

1

Essential
Functions of Life (Animals)

I. Answer the following questions :

Ans.

1. Birds

- (i) Forelimbs of birds are modified in the form of wings. These wings have feathers which help them to fly.
- (ii) The muscles help the birds to flap their wings and to fly.

Insects

- (i) Wings of insects have no feathers, bones and strong muscles etc., to fly.
- (ii) Their wings are made of tiny coloured scales. They move with the help of chest muscles.

- 2. An adult frog breathes through its lungs on land and through its moist skin under water.
- 3. Animals take in oxygen because it breaks down the absorbed food to release energy for life activities.
- 4. Insects breathe through air holes or spiracles on their body surface. The spiracles lead to air tubes which form a fine network that reaches every tissue of the body. Air enters the body through this network. The body tissues take in oxygen and give out carbon dioxide which is pumped out of the body.
On the other hand fish breathe through its gills. Gills are special organs which are richly supplied with blood vessels. An exchange of gases takes place when water flows through the gills. The gills absorb oxygen from water and release carbon dioxide from the blood.
- 5. All animals move from one place to another in search of food, shelter or mate. Limbs in animals are used to move.
- 6. Aquatic animals have fins for swimming. A boat-shaped body and fins help a fish to push water aside and tail to balance. Turtles have four paddle like limbs to push water and to swim. Penguins use their two forelimbs as flippers to push water and to swim. Frogs have webbed feet to swim.
- 7. Whale and dolphin.
- 8. The hands of a monkey or a man are adapted to hold objects. The arrangement of the thumb opposite the finger enables them to hold tools etc. and to do many kinds of work.
- 9. Snakes have scales or plates on the under side of their bodies. These plates are attached to their ribs. When snakes move, these plates act like feet and their ribs like legs. Besides plates, they have strong muscles and a flexible backbone which help them to move forward.
- 10. When a man is in danger, he can use his legs to run and escape and his upper limbs or arms for attack or defence.
- 11. Six-legged creatures-insects usually use their legs for movement. Insects like ants and cockroaches crawl on their legs. A grasshopper uses its long

hind-legs for hopping. Swimming insects like water boatman use their legs as oars while swimming. Some insects have one or two pairs of wings and can fly.

II. Fill in the blanks :

- Ans.**
1. Only **living** things can grow.
 2. Plants depend on animals for **carbon dioxide** and dispersal of seeds.
 3. **Carnivores** are those animals that take food from the body of other animals.
 4. A bird reproduces by laying **eggs**.
 5. All living beings respond to external **stimuli**.

III. Cross out the wrong ones :

- Ans.**
1. Whales and dolphins have lungs/~~gills~~ to breathe.
 2. A bat is a ~~bird~~/mammal that can fly in the air.
 3. Penguins ~~fly~~/swim with the help of its forelimbs.
 4. A grasshopper uses its pair of long hind-legs for running/~~hopping~~.
 5. ~~Fish~~/insects breathe through spiracles.

IV. Give one word for each of the following :

- | | | |
|-------------|--|----------------|
| Ans. | 1. Animals that breathe through spiracles. | insects |
| | 2. Animals which can produce upto 32 babies at a time. | frog |
| | 3. Animals which sense environment through antennae. | insects |
| | 4. A thing that causes a living being respond. | stimuli |
| | 5. Locomotory organs of snakes. | plates |

V. Tick (✓) the correct answer :

- Ans.**
1. Frogs and ducks swim with the help of :

(a) webbed toes	<input checked="" type="checkbox"/>	(b) fins	<input type="checkbox"/>
(c) broad wings	<input type="checkbox"/>	(d) all of these	<input type="checkbox"/>
 2. Insects have limbs :

(a) one pair	<input type="checkbox"/>	(b) two pairs	<input type="checkbox"/>
(c) three pairs	<input checked="" type="checkbox"/>	(d) four pairs	<input type="checkbox"/>
 3. Animals which use their fore limbs as hands are :

(a) monkeys	<input checked="" type="checkbox"/>	(b) squirrels	<input type="checkbox"/>
(c) none of these	<input type="checkbox"/>	(d) both of these	<input type="checkbox"/>
 4. Animals that breathe through spiracles are :

(a) snakes	<input type="checkbox"/>	(b) insects	<input checked="" type="checkbox"/>
(c) fish	<input type="checkbox"/>	(d) earthworms	<input type="checkbox"/>
 5. Wings in birds are modified :

(a) hind-limbs	<input type="checkbox"/>	(b) fore limbs	<input checked="" type="checkbox"/>
(c) none of these	<input type="checkbox"/>	(d) both of these	<input type="checkbox"/>

I. Answer the following questions :

- Ans.**
1. Plants take carbon-di oxide released by animals and animals take oxygen released by plants.
 2. Oxygen is released in the process of photosynthesis. Animals use this oxygen for breathing.
 3. Dead bodies of animals decay and mix with the soil. This adds humus to the soil, which makes it fertile for plants.
 4. Number of herbivores will increase and they will over graze the land, it will lead to scarcity of food for animals like deer.
 5. A food chain is a sequence of living things living in a particular region, in which each living thing is food for the next member in the sequence. The primary source of energy in any food chain is the sun because it helps plants to produce food.

A food chain always belongs to a certain habitat. It clearly indicates the dependence of living things on one-another. It always begins with the producer followed by a herbivorous consumer and then by a carnivorous consumer.

If any one member of the food chain is harmed, all the other living things are also affected. For example, if all deer in a forest are destroyed through natural or human actions, the tigers and leopards living in the region will not have enough food to eat.

6. Value of a 50 year old tree might fetch ₹ 1 to 2 lakhs of timber.

Its real value can be shown as under :

Nitrogen	₹ 20,000
Oxygen	₹ 2,50,000
Prevention of air pollution	₹ 5,00,000
Food and shelter to animals	₹ 2,50,000
Recycling of water and moisture retention	₹ 3,00,000
Prevention of soil erosion	₹ 2,50,000
Total	₹ 15,70,000

7. Forests and forest communities are important to us for the following reasons :

- (i) Forests supply oxygen and purify the air.
- (ii) Forests supply wood.
- (iii) Forests supply food.
- (iv) Forests protect soils.
- (v) Forests prevent floods.
- (vi) Forests provide us medicines.
- (vii) Forest communities in a big way help us to protect our all important forest resources.

8. The Government of India has undertaken a project to protect tigers. It is called the 'Project Tiger'. Under this project, forests where tigers live are protected and looked after by the government. Such forests are called tiger reserves. Nobody is allowed to kill animals or cut trees growing in these forests.
9. To protect a forest, both its plants and animals need to be protected. Trees should be banned to cut in large number for wood or for cleaning land for living or agriculture.
Polluting industries should not be allowed to be set up close to the forest regions. Some people kill wild animals for sport or for their skin or horns. This is called poaching. The government has made many laws against poaching. Forests region of our country are protected by the government. The protected forest region are known as Wild Life Parks or Wild Life Sanctuaries.

II. Fill in the blanks :

- Ans.**
1. Today **lions** are found only in the Gir forest in Gujarat.
 2. Plants cannot grow if there is no **soil**.
 3. Animals depend on plant for a **continuous supply of oxygen** to breathe.
 4. A **food chain** is a sequence of living things found in an area.
 5. Many animals help in the **dispersel** of seeds.
 6. Plants are called **producers** and animals are called **consumers**.
 7. The sun provides **sunlight** to plants for photosynthesis.

III. Write whether the following statements are 'true' or 'false' :

- Ans.**
- | | |
|---|--------------|
| 1. Plants are producers of food. | True |
| 2. Plants do not need oxygen. They need only carbon-di oxide. | False |
| 3. Life cannot be possible on the earth without sunlight. | True |
| 4. In Indian tradition many plants and trees were worshipped. | True |
| 5. Animals do not help in the dispersal of seeds. | False |
| 6. Plants do not depend on animals to produce seeds. | True |
| 7. Plants are homes for a large variety of big and small animals. | True |
| 8. Soil provides shelter to some animals. | True |

IV. Tick (✓) the correct option :

- Ans.**
1. Plants depend on animals for :

(a) food	<input type="checkbox"/>	(b) carbon dioxide	<input checked="" type="checkbox"/>
(c) water	<input type="checkbox"/>	(d) sunlight	<input type="checkbox"/>
 2. Animals depend on plants for :

(a) oxygen	<input checked="" type="checkbox"/>	(b) food	<input type="checkbox"/>
(c) shelter	<input type="checkbox"/>	(d) all of them	<input type="checkbox"/>
 3. If forests are disturbed :

(a) only plants are affected	<input type="checkbox"/>
(b) only animals are affected	<input type="checkbox"/>
(c) only human beings are affected	<input type="checkbox"/>
(d) all living-beings are affected	<input checked="" type="checkbox"/>

4. A food chain always begin with a :
- | | | | |
|--------------|--------------------------|-----------------|-------------------------------------|
| (a) omnivore | <input type="checkbox"/> | (b) producer | <input checked="" type="checkbox"/> |
| (c) consumer | <input type="checkbox"/> | (d) transporter | <input type="checkbox"/> |
5. The protected forest regions are called :
- | | | | |
|---------------------|-------------------------------------|---------------------------|--------------------------|
| (a) Wild life parks | <input type="checkbox"/> | (b) Wild life sanctuaries | <input type="checkbox"/> |
| (c) both of these | <input checked="" type="checkbox"/> | (d) none of these | <input type="checkbox"/> |

3

Adaptations by Plants and Animals

I. Answer the following questions :

- Ans.**
- Growing tall is an adaptation for forest trees. In dense forests, it is difficult to get sunlight. So they grow straight and tall.
 - The stem of desert plants is green and contains chlorophyll. It makes food for the plant.
 - Mangrove trees grow in swampy areas. The soil does not contain air. Their roots come out of water so as to get air.
 - Flowering plants reproduce through seeds. A plant produces many seeds. If they all germinate nearby mother plants, they shall get very little water, minerals, space and sunlight. So plants have adapted mechanism for scattering of seeds to far off places. Scattering or spreading of seeds to distant places, is called seed dispersal. Seed dispersal takes place through different agents like wind, water and animals.
 - Insects have holes on their body. These small holes are called spiracles. They lead into a network of tubes inside the body. They are called trachea. Air enters the spiracles, passes into the trachea and is absorbed by the tissues of the body. Carbon dioxide from the tissues enters the trachea and is removed from the body through the spiracles.
 - A snake moves on its scales. It moves by curving and straightening its body. Scales on its underside grip the ground and helps it to move.
 - Fish have fins to swim in water. Most fish have two pairs of fins—one or more unpaired fins and a tail fin. The fish use the unpaired fin as oars, when they swim slowly. The tail fin is used as a propeller and pushes a fish forward. The unpaired fins maintain the balance. Whales also use fins to swim.
 - Animals migrate in search of favourable conditions of temperature, food and breeding grounds.

II. Fill in the blanks :

- Ans.**
- Plants develop **adaptation** to survive.
 - Stem of **desert** plants contains chlorophyll.
 - Suckers are found in **parasitic** plants.
 - Winged seeds blow with the **wind**.
 - Forest plants grow tall to get **sunlight**.
 - Animals help in the **dispersal** of seeds.

7. Seeds of drumstick has **papery** wings.
8. Hard **hairy** shell of coconut protects it against damage by rocks.

III. Write whether the following statements are 'true' or 'false' :

- Ans.**
- | | |
|--|--------------|
| 1. Puffball contains millions of spores. | True |
| 2. Animals cannot adapt themselves according to the environment. | False |
| 3. Cactus is a type of fungus. | False |
| 4. Animals use same body parts for moving. | False |
| 5. All plants produce seeds. | False |
| 6. Mangroves can grow in the desert. | False |
| 7. Animals migrate to long distances in search of food, to escape unsuitable weather and to reproduce. | True |
| 8. Animals have same breathing organs and methods. | False |

IV. Match the following columns :

- | | | |
|-------------|--|-------------------|
| Ans. | Column 'A' | Column 'B' |
| | 1. A seed that has wings | (d) drumstick |
| | 2. Tortoise | (c) shell |
| | 3. Polar bear | (a) fur |
| | 4. A fleshy, juicy and edible fruit | (e) mango |
| | 5. A seed with a fibrous coat | (f) coconut |
| | 6. A seed that has hooks | (h) tiger nail |
| | 7. A fruit that bursts to scatter its seeds | (g) balsam |
| | 8. A fruit whose seeds are not digested by animals | (b) tomato |

V. Define the following terms :

- Ans.**
1. **Habitat** : A place where an organism lives, feeds and reproduces comfortably and normally.
 2. **Spiracles** : Holes on the bodies of insects which lead into a network of tubes inside the body.
 3. **Migration** : Movement of animals in search of favourable conditions of temperature, food and breeding grounds.

Now You do

1. Write these animals in the relevant columns :

Ans.	Terrestrial animals	Aquatic animals	Amphibian animals	Arboreal animals	Aerial animals
	Cow Zebra	Whale Dolphin	Toad Frog	Monkey Squirrel	Sparrow Parrot

I. Answer the following questions :

- Ans.**
1. Skeleton encloses all the internal organs giving support, shape and strength to the body.

2. (i) **Hinge joint** : It works like a hinge in the door. At this joint, bones can move only in one direction.
 (ii) **Ball and Socket joint** : Ball of a bone moves into the socket of the other bone. It allows to swing our arms almost like a wheel.
 (iii) **Pivot joint** : This joint is found between the skull and the first two vertebrae of the backbone. It allows the skull to move from side to side and up and down.
 (iv) **Gliding joint** : In this joint one bone glides on the another in it. It allows only a little movement but in all directions.
3. The bones of the feet are arranged in the form of an arch. An arch can support maximum weight. There are three kinds of arches in each foot :
 (i) at the base of the heel (ii) at the base of the big toe and (iii) at the base of each small toe.
4. Voluntary muscles are under our control. We can use them as we like. Involuntary muscles are not under our control. They work on their own will. They are automatically controlled by our brain.
5. **Cardiac muscles** : These muscles are not attached to any bone. Our heart has cardiac muscles. These muscles of heart keep on working 24 hours a day, throughout our lifetime. Cardiac muscles are very strong. So, they do not get tired.
6. Bones and muscles perform very important functions. So, one should take proper care to keep them strong and healthy. Muscles grow and develop by adequate exercise. Swimming, walking, running, jumping, cycling and games are good exercises. Bending and stretching of body in yoga and P.T. are also a kind of exercises.
 Keeping correct posture is also necessary. Sit straight, stand straight and walk straight. Correct posture helps bones grow healthy and correctly and support the body well. Food items like pulses, milk, bananas, wheat, eggs and fish are food for your healthy muscles and bones. Taking tobacco, alcohol or any other harmful habit forming drugs, damage the bones and muscles.

II. Fill in the blanks :

- Ans.**
1. You cannot move your **upper** jaw.
 2. The floating ribs are joined only to the **backbone**.
 3. Cardiac muscles are the muscles of the **heart**.
 4. The upper arm joins the lower arm at the **elbow**.
 5. **Bone-marrow** in the hollow of long bones makes the red blood cells in the body.

III. Write whether the following statements are 'true' or 'false' :

- Ans.**
- | | |
|---|--------------|
| 1. The skeleton gives shape, support and strength to the body. | True |
| 2. The ribs protect the brain. | False |
| 3. The long bones of the legs are tube like structures. | True |
| 4. Muscles and bones help to move the parts of the body. | True |
| 5. The bones of the rib-cage are inflexible. | False |
| 6. Proper food and regular exercise keep the muscles and bones healthy. | True |

IV. Give one word for each of the following :

- | | | |
|-------------|---|--------------------|
| Ans. | 1. The substance found inside the bones. | bone marrow |
| | 2. The bones that protect the brain. | skull |
| | 3. The bones that protect heart and lungs. | rib cage |
| | 4. The tissue that join bones and muscles. | ligaments |
| | 5. Cardiac muscles belong to the human organ. | heart |

V. Which joint comes into use when you do the following :

- | | | |
|-------------|--|------------------------------|
| Ans. | 1. Bend down to touch your toes. | pivot joint |
| | 2. Climb a staircase. | hinge joint |
| | 3. Lift your head. | pivot joint |
| | 4. Write with your hand. | hinge joint |
| | 5. Rotate your shoulders while exercising. | ball and socket joint |

VI. Tick (✓) the correct option :

- Ans.**
- Which of the following is an immovable joint?
(a) bones in the wrist
(b) bones in the upper part of the skull
(c) bones in the face
(d) bones in the shoulders
 - Red and white blood cells are found in the :
(a) brain (b) spinal cord
(c) bone marrow (d) all of these
 - Which of the following movements cannot done by the bones in the neck?
(a) up and down (b) right to left
(c) left to right (d) front to back
 - The joint between the skull and the first two vertebrae of the backbone are called :
(a) hinge joint (b) pivot joint
(c) gliding joint (d) ball and socket joint

5

The Brain and The Nervous System

I. Answer the following questions :

- Ans.**
- The brain, spinal cord and nerves.
The Brain : The brain controls all our activities.
It consists of three parts : cerebrum, cerebellum and medula oblongata.
Each of these parts perform a specific function.
Spinal Cord : It controls the reflex action.

Nerves : Nerves carry the impulses to the brain and spinal cord and carry their order to the muscles.

2. Nerves carry the impulses to the brain and spinal cord and carry the order to the muscles. The brain receives and messages through the nerves. So, the network of nerves allows the brain to monitor every part of the body.
3. **(i) Sensory nerves :** Nerves that carry messages from the sense organs to the brain or spinal cord, are called **sensory nerves**.
(ii) Motor nerves : Nerves that carry orders from the brain or spinal cord to the muscles to move or glands to secrete, are called **motor nerves**.
(iii) Mixed nerves : Some nerves do both these jobs and are called **mixed nerves**.
4. An automatic movement in response to a stimulus is called a reflex action. A reflex action does not involve the brain directly. Suppose, you get your finger pricked by a pin, you feel the pain and at once a message is sent to the spinal cord. The spinal cord acts quickly by sending a message to the arm muscles to move away the finger.
5. The brain is protected within a bony structure called skull. The space between the brain and the skull bones is filled with a fluid. This structure protects the brain from shocks and jerks.
6. Eyes, ears, nose, tongue and skin.
7. Tongue is the sense organ of taste. We taste with our tongue. The surface of the tongue has many taste buds. These taste buds have nerve endings. When food enters the mouth, it touches the taste buds. These buds send signals to the brain through the nerve endings. Different areas of the tongue are sensitive to different tastes, such as sweet, salty, sour and bitter.
8. We see an object before us with the help of our eyes. Light enters the eye through the pupil and passes through the lens. At the back of the eye is the retina. Cells of the retina are sensitive to light and colour. The optic nerve connects the eye to the brain. Messages from the retina also pass to the brain through this optic nerve.

II. Fill in the blanks :

- Ans.**
1. The brain, spinal cord and **nerves** form our **nervous** system.
 2. The **brain** is protected in the skull.
 3. The spinal cord is protected in the **vertebral column**.
 4. The vertebral column runs all along your **backbone**.
 5. Spinal cord begins at the **medulla**.
 6. Taste buds are located on the **tongue**.
 7. A motor nerve can carry message from the **brain** or the spinal cord to **muscles**.

III. Name the following :

- Ans.**
1. The part of the brain that controls the involuntary actions of the internal organs. **Medulla oblongata**
 2. The nerves that carry messages from the skin to the brain. **Sensory nerves**

- | | |
|---|-----------------------|
| 3. The actions controlled by the spinal cord. | reflex actions |
| 4. The part of the eye that focuses the picture. | lens |
| 5. The nerves that cause movement of the muscles. | motor nerves |

IV. Give one word for the following :

- | | |
|--|--------------------------|
| Ans. 1. The largest part of the brain. | Cerebrum |
| 2. Part of the brain that works even when we are asleep. | Medulla Oblongata |
| 3. The sense organ that has taste buds. | Tongue |
| 4. This sense organs gives us the sense of touch. | Skin |
| 5. Cells of the nervous system. | Neurons |
| 6. This vibrates when sound passes through it. | Ear drum |
| 7. Black spot in the centre of the iris. | Retina |
| 8. Action which are controlled by the spinal cord. | Reflex actions |

V. Match the following columns :

- | Ans. | Column 'A' | Column 'B' |
|-------------|-------------------|--|
| | 1. Spinal cord | (c) reflex action |
| | 2. Eye | (e) pupil |
| | 3. Tongue | (a) taste buds |
| | 4. Medulla | (b) controls involuntary action |
| | 5. Cerebellum | (d) controls muscular actions |
| | 6. Cerebrum | (g) controls our sense organs |
| | 7. Skin | (f) has many nerve endings |

VI. Name three :

- Ans.**
1. The brain, spinal cord and nerves
 2. Motor nerves, mixed nerves and sensory nerves
 3. Cerebrum, cerebellum and medulla oblongata
 4. Controls our thinking, our memory and sense organs.

Unit – 3 Air, Water and Weather

6

**Atmosphere :
Our Life Supports**

I. Answer the following questions :

- Ans.**
1. It absorbs the sun's ultra-violet rays.
 2. The gaseous envelope covering the earth, is called atmosphere. Air is mainly composed of oxygen (21%), nitrogen (78%) and carbon dioxide (0.03%). It contains other gases, water-vapour and dust particles also.
 3. Air has weight, it occupies space and it exerts pressure.
 4. We make use of air pressure in a syringe.

5. Liquid rise in the dropper to take that place of air that was thrown out when the dropper was pressed.
6. Soluble impurities cannot be removed by sedimentation, decantation and filtration.
7.
 - (i) Pure water has no colour, taste or odour.
 - (ii) Water is a very good solvent as it dissolves many things. It is called the universal solvent.
 - (iii) Water can absorb a lot of heat. That is why water is valuable to industries. It is also used as a coolant in vehicles.
 - (iv) Water tends to clump in drops. That is why it can move through the roots and stem of plants and through the tiny blood vessels of our body.
 - (v) Water is the only natural substance that is found in all three states of matter—liquid (water), solid (ice) and gas (steam).
8. **Distillation** : In the process of distillation, water is first heated in a distillation flask. The water evaporates and steam enters the condenser. The condenser is kept cool by the cold water circulating around it. When hot steam enters the cool condenser, the steam changes into water again. It is collected in another flask. This water is called distilled water and is very pure water.

II. Fill in the blanks :

- Ans.
1. **Oxygen** helps in burning something.
 2. Neon gas is used in glowing neon **signs**.
 3. Ozone is found in the **stratosphere** layer.
 4. Amount of water vapour contained in air is called **humidity**.
 5. Water cannot be lifted more than **1034** centimetres.
 6. Moving air has **force** and it can push things.
 7. Air pressure can be transferred in all **directions**.
 8. Anything that has weight **exerts** pressure.

III. Match the following columns :

- | Ans. | Column 'A' | Column 'B' |
|------|-----------------|--|
| | 1. Exosphere | (b) outermost layer |
| | 2. Ionosphere | (e) reflects back radio signals |
| | 3. Thermosphere | (d) hot layer |
| | 4. Mesosphere | (f) cold layer |
| | 5. Stratosphere | (a) jet planes fly here |
| | 6. Troposphere | (c) responsible for weather changes |

IV. Circle the correct answer :

- Ans.
1. Insoluble impurities can be removed by **filtration** /evaporation.
 2. Water should be boiled for at least **10 minutes** /30 minutes to make it suitable for drinking.
 3. There are four/ **five** layers in the atmosphere.

4. Soluble impurities can be removed by decantation/**distillation**.
5. The ozone layer is located in the **stratosphere**/troposphere.
6. **Nitrogen**/oxygen is present in the maximum quantity in the air.

V. Identify the gas and give its percentage in the air :

- Ans.**
- | | |
|--|-----------------------------|
| 1. Plants need me to prepare food. | Carbon dioxide-0.03% |
| 2. When you breathe, you make use of me. | Oxygen-21% |
| 3. More than three quarters of air is me. | Nitrogen-78% |
| 4. I am used to produce orange glow in electric tube lights. | Neon-0.95% |

VI. Tick (✓) the correct option :

- Ans.**
1. Air does not contain :

(a) argon	<input type="checkbox"/>	(b) nitrogen	<input type="checkbox"/>
(c) sulphur	<input checked="" type="checkbox"/>	(d) oxygen	<input type="checkbox"/>
 2. How many valves does a water pump have?

(a) one	<input type="checkbox"/>	(b) two	<input checked="" type="checkbox"/>
(c) three	<input type="checkbox"/>	(d) four	<input type="checkbox"/>
 3. Besides gases air also contains :

(a) smoke	<input type="checkbox"/>	(b) nitrogen	<input type="checkbox"/>
(c) dust	<input type="checkbox"/>	(d) all of these	<input checked="" type="checkbox"/>
 4. It does not work by air pressure :

(a) syringe	<input type="checkbox"/>	(b) siphon	<input type="checkbox"/>
(c) fan	<input checked="" type="checkbox"/>	(d) water-pump	<input type="checkbox"/>

I. Answer the following questions :

- Ans.**
1. (a) **Carbohydrates and Fats** : They give energy.
 (b) **Proteins** : They are necessary for growth and repair.
 (c) **Vitamins** : They give resistance to our body to fight against diseases.
 2. A daily diet that provides all the nutrients in the right amount, is called a balanced diet. If the diet contains less nutrients, the body becomes weak.
 3. Insufficient amount of nutrients from food can cause deficiency diseases. Deficiency diseases are called non-communicable diseases also because they do not spread from one person to another. We can prevent them by taking balanced diet.
 4. Diseases that spread from one person to another, are called communicable diseases. They are spread through air, infected food and water, direct contact, insect bite.

5. Disease causing microscopic organisms are called germs. They are transferred from one person to another through air, food and water, direct contact and insect bite.
6. Malaria and dengue can be controlled by the following measures :
Do not allow water to collect around homes, gardens, schools, offices and playgrounds as mosquitoes lay their eggs in standing water. Introduce fish in the ponds. They feed on mosquito larvae and do not let mosquitoes multiply. Use mosquito repellent cream to keep mosquitoes away. Use a mosquito net to sleep in. If malaria is common in your area, ask your doctor to prescribe preventive medicines and take them regularly.
7. A vaccine is a preparation that improves immunity to a particular disease. Vaccines protect a person from certain diseases. They kill micro-organisms causing diseases and reduce the risk of infection.
After vaccination the body is ready to fight away the infection. Thus preventing the occurrence of that disease. Vaccines are available for many diseases such as polio, diphtheria, whooping cough, typhoid, etc.
8. Cholera spreads by infected food and water. Influenza spreads through air and direct contact.
9. **(i) Bacteria :** These are single-celled plants which may be round, rod shaped or spiral in shape. These can cause typhoid, cholera and tuberculosis.
(ii) Virus : Virus are much smaller than bacteria and can be seen with the help of an electron microscope only. They become active only on entering a living body. They are filterable. They cause diseases such as influenza, rabies, measles and smallpox etc.
(iii) Protozoa : Protozoa are much bigger than bacteria. They are single celled creatures. Amoebic dysentery and malaria are diseases caused by protozoa, amoeba and plasmodium respectively.
(iv) Fungi : These are very small non-green plants. They are larger than bacteria. Fungi cause disease called ringworm.
10. Clean habits help prevent the spread of diseases. A clean person is a healthy person. Do the following to maintain your personal hygiene.
 - Brush your teeth at least twice a day. Clean your tongue with a tongue cleaner.
 - Wash your hands with soap and water after you visit the toilet.
 - Have a bath daily. Clean your nose and ears after taking bath.
 - Keep your finger nails short and clean. Do not bite your finger nails.
 - Always wear clean clothes and keep your surroundings clean.
 - Do regular exercise and take enough rest to keep your mind and body healthy.

II. Fill in the blanks :

- Ans.**
1. **Vaccination** protect us from certain germs.
 2. Diseases are of two types, **communicable** and **non-communicable** diseases.

- Anopheles mosquito causes **malaria** while **aedes mosquito** causes dengue.
- Protozoa** are single celled plants.
- Disease-causing micro-organisms are called **germs**.
- Fungi are very small non-green **plants**.
- Deficiency of vitamin D causes **rickets**.

III. Name any two diseases caused by :

- Ans.**
- | | | |
|--------------------------------------|--------------------|---------------------|
| 1. Germs in the air | chicken pox | tuberculosis |
| 2. Contaminated food | cholera | typhoid |
| 3. Insect bites | malaria | dengue |
| 4. Direct contact with the patients. | measles | common cold |

IV. From the given symptoms, identify the probable disease :

- Ans.**
- Has dry cough, mild fever and body has become very weak. **whooping cough**
 - Has vomitted 5 times and passed watery stools several times in a day, had eaten some fruits from a roadside vendor. **cholera**
 - Cough and has a running nose. **common cold**
 - Has high fever with bodyache and feels very cold; was bitten by a mosquitoes a few days back. **malaria**

V. Complete the following table :

Ans.	Diseases	Germ Type	Mode of transmission
	1. Typhoid	bacteria	infected food and water
	2. Malaria	mosquito	insect bite
	3. Chicken pox	virus	direct contact
	4. Cholera	bacteria	water
	5. Measles	virus	direct contact
	6. Plague	insect	insect bite

VI. Fill in the diseases that are caused due to the deficiency of these :

Down

- Ans.**
- | | | | |
|--------------|------------------|--------------|---------------------|
| 1. Vitamin B | beri-beri | 2. Calcium | osteoporosis |
| 3. Iron | anaemia | 4. Vitamin C | scurvy |

Across

- | | | | |
|--------------|------------------------|-----------|---------------|
| 4. Vitamin A | night blindness | 6. Iodine | goitre |
| 7. Vitamin D | rickets | | |

VII. Tick (✓) the correct option :

- Ans.**
- Rickets can be prevented in a child by giving him :

(a) fruits	<input type="checkbox"/>	(b) exposure to sunlight	<input checked="" type="checkbox"/>
(c) vitamin A	<input type="checkbox"/>	(d) vitamin C	<input type="checkbox"/>
 - If one suffers from swollen, bleeding gums eat :

(a) Papaya	<input type="checkbox"/>	(b) milk and chapati	<input type="checkbox"/>
(c) amla and lemon	<input checked="" type="checkbox"/>	(d) sweet potatoes	<input type="checkbox"/>

3. Night blindness can be prevented by eating daily :
- (a) rice and dal (b) chapati and dal
 (c) carrot and spinach (d) nuts
4. What are micro-organisms?
- (a) small living things, which can be seen only with the help of a microscope
 (b) small living things that live only in the air
 (c) any small living thing that can make us sick
 (d) none of the above
5. Where do germs live?
- (a) only in water (b) only in air
 (c) only in soil (d) everywhere

8

Safety and First-Aid

I. Answer the following questions :

- Ans.**
- The immediate help given to an injured person to minimize his pain and at times to save his life is called first-aid. It prevents the condition of the victim from getting worse.
 - Make the victim sit down on a chair, with the head held back.
 - Ask the victim to put a wet handkerchief over the nose until the bleeding stops.
 - Put an ice-cube over the nose. This would ensure that bleeding does not start again.
 - Ask the victim to breathe through his mouth for sometime.
 - Wash the wound with antiseptic soap and clean water to remove the saliva.
 - Apply antiseptic cream on the wound to prevent infection.
Take the victim to a doctor to get anti-rabies injection.
 - In case of a snake bite, it injects poison into the victim's body. This poison spreads to all parts of the body through the blood.
Do the following in case of a snake bite :
 - Do not move the victim. Movement will cause the poison to spread faster.
 - Tie a piece of cloth or a bandage just above the bite. This would slow

down the movement of the infected blood towards the heart.

- Take the victim to a doctor to get him anti-venom injection.
4. • Make sure that the fractured part is not moved.
 - Take a piece of cardboard or wood, a magazine or a pillow and tie it around the affected part. This will act as a **splint**. It will prevent the movement of the bone.
 - You cannot treat a fracture on your own. So take the victim to a doctor.
 5. (i) We will use a zebra crossing to cross the road. (ii) We will cross the road after looking on the road both sides.
 6. • Get your hands washed with soap and water to remove germs. Germs if present, usually enter the body through minor cut and wounds.
 - If the cut is minor clean it with soap and plenty of water. Dry it and apply an antiseptic cream or put a band-aid over the wound.
 - To stop the bleeding from severe cuts first wash it with soap and water.
 - Take some cotton, wool or make a thick pad of sterile gauze and press it over the wound. Then tie it tightly with a bandage.
 - Consult a doctor for the treatment.
 7. • Shout for help.
 - Extend a long pole or use a rope attached to a floating object such as a life ring or inflated tube of a vehicle tyre, then pull the person out of water.
 - Remove wet clothes and cover the person with something warm.
 - If injured, do not move the person. Call an ambulance and shift the person to the nearest hospital or clinic.
 8. Earthquakes, tsunamis, floods, tides and cyclones etc. are natural disasters that can cause a great damage to human life. These occur naturally. Except earthquakes, the other natural calamities can be predicted and people can move away from approaching tsunamis, cyclones or floods.

Earthquake : Some areas experience earthquakes more frequently. During a strong earthquake, the ground shakes with a great force and damage human lives and buildings. A strong earthquake in the sea of more than 7 on the richter scale can cause a tsunami in which sea water rushes into the coastal region with great force.

II. Fill in the blanks :

- Ans.**
1. In case of heavy bleeding, sit with your head **held back**.
 2. In case of heavy bleeding, use **bandage**.
 3. Use the **zebra** crossing to cross the road.
 4. Except **earthquakes** all natural disasters can be predicted.
 5. Splint gives **support** to the broken bone.
 6. Never give or take **medicine** in the dark.
 7. A **fracture** is a breaking of a bone.
 8. Fires are put out by fire **extinguisher**.

III. What will happen in the following situations?

- Ans.**
1. He may get a shock.
 2. He may a electrical shock.
 3. Poison will spread fastly.
 4. It will provide relief.
 5. He may become victim of rabies.

IV. Match the following columns :"

- | Ans. | Column 'A' | Column 'B' |
|-------------|-------------------------------|----------------------|
| | 1. Playing with a knife | (d) cuts |
| | 2. Playing on the road side | (f) road accident |
| | 3. Hand blow | (b) brusies |
| | 4. Teasing animal | (e) animal bite |
| | 5. Bursting crackers in hands | (a) burns |
| | 6. Touching the live wire | (c) electric current |

V. Give reason for the following :

- Ans.**
1. To avoid wrong use.
 2. To avoid spread of germs.
 3. To support injured part.
 4. To remove saliva.

VI. What first aid would you give to the following :

- Ans.**
1. We will keep burnt area under cold running water.
 2. We will take the victim to safe place.
 3. We will wash his wound and apply an antiseptic cream.
 4. We will wash his cut and put bandage over it.
 5. We will pull him out of the water. Remove his wet clothes and try to keep him warm.

Rocks and Minerals

I. Answer the following questions :

- Ans.**
1. Sedimentary rocks are formed from pebbles, sand, mud or clay that are deposited in oceans. These sediments are brought to shore by flowing water or ice and are piled up in layers. The layers are cemented together by minerals. Some kinds of sedimentary rocks are formed from the shells of tiny sea creatures. Others are formed when dissolved minerals settle by the side of oceans.
 2. Metamorphic rock means rock that has changed. Igneous or sedimentary rocks change into metamorphic rocks. Most metamorphic rocks were either igneous or sedimentary. Powerful forces like heat and pressure bring about changes in rocks. In some rocks, the minerals are broken into smaller ones. In others, the minerals are constructed into fine particles, while in some, the sedimentary materials are replaced.
 3. Igneous rocks are formed from magma, the hot molten material found deep inside the earth. The intense pressure inside the earth pushes the magma towards the surface of the earth. The magma cools first below the earth's surface. Then it hardens to form igneous rocks. The first rocks to form on earth were igneous rocks.
Volcanoes eruption also lead to the formation of igneous rocks. When volcanoes erupt, magma comes out of them. When this magma reaches the surface of the earth, it is called lava. This lava cools and hardens to form previous rocks. The type of igneous rock formed depends on the kind of minerals the magma contains and the size of the mineral particles.
 4. (i) Rocks like marbles, sandstone and granite are used for making buildings and paving roads. The Taj Mahal of Agra is made of marble. The Red Fort at Delhi and Agra are made of red sandstone. Granite temples and statues have been made in South India. Marble temples and statues have been made in North India.
(ii) Rocks (minerals) also give us useful metals like platinum, gold, silver, copper, zinc, nickel, aluminium and iron etc. Metals are used for jewellery, coins, internet wire, aeroplanes, machines, furnitures and rails.
(iii) Precious stones or gem stones like diamond and ruby are also found in rocks. Stones used to make jewellery, are called gem stones. They are often coloured and shining pieces of stones. Ruby is red, sapphire blue and emerald green. They are called gems when cut and polished.

Gems sparkle and shine. Diamond is almost colourless but most sparkling and most precious.

5. Long ago, the earth was covered with forests and swamps. When plants died, they fell into these swamps. Over million of years, mud and new plants got deposited on them. Due to intense pressure, the bottom layers of plants matter changed into coal.
There are four types of coal : peat, lignite, bituminous and anthracite.
6. Coal and petroleum are used as fuel. Coal is also used in steel plants to make steel. Petroleum is also used in the plastic, paint, fertilizer and cosmetic industries.
7. Coal and petroleum are called fossil fuels as they are formed from fossils of plants or animals buried under sedimentary rocks.
8. Petroleum is refined in refineries to give cooking gas, petrol, diesel, kerosene, lubricants, vaseline, wax, asphalt etc. Petrol is used in running motor-cycles and cars. Diesel is used in trains and buses. Petrol is used for dry cleaning our woollen clothes. Many chemicals which come from coal and petroleum, help to make nylon, plastics, fertilizers, medicines, perfumes, cosmetics, colour dyes etc.

II. Fill in the blanks :

- Ans.**
1. **Shale** is used to make tiles for roofs.
 2. **Wells** are dug deep under the ground to get petroleum.
 3. **Igneous rock** is formed when magma cools slowly **under** the ground.
 4. **Minerals** are dug out from mines as ores.
 5. **Coal** is formed from trees and other plants which died millions of years ago.

III. Match the two columns :

- | | | |
|-------------|----------------------|---------------------------|
| Ans. | Column 'A' | Column 'B' |
| | 1. Ruby | (d) gem stone |
| | 2. Coal | (e) a fuel |
| | 3. Slate | (a) formed from shale |
| | 4. Lava | (b) igneous rocks |
| | 5. Marble | (f) formed from limestone |
| | 6. Sedimentary rocks | (c) formed in layers |

IV. Listed below are some rocks. Write 'I' for igneous, 'S' for sedimentary and 'M' for metamorphic :

- | | | | | | | | | |
|-------------|-----------|---|--------|---|--------------|---|---------|---|
| Ans. | Slate | M | Pumice | I | Conglomerate | S | Granite | I |
| | Quartzite | M | Gneiss | M | Sandstone | S | Basalt | I |
| | Marble | M | Coal | S | Limestone | S | Shale | S |

V. Tick (✓) the correct option :

- Ans.**
1. Coal is formed from dead :

(a) Sea animals	<input type="checkbox"/>	(b) trees	<input checked="" type="checkbox"/>
(c) animals	<input type="checkbox"/>	(d) none of these	<input type="checkbox"/>

2. Granite is formed from :
- | | | | |
|---------------|--------------------------|------------------|-------------------------------------|
| (a) sediments | <input type="checkbox"/> | (b) magma | <input checked="" type="checkbox"/> |
| (c) plants | <input type="checkbox"/> | (d) animal shell | <input type="checkbox"/> |
3. The metamorphic rock formed from limestone is :
- | | | | |
|------------|--------------------------|-------------|-------------------------------------|
| (a) slate | <input type="checkbox"/> | (b) marble | <input checked="" type="checkbox"/> |
| (c) gneiss | <input type="checkbox"/> | (d) granite | <input type="checkbox"/> |
4. A rock with many tiny air holes, may be :
- | | | | |
|---------------|--------------------------|------------------|-------------------------------------|
| (a) marble | <input type="checkbox"/> | (b) pumice | <input checked="" type="checkbox"/> |
| (c) sandstone | <input type="checkbox"/> | (d) conglomerate | <input type="checkbox"/> |

I. Answer the following questions :

- Ans.**
- In simple machines force is provided by the muscular energy whereas in case of complex machine it is provided by fuel or electricity.
 - First class levers, second class levers and third class levers.
 - An inclined plane is a slope. It helps to move a heavy load with lesser effort.
 - They help in lifting or lowering loads with very less efforts.
 - A gradual slope is used to make work easier. A gradual sloping surface, is called an inclined plane. It can be used to lift heavy objects to a higher level.
 - Jar lid, bolt, drill and jack screw.
 - Screw has grooves cut into it. It holds the wood pieces tightly.
 - Here the work is spread over a large distance (movement of handle), i.e. screw-jack divides the work into small bits. Thus, it helps the driver to lift a very heavy vehicle and change the burst tyre.

II. Fill in the blanks :

- Ans.**
- To draw water from a well, a **pulley** is used.
 - A **simple** machine has very few parts in it.
 - A slide is shaped like a/an **inclined plane**.
 - In a nut cracker, the **load** lies between the **fulcrum** and the **effort**.
 - In a lever, if the effort is between the fulcrum and the load it is a **third** class lever.

III. Write whether the following statements are 'true' or 'false' :

- | | | |
|-------------|---|--------------|
| Ans. | 1. A pair of scissors is an example of a complex machine. | False |
| | 2. An inclined plane makes work difficult for us. | False |
| | 3. A plank can be used as a lever. | True |
| | 4. Wedge is a machine having several threads. | False |
| | 5. A screw holds things firmly together. | True |
| | 6. A screw driver is an example of second kind of lever. | False |

IV. Match the following columns :

- | | | |
|-------------|-------------------|-------------------------------|
| Ans. | Column 'A' | Column 'B' |
| | 1. Tongs | (d) third class lever |
| | 2. Shovel | (a) first class lever |
| | 3. Fishing rod | (e) third class lever |
| | 4. Slide | (f) inclined plane |
| | 5. Scissors | (c) first class lever |
| | 6. Pliers | (b) second class lever |
| | 7. Wheel barrow | (g) second class lever |

V. Classify the following machines and fill the table :

Ans.	Inclined plane	Lever	Wedge	Pulley	Wheel and Axe
	Screw	bottle opener	pin		wheel of a plane
	mountain road		nail		
		tweezer	spear		curtain rod wheels
	screw	scissors	knife		
	slope	tap knob	blade		
	stairs				

Moon and Satellites

I. Answer the following questions :

- Ans.**
1. Because there is no atmosphere on moon.
 2. The moon has no atmosphere. So, it cannot filter the heat of sun.
 3. Because gravity of moon is 1/6 of that on the earth.
 4. The shadow of a lying bird high up in the sky does not fall on the earth. The distance between the source of light, sun and bird is very large. Also

the distance between the bird and earth is large. The shadow of the bird ends up at a short distance and is not seen on the earth.

5. Like earth the moon also casts shadow when sunlight falls on it. As the earth, sometimes the sun, the moon and the earth come in one straight line. The dark shadow casted by the moon falls at some part of the earth. The sun becomes invisible to the people of this part and total solar eclipse occurs. The parts of the earth that remain in the lighter shadow region of the moon, observe partial solar eclipse.

Since the illuminated part of the moon is facing away from the earth in this position, solar eclipse takes place only in a no moon day. But it is a rare phenomenon, because the sun, the moon and the earth do not come in a straight line on every no moon day.

6. When the moon remains in the lighter shadow part of the earth, it is partially seen. It is called partial lunar eclipse.
7. The astronauts entered the Lunar Module by crawling into it.
8. Artificial satellites are used as the following :

(i) **Weather satellites** : Cameras of weather satellites photograph the earth and its atmosphere including cloud. They send back these photographs to weather study centres on the earth. Such as the weather bulletin is telecasted on Indian TV every day on the basis of information received from INSAT IB. Weather bulletin predicts the weather and gives us early warnings of rain, storm or cyclone.

(ii) **Communication satellites** : These satellites send live telecast of events on TV to distant places. Events may be political, cultured or related to sports. It also communicates dance, drama, music and films for recreation.

(iii) **Unmanned spacecraft** : Astronomers use unmanned spacecrafts to take detailed observation and measurement of our solar systems and stars. Unmanned spacecrafts have travelled as far as the planets Venus, Mars, Jupiter and Saturn.

II. Fill in the blanks :

- Ans.
1. Space begins where the **earth's** atmosphere ends.
 2. The first traveller in space was a **white dog called Laika**.
 3. India launched its first satellite into space in **1975**.
 4. The **shadow** of the earth causes a lunar eclipse.
 5. A lunar eclipse falls on a certain **full** moon night.
 6. **Neil Armstrong** was the first man to step on the surface of the moon.
 7. The moon reflects the light of the **Sun**.

III. Write whether the following statements are 'true' or 'false' :

- Ans.**
- | | |
|---|--------------|
| 1. The moon is very hot during the day and very cold at night. | False |
| 2. The moon is much bigger than the earth. | False |
| 3. You would weigh more on the moon. | False |
| 4. When the moon casts shadow on the earth, a solar eclipse occurs. | True |
| 5. Edwin Aldrin never stepped on the surface of the moon. | False |
| 6. Man first landed on the moon in 1959. | False |
| 7. Moons are the natural satellites of the earth. | True |

IV. Name the first :

- | | | |
|-------------|--|-----------------------------|
| Ans. | 1. Man-made spacecraft or satellite. | Sputnik-1 |
| | 2. Traveller in space. | Laika |
| | 3. Man to travel round the earth in space. | Major Yuri Gagarin |
| | 4. Woman to go into space. | Valentina Tereshkova |
| | 5. Man to step on the moon. | Neil Armstrong |
| | 6. Indian to become an astronaut. | Rakesh Sharma |

V. Tick (✓) the right option :

- Ans.**
1. Light always travels in a :
- | | | | |
|-------------------|-------------------------------------|--------------------|--------------------------|
| (a) straight line | <input checked="" type="checkbox"/> | (b) curved line | <input type="checkbox"/> |
| (c) wavy line | <input type="checkbox"/> | (d) parallel lines | <input type="checkbox"/> |
2. A lunar eclipse occurs when :
- | | |
|--|-------------------------------------|
| (a) the moon is bright | <input type="checkbox"/> |
| (b) the earth is between the sun and the moon | <input checked="" type="checkbox"/> |
| (c) the moon is in between the sun and the earth | <input type="checkbox"/> |
| (d) the sun is between the earth and the moon | <input type="checkbox"/> |
3. No shadow is formed when the object is :
- | | | | |
|-----------------|-------------------------------------|-------------------|--------------------------|
| (a) transparent | <input checked="" type="checkbox"/> | (b) translucent | <input type="checkbox"/> |
| (c) opaque | <input type="checkbox"/> | (d) none of these | <input type="checkbox"/> |
4. A toy car allows some light to pass through it is made up of :
- | | |
|--------------------------|-------------------------------------|
| (a) transparent material | <input type="checkbox"/> |
| (b) translucent material | <input checked="" type="checkbox"/> |
| (c) opaque material | <input type="checkbox"/> |
| (d) all of these | <input type="checkbox"/> |
5. A solar eclipse occurs when :
- | | |
|--|--------------------------|
| (a) the sun becomes black | <input type="checkbox"/> |
| (b) the earth is in between the sun and the moon | <input type="checkbox"/> |

(c) the moon is in between the sun and the earth



(d) none of these



Now You Do

1. People do the following activities during eclipses. Cross the wrong ones :

Ans. (a) People take a bath in a river on pond and give donations to get sun released from Rahu or moon released from Ketu.

Blind faith/scientific bases.

(b) People do not see the eclipse directly. They put water in a pan and see the image of sun or moon in it.

Blind faith/scientific basis.

2. Draw a figure of Apollo 11.

Ans.

