
- It has no natural moon.

Venus:

- It is the hottest and the brightest planet, also called 'Evening Star'.
- It is visible during late evening.
- It is almost same size as the earth.
- It rotates in the direction opposite to all other planets.
- It has no natural moon.

- D. 1.** The highest tides occur at the time of new moon and full moon because at these times, the moon is nearest to the earth and causes its maximum gravitational pull on the sea water.
- 2.** During total solar eclipse, the moon completely covers the sun and its light does not reach the earth. So, it becomes completely dark on the earth.
- 3.** Life is not possible on the moon because there is no water and air on the moon. Air and water are necessary for the life to exist.
- 4.** Neelu could not hear Ravi because sound needs a medium, i.e., air and water to travel and as we know there is no air on the moon for sound to travel.

CHECK POINT

1. No 2. Yes 3. Yes 4. Yes

PRACTICE TIME

- A.** 1. Natural disaster 2. Epicentre 3. Active volcanoes 4. Drought 5. The Barren Island Volcano
- B.** 1. (b) 2. (a) 3. (c)
- C.** 1. plates 2. waves 3. Fire 4. undersea 5. rainwater
- D.** 1. An earthquake is a sudden shaking of the ground. It occurs by the movements or vibrations deep inside the earth.
2. A volcano is an opening on the earth's surface which allows hot, molten rocks, ash and gases to escape from below the surface. Famous active volcanoes are Mount Vesuvius, Mount Etna, Mount Erebus, Mount Fuji and the Barren Island.
3. Tsunami is caused by an undersea earthquake or by a severe hurricane or cyclone. It causes loss of life and property in the area near the seashore.
4. Flood is a condition caused by the continuous rains for several days resulting in overflowing of the rivers and submerging of nearby areas.
Floods are caused when the rain water does not seep through the soil and accumulates over the land.
5. ● The upper fertile layer of soil gets washed away with flood water causing soil erosion.
- Heavy floods wash away animals, vehicles or even kutcha houses with them.
 - They may cause massive loss of life and property.
6. When a particular area receives no rain or less rain than normal for a long period, it is said to be affected by drought.
- E.** 1. (d) 2. (e) 3. (b) 4. (c) 5. (a)
- F.** 1. Flood water flows with heavy force and great speed that wear away topsoil causing soil erosion.
2. It is because trees help form clouds by releasing lots of water vapour into atmosphere through transpiration.
- G.** TSUNAMI, VENT, CRUST, MAGMA, EARTHQUAKE, LAVA, FLOOD, SEISMOGRAPH