

Key to

Soaring Higher and Higher in

Science

5



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1. Human Body: The Circulatory System

Section 1

- | | | |
|-----------------|-----------------------|-------------------|
| A. 1. heart | 2. blood vessels | 3. capillary |
| 4. valves | 5. plasma | |
| B. 1. pulse | 2. ribcage | 3. ventricles |
| 4. lub-dub | 5. RBCs | |
| C. 1. heartbeat | 2. inferior vena cava | |
| 3. WBCs | 4. venules | 5. carotid artery |
| D. 1. T | 2. T | 3. F |
| 4. T | 5. F | |

Section 2

- A. 1. The function of the human circulatory system is to transport substances, such as nutrients, water, and oxygen to all parts of the body and remove waste gases, such as carbon dioxide, from the body.

The three main parts of the human circulatory system are heart, blood, and blood vessels (veins, arteries, and capillaries).

2. The rhythmic contraction and relaxation of the heart muscles while pumping blood is called heartbeat.

An adult human heart beats around 70 to 75 times a minute.

3. Pulse is a light throbbing sensation produced in the arteries caused by the beating of the heart.

Wrist and neck are the places where pulse can be felt in the body.

4. The continuous movement of nutrients, oxygen, and carbon dioxide between the heart and the rest of the body by blood through the blood vessels is called circulation of blood.

5. A few benefits of practising yoga are as follows:

- It improves muscle strength and functioning of lungs.
- It improves circulation of blood.

- B. 1. **Structure of heart:** The human heart has two upper chambers and two lower chambers. The upper chambers are called atria or auricles. The lower chambers are called ventricles.

Function of heart: The main function of heart is to pump blood containing oxygen and nutrients to all cells in the body. At the same time, it receives blood containing carbon dioxide from all parts of the body and pumps it to the lungs for purification.

2. Blood is the red-coloured fluid that flows inside the human body through blood vessels.

The four functions of blood are given below:

- a. Blood transports oxygen and carbon dioxide throughout the body.
 - b. Blood carries nutrients from the digested food to all cells of the body.
 - c. Blood carries the waste generated by the cells of the body to the kidneys for filtration.
 - d. Blood regulates body temperature and prevents it from becoming either too hot or too cold.
3. The five ways to keep the heart healthy are given below:
- a. Eat a healthy and balanced diet.
 - b. Drink plenty of water rather than carbonated drinks.
 - c. Exercise regularly for at least 30 minutes, preferably in the morning.
 - d. Stay away from polluted surroundings.
 - e. Avoid sitting for a long time.
4. The main differences between arteries and vein are given below:

Characteristics	Arteries	Veins
Blood circulation	Arteries carry blood from the heart to all around the body.	Veins carry blood from all around the body back to the heart.

Blood type	Arteries carry oxygen-rich blood.	Veins carry carbon dioxide-rich blood.
Thickness	Arteries have thick walls and carry blood under high pressure.	Veins have thin walls and carry blood under low pressure.
Position	Arteries are situated deep under the skin.	Veins are situated under the surface of the skin.
Valves	Arteries contain no valves.	Veins contain valves.

5. Blood vessels are of three types: Arteries, Veins and Capillaries

- Arteries:** These are thick walled blood vessels. They carry oxygen-rich blood from the heart to all parts of the body.
- Veins:** These are thin walled blood vessels. They carry carbon dioxide-rich blood from all around the body back to the heart.
- Capillaries:** These are the thinnest blood vessels. They connect the arteries to the veins to form a network within the body.

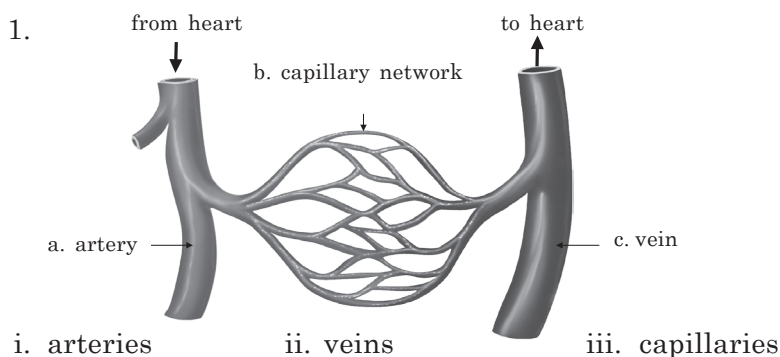
Think and Answer

The crossword puzzle grid is filled with the following words:

- Across:**
 - 4. HEART
 - 5. CAPILLARIES
 - 6. ARTERIES
 - 7. BLOOD
 - 8. SYSTEMS
- Down:**
 - 1. CIRCULATION
 - 2. VEINS
 - 3. HEMOGLOBIN
 - 8. SYSTEMS

Illustrations include a capillary network, a heart, a stethoscope, and a circulatory diagram.

Picture Study



2. Human Body: The Skeletal System

Section 1

- | | | |
|---------------------------|-----------------|--------------|
| A. 1. skeleton | 2. skull | |
| 3. involuntary muscles | 4. joint | |
| 5. cardiac muscle | | |
| B. 1. ribcage | 2. voluntary | 3. hinge |
| 4. Rest | 5. Posture | |
| C. 1. backbone | 2. jawbone | 3. ligaments |
| 4. femur | 5. head | |
| D. 1. T | 2. F | 3. F |
| 4. T | 5. T | |
| E. 1. Gliding joints | 2. Hinge joints | |
| 3. Ball-and-socket joints | | |
| 4. Ball-and-socket joints | | |

Section 2

- A. 1. The entire framework of bones in the body is called the skeleton.

It supports the body and gives it a definite shape. It also protects internal delicate organs of the body.

2. The different types of bones present in the human body are given below:
 - a. Skull: facial bones
 - b. Backbone: vertebra
 - c. Ribcage: ribs
 - d. Limb bones: radius and ulna
 - e. Jawbone
 - f. Girdles: shoulder girdle
 3. The shoulder girdle is made up of the shoulder blade and the collar bone. The hip girdle is made up of three bones fused together to form a single bone.
 4. A joint is a place where two or more bones meet. The two types of joints in the human body are movable joints and immovable joints.
 5. Cartilage cushions the joints and protects the bones from getting damaged due to constant movements.
 6. Posture is the position in which we hold our body while sitting, standing, or walking. It gives a smart look to the body and prevents problems, such as backache, muscular pain, and strain.
- B. 1. The structure of skull, ribcage, and limbs are given below:
- a. **Skull:** The skull is a hollow, bony structure that forms the head. It is made up of 22 bones. Among these, eight bones protect the brain and the remaining 14 are facial bones that form the shape and structure of the face.
 - b. **Ribcage:** The ribcage is a bony structure present in the chest region. It is made up of 12 pairs of thin, curved bones.
 - c. **Limbs:** Upper limbs have two parts: the upper arm and the lower arm. The upper arm has a long bone extends from the shoulder to the elbow. The lower arm lies between the elbow and the wrist consists of two bones.

Lower limbs have two parts: the upper leg and the lower leg. The upper leg has the largest and the strongest bone of the body. The femur extends from the hip region to the knee. The lower leg lies between the knee and the ankle consists of two bones.

2. The importance of bones, joints, and muscles are given below:

a. Importance of bones:

- i. Bones provide shape and support to the body.
- ii. Bones protect the delicate internal organs of the body.
- iii. Bones form joints and act as levers, allowing muscles to pull on them to produce movement.
- iv. Bones contain bone marrow which produces the red blood cells.

b. Importance of joints:

- i. Joints provide stability to our body by holding the bones together.
- ii. Joints provide flexibility to our body by allowing movements in different directions

c. Importance of muscles:

- i. Muscles provide support to the bones.
- ii. Muscles assist the skeleton in moving the limbs and other parts of the body.
- iii. Muscles maintain our posture and balance during movements.
- iv. Muscles inside the internal organs help them to carry out important functions.

3. Muscles are the fleshy part in our body. Muscles cover the framework formed by the bony skeleton to give the body its shape. There are two types of muscles: voluntary muscles and involuntary muscles.

Voluntary muscles: Muscles whose movements are under our control are called voluntary muscles. These muscles work at our will. The muscles of arms, hands, and legs are some examples of voluntary muscles.

Involuntary muscles: Muscles whose movements are beyond our control are called involuntary muscles. These muscles work all the time. The muscles of heart, stomach, and liver are some examples of involuntary muscles.

4. The different types of movable joints are hinge joint, ball-and-socket joint, pivot joint, and gliding joint.
 - a. **Hinge joint:** It allows the movement of bones in one direction only. Hinge joints are found in the knees, fingers, elbows, and toes
 - b. **Ball-and-socket joint:** In this type of joint, one end of the bone has a hollow part (socket). The other end of the bone has a round shape like a ball. The ball fits into the socket and can move around in all directions. Ball-and-socket joints are found in shoulders and hips.
 - c. **Pivot joint:** In this type of joint, the rounded surface of one bone fits into a ring formed by the other bone. Pivot joints are found between the first two vertebrae in the neck region of the backbone. They allow the head to move up, down, and sideways
 - d. **Gliding joint:** In this type of joint, bones glide against each other. It allows side to side, as well as backward and forward movements. Gliding joints are found in the wrists, ankles, and each vertebrae.
5. We must adopt the following measures to take care of our bones and joints:
 - a. Eat food items rich in calcium, proteins, and vitamins.
 - b. Do some physical exercises, such as walking, running, and playing sports for at least 30 minutes a day.
 - c. Maintain an ideal body weight.
 - d. Maintain a correct posture while sitting, standing, or walking.
6. The food items rich in proteins, vitamins, and minerals make the bones and muscles strong in the following ways:
 - a. Proteins help to build strong bones and muscles. They also help to repair the wear and tear of the body.
 - b. Vitamins and minerals protect our body from diseases. They also make bones, joints, and muscles strong and healthy.

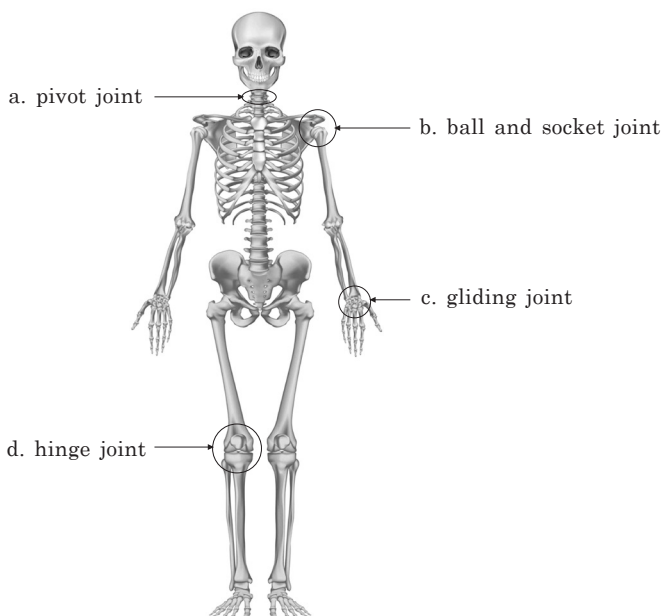
7. Exercise and rest are quite important in keeping the bones, muscles, and joints strong and healthy. Some key points of importance are given below:
- Walking, running, skipping, and playing outdoor games keep the body fit and healthy.
 - Practising yoga keeps the body and mind healthy.
 - Rest such as sleep is essential to restore energy. During sleep, our body gets time to repair damaged tissues and cells as well as to relax.

Think and Answer

- ball and socket joint
 - pivot joint
 - hinge joint
- If backbone was made up of one single bone, then we would have never been able to sit, crouch or lie. We would also not be able to twist or bend our backs due to lack of flexibility.

Picture study

1.



3. Food and Health

Section 1

- A. 1. roughage 2. lifestyle diseases
 3. kwashiorkor 4. adulteration 5. junk food
- B. 1. diet 2. Junk 3. ideal
 4. iodine 5. Water
- C. 1. anaemia 2. scurvy 3. Vitamin A
 4. beriberi 5. diabetes
- D. 1. F 2. F 3. T
 4. F 5. T
- E. 1. wheat, rice 2. whole grains, vegetables
 3. goitre, anaemia 4. obesity, diabetes
 5. urea, sawdust

Section 2

- A. 1. The components of food which provide energy to our body, help in growth and repair of worn-out body parts, and protect the body from diseases are called nutrients.
2. Roughage adds volume to the food and makes it bulky. It helps the body to eliminate undigested food.
3. The food that has low amount of nutrients and fibres, and high amount of salt, sugar, and fats is considered junk food. Patties, burgers, and chocolates are some examples of junk food.
4. Obesity refers to excess of body weight. Its four symptoms are unexpected weight gain, digestive disorder, fat deposits especially around the waist, and poor sleep.
5. Diabetes is a disorder which occurs when the body is unable to regulate blood sugar (glucose) properly. Its four symptoms are frequent urination, extreme fatigue, blurred vision, and frequent infections.
6. The main causes of high blood pressure are lack of physical exercise, obesity, stress, anxiety, and eating food rich in salt and fat.

7. Food adulteration is an act of adding unwanted or unsafe substances to the food items. Some common food adulterants are water in milk, brick powder in chilli powder, mineral oil in edible oil, etc.

B. 1. The functions and sources of different components of food are given below:

Components of food	Function	Food sources
Carbohydrates (energy-giving foods)	Provide energy to the body	Wheat, rice, jowar, fruits, potatoes, sweet potatoes, jaggery, and sugar cane
Fats (energy-giving foods)	Provide more energy than carbohydrates	Oils, nuts, butter, cheese ,and ghee
Proteins (body-building foods)	Necessary for growth and repair of worn-out body parts	Pulses, milk, eggs, meat, and fish
Vitamins (protective foods)	Needed in small amounts to protect the body from diseases	Green leafy vegetables, fruits, nuts, cereals, eggs, fish, and chicken
Minerals (protective foods)	Needed in small amounts to promote good health	Milk, fresh fruits, vegetables, and eggs

2. A diet that contains all the essential components of food in proper proportions for the maintenance of good health is called a balanced diet.

It is important to eat a balanced diet because they help us in proper growth and development, builds immunity, prevents diseases, improves mental health, and controls weight.

3. The adverse effects of eating junk food are as follows:
 - a. Lack of energy
 - b. Poor digestion
 - c. Deficiency of certain nutrients
 - d. Weight gain and obesity
 - e. Danger of high blood pressure
 - f. Risk of diabetes
 - g. Heart diseases
4. Different ways in which we can make our diet healthier are as follows:
 - a. Eat plenty of salad, yogurt, and sprouted seeds.
 - b. Prefer to eat fibre-rich whole food over junk foods.
 - c. Eat fresh fruits and vegetables.
 - d. Restrict intake of sugar, fats, salts, and deep-fried food items.
5. Diseases caused due to unhealthy lifestyle such as bad food habits, lack of physical activities, and wrong body posture are called lifestyle diseases.

Five ways to prevent lifestyle diseases are given below:

- a. Eat a balanced diet and avoid junk food.
- b. Get up early in the morning and go to bed early at night.
- c. Do regular exercises, such as walking, dancing, aerobics, cycling, and swimming.
- d. Practise yoga and meditation to avoid stress.
- e. Avoid spending too much time watching television or playing computer games.

6. Diseases caused due to the deficiency of a particular nutrient in diet over a long period of time are called deficiency diseases.

Three deficiency diseases with their symptoms, causes, and prevention are given below:

Deficiency diseases	Symptoms	Causes	Prevention
Kwashiorkor	• Loss of appetite • Swelling in the ankles, feet, and belly due to accumulation of fluids • Flaky and dry skin • Reduced growth • Frequent infections	Deficiency of proteins	Eat food rich in proteins, fats, and carbohydrates, such as pulses, milk, eggs, meat, fish, wheat, rice, potatoes, jaggery, nuts, oil, butter, and cheese.
Marasmus	• Weight loss • Stunted growth • Chronic diarrhoea • Loose and dry skin • Brittle hair • Stomach shrinkage	Deficiency of proteins and carbohydrates	Eat food rich in proteins and carbohydrates, such as cereals, milk, meat, and eggs.

Night Blindness	• Inability to see well at night or in poor light	Deficiency of Vitamin A	Eat food rich in Vitamin A, such as green leafy vegetables, carrots, papayas, pumpkins, milk, and eggs.
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7. Food items are often adulterated to increase their quantities or to make them look fresh and attractive. The unwanted substances that are added to a food item to change its quantity and presentation. Food adulteration is mainly done to cheat consumers and make more profits.

Think and answer

1. She does this by hand picking harmful substances and make the pulses free from unwanted substances to cook.
2. a. John is suffering from night blindness.
b. The food component lacking in his diet is Vitamin A
c. He should include green leafy vegetables, carrots, papayas, and milk.

Picture study

1. a. The disease is Goitre
b. It is caused due to deficiency of iodine in the diet.
c. It can be prevented by eating food rich in iodine, such as sea food and cooking the food using iodised salt.

4. Pollination

Section 1

- A. 1. calyx 2. filament 3. pistils
4. bisexual flowers 5. pollination

- | | | |
|----------------|------------------|-------------|
| B. 1. Style | 2. Anther | 3. Sepals |
| 4. Pollination | 5. Stigma | |
| C. 1. petals | 2. pollen grains | 3. thalamus |
| 4. gynoecium | 5. watermelon | |
| D. 1. F | 2. T | 3. T |
| 4. F | 5. T | |

Section 2

- A. 1. Flowers are the most attractive part of plants which perform the function of reproduction in plants.
A flower has four main parts— calyx, corolla, androecium, and gynoecium.
2. The calyx is the first and outermost whorl of a flower. It contains a set of green-leaf like structures called sepals. A flower may have five or more sepals. Sepals protect the flower in the bud stage and can also prepare food for the plant.
3. The corolla is the second whorl of a flower. It consists of a ring of brightly-coloured leaf-like structures called petals. Petals produce different fragrances to attract insects, birds, and small animals towards the flower.
4. The transfer of pollen grains from a mature anther to the stigma is called pollination.
The three agents of pollination are water, wind, and insects.
- B. 1. The different parts of androecium and gynoecium are given below:

Androecium: Androecium is a collection of stamens. A stamen is the male reproductive unit of the flower. Each stamen has two parts— filament and anther.

- Filament:** It is the hair-like stalk of the stamen which bears the anther.
- Anther:** It is located at the tip of the stamen where pollen grains are produced.

Gynoecium: Gynoecium is usually located at the centre of the flower. A gynoecium may consist of a single or a

group of pistils. A pistil is the female reproductive unit of the flower. A pistil has three parts– stigma, style and ovary.

- a. **Stigma:** It is a small sticky, swollen disc-like structure. It is located at the tip of the pistil. It receives the pollen grains.
 - b. **Style:** It is a thin, long, tube-like structure. It connects stigma to the ovary.
 - c. **Ovary:** It is the swollen base of the pistil which contains small beads-like structures called ovules. The ovules contain egg cells or the female gametes.
2. The flowers that contain both, the male reproductive part and female reproductive part are called bisexual flowers. Hibiscus and sunflower are examples of bisexual flowers. The flowers that contain either the male reproductive part or the female reproductive part are called monosexual flowers. Flowers of papaya, and watermelon are examples of monosexual flowers.
 3. When the anthers mature, they split open to set the pollen grains free. The pollen grains may fall on the stigma of the same flower or may be carried to the stigma of another flower of the same kind by different agents, such as water, wind, or insects. Thus, the process of pollination takes place.
 4. The differences between self-pollination and cross-pollination are given below:

Self-Pollination: The process in which pollen grains from the anther of a flower fall on the stigma of the same flower or another flower, on the same plant is called as self-pollination.

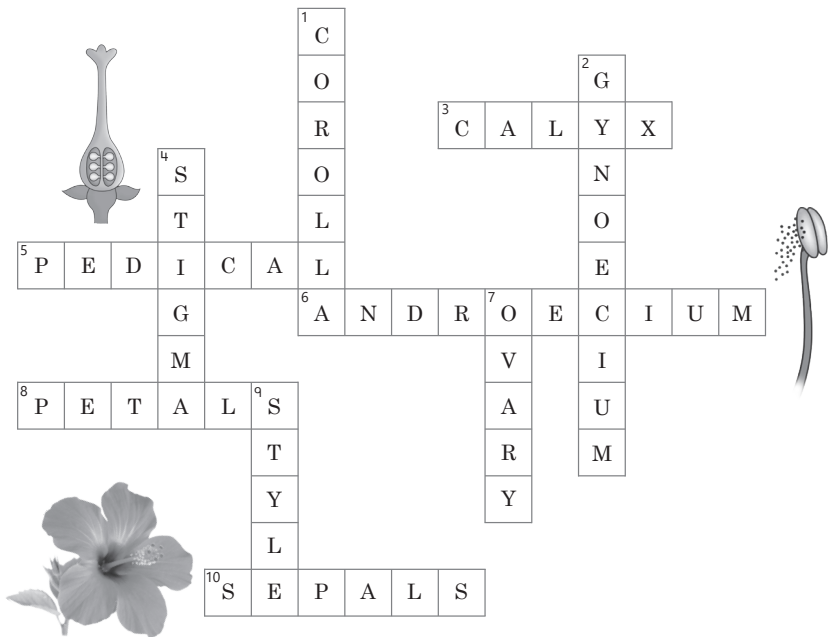
Self-pollination is commonly seen in tomato, pea, and rose flowers.

Cross-Pollination: The process in which pollen grains from the anther of a flower are transferred to the stigma

of another flower on a different plant of the same kind is called as cross-pollination.

Cross-pollination is commonly seen in apple, pear, and lavender flowers.

Think and Answer



Picture Study

- stigma
 - style
 - ovary
 - sepal
 - petal
 - anther
 - filament
 - thalamus
 - pedicel
- cross-pollination
 - bee
 - stamen and pistil

5. Plant Reproduction

Section 1

- | | | |
|-------------------------|-----------------------|-----------------------|
| A. 1. seed coat | 2. germination | 3. reproduction |
| 4. fertilization | 5. dispersal of seeds | |
| B. 1. embryo | 2. stem cutting | 3. eye bud |
| 4. pollen tube | 5. wind | |
| C. 1. cotyledons | 2. spores | 3. explosion of fruit |
| 4. wing-like structures | | 5. leaves |
| D. 1. T | 2. T | 3. T |
| 4. F | 5. F | |

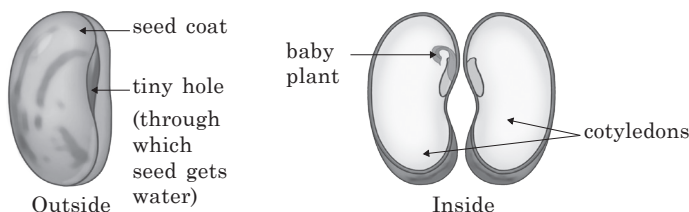
Section 2

- A. 1. Reproduction is the process by which living organisms produce young ones of their own kind.

Living beings reproduce so that they may not die out and become extinct.

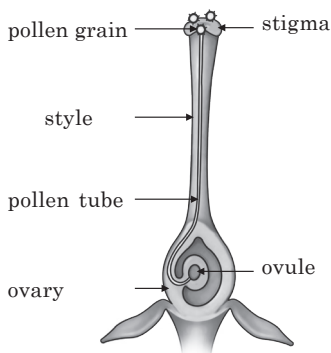
2. Dispersal of seeds is meant the process by which seeds are scattered away from the parent plant.
3. Seeds need to be dispersed for the proper growth and survival of the parent plant as well as the new plants.
4. Vegetative reproduction is the method of reproduction in which new plants are grown by using vegetative parts such as stems, roots, and leaves of the parent plant.
5. The swollen roots of certain plants such as carrot, turnip, and sweet potato are cut and sown in the soil, they give rise to new plants.
6. Non-flowering plants have tiny seed like structures on its leaves. They are called spores. For examples fern, mushroom, etc.
7. All seeds do not germinate to form new plants as some are eaten up by animals, some are destroyed by rain or wind, while some do not get sufficient amount of air, moisture, or warmth.

- B. 1. A seed has an outer covering around it called the seed coat. The seed coat is usually hard and protects the seed. It has a tiny hole through which the seed gets water. The seed has a baby plant inside it. A seed has one or two seed leaves or cotyledons.



Structure of a seed

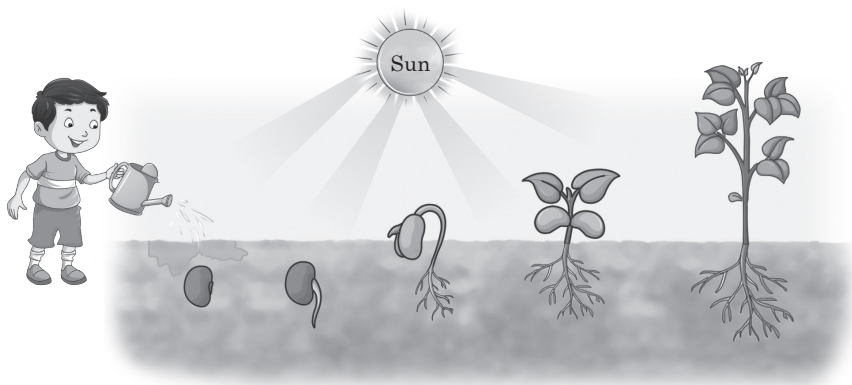
2. The process of sexual reproduction in plants takes place in a flower, the reproductive part of a plant. A flower may contain either the male or female reproductive organ or both. When the pollen grains fall from the anther of a flower to the stigma of the same kind of flower, pollination takes place.



Fertilisation

After pollination, pollen grain on stigma develops pollen tube. Pollen tube moves down through the style and reaches the ovary. The male gamete then enters the ovule and fuses with the female gamete to form a fertilised cell called the zygote. This process is called fertilisation.

3. Germination is the process by which a seed grows into a baby plant or seedling. The seed becomes soft and spongy after absorbing water from the soil. It gets air from the atmosphere and warmth from the Sun. After some time, a tiny root comes out through a small hole. This root grows downwards. It brings out the tiny shoot which grows upwards. This tiny plant with seed leaves is called seedling.



Stages of germination of a bean seed

4. Dispersal of seeds usually take place through various agents, such as wind, water, animals, or explosion.

a. **Dispersal of seeds by wind:**

Seeds of some plants are light and have wings or tufts of hair on them to be easily carried away by wind.

- b. **Dispersal of seeds by water:** Seeds of some plants are spongy or have fibrous outer coat that grow in or near water. These seeds are light in weight and can easily be carried away by water.

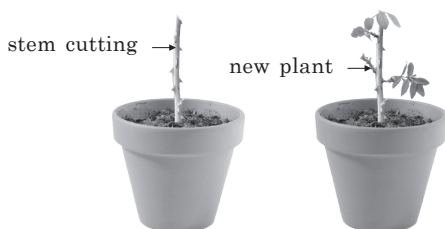
- c. **Dispersal of seeds by animals:** Some animals eat fruits and nuts along with their seeds. These seeds are dispersed through their excreta to places far away from the parent plant. Some seeds have hooks, spines, stiff hair or a sticky coating on their surface which stick to the bodies of animals and are carried away to different places.

- d. **Dispersal of seeds by fruit explosion:** Some plants have fruits in the form of pods which explode on drying. The force of explosion disperses the seeds away from the parent plant.

5. Some plants can be reproduced from stems and leaves.

Reproduction from stems: The process of reproduction from stem is done through cut off a mature stem from the parent plant. The cut portion of the stem is put in the moist soil and watered regularly.

Reproduction from leaves: Leaves of some plants have notches along the edges. Buds arise from the notches. When the leaf buds fall onto moist soil, they grow into new plants.



A stem cutting of a rose plant grows into a new rose plant.

Think and Answer

1. Plants produced by vegetative reproduction takes less time to grow than those produced from seeds due to following reasons:
 - a. The plant has not to germinate or grow afresh from the soil. Thus, time required for germination is saved.
 - b. Leaf formation is already begun. The root formation process is much quick. Thus, a plant develops at a great pace.

Picture study

1. a. Germination
 - b. The necessary conditions for the germination are proper amount of air, moisture, and warmth.
 - c. During the early stages of germination, the seedling uses the food stored inside the seeds.

6. Solids, Liquids, and Gases

Section 1

- | | |
|---------------|-------------------------|
| A. 1. gas | 2. insoluble substances |
| 3. storm | 4. miscible liquids |
| 5. sea breeze | |

- | | | |
|----------------|-----------------------|----------------|
| B. 1. Gases | 2. Molecules | 3. Liquids |
| 4. Ventilators | 5. Wind | |
| C. 1. nitrogen | 2. immiscible liquids | |
| 3. humidity | 4. filtration | 5. land breeze |
| D. 1. F | 2. F | 3. T |
| 4. F | 5. T | |

Section 2

- A. 1. The three properties of air are given below:
- Air is invisible.
 - Air occupies space.
 - Air has weight.
2. Soluble substances are the substances that dissolve completely in a liquid to form a solution.
Insoluble substances are the substances that do not dissolve in a liquid.
3. Liquids that mix completely with each other are called miscible liquids.
Liquids that do not mix completely with each other are called immiscible liquids.
4. A solution is a uniform mixture of two substances that blend into each other.
Examples: 1. Sugar solution 2. salt solution, and soda water.
5. Warm air is lighter than cold air. Because of this, when air gets heated, it rises. This movement of air causes the formation of wind.
6. Monsoon breeze is the moisture-laden cold air that moves from the sea towards the land during summers.
During the summer, due to direct Sun rays, the land surface heats up faster than the sea and ocean. The warm air above the land surface rises. The moisture-laden cold wind from the sea moves towards the land to fill up the space. Thus the monsoon breeze is formed.

7. The air that we exhale is warmer and impure. It rises at the upper parts of the room as the warm air is lighter than the cold air. It is needed to remove this warmer and impure air out of the room. Thus, the ventilators are fixed at the upper parts of the walls of rooms.

B. 1. Three properties of solids are listed below:

- a. Solids have a fixed shape.
- b. Solids have a definite volume.
- c. Solids do not flow.

Three properties of liquids are listed below:

- a. Liquids do not have a fixed shape.
- b. Liquids have a fixed volume.
- c. Liquids flow from a higher level to a lower level.

Three properties of gases are listed below:

- a. Gases do not have a shape of their own.
- b. Gases do not have a fixed volume.
- c. Gases can flow easily in all the directions.

2. Distillation is the process of separating the soluble substances from a solution by boiling it and then condensing the vapour obtained.

For example, we can separate salt and water by the process of distillation as follows:

Heat some salty water in a round bottomed flask. The water evaporates on heating and rises through the round-bottomed flask leaving behind the salt. As the water vapour reaches the neck of the round-bottomed flask, it passes through the condenser which cools it down to liquid. This water is pure and called distilled water.

3. Filtration is the process of separating insoluble substances from the solution by passing it through a filter.

For example, we can separate clear water from sandy water by the process of filtration as follows:

Fold the filter paper in the form of a cone. Fix this cone onto the funnel and keep the empty beaker below it. Take

the beaker containing sandy water and slowly pour it on to the funnel. The clear water passes through the funnel and is collected in the beaker below. The particles of sand remain trapped on the filter paper.

4. Sedimentation is the process in which the insoluble substances in a liquid are made to settle down at the bottom of the container.

The process in which the clear water is gently poured out after sedimentation is called decantation.

For example, we can separate mud from muddy water to obtain clear water, by the process of sedimentation and decantation as follows:

Leave the beaker containing muddy water undisturbed for sometime. The mud and other impurities settle down at the bottom of the beaker and clear water stays above it. This is sedimentation. Now, gently pour out clear water into another container without disturbing the sediments.

5. In the daytime, the air above the land is warmer and lighter, and the air above the sea is cooler and heavier. Hence, warm air above the land rises. The cooler air above the sea rushes to the land to fill up the space. This cooler air (wind) thus formed is called sea breeze.

At night, the air above the sea is warmer and lighter, and the air above the land is cooler and heavier. Hence, warm air above the sea rises. The cooler air above the land rushes to the sea to fill up the space. This cooler air (wind) thus formed is called land breeze.

6. Air around us is a mixture of gases, mainly nitrogen (78%) and oxygen (21%). The rest 1% of air is made up of other gases such as argon, carbon dioxide, water vapour, and neon. Beside this, air also contains dust, carbon, and smoke.
7. Ventilators expel the harmful pollutants, unwanted cooking smell, and foul odour from the house. It ensures the circulation of fresh air inside the rooms. Lack of air

circulation may lead to the collection of moisture in the house that can dampen walls, wooden furniture and other things. It may also lead to the growth of moulds and cause health hazards.

Thus, closed spaces such as a building should have ventilators to keep it fresh, dry, and airy.

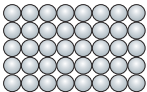
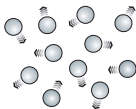
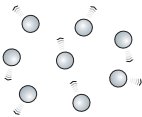
Think and Answer

1. It is because of the lack of air circulation in the room.

Ensure adequate ventilation to pass out impure air and moisture. Keep the windows open to allow the fresh air and sunlight come inside.

Picture study

- 1.

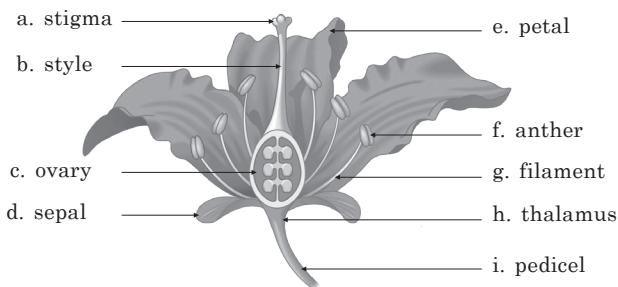
Picture	State of matter	Draw the arrangement of molecules	Two properties
	Solid		1. Solids have a fixed shape. 2. The molecules in solids are tightly packed.
	Liquid		1. Liquids do not have a fixed shape. 2. The molecules in liquids are loosely packed and can move around freely.
	Gas		1. Gases do not have a shape of their own. 2. The molecules in gases are very loosely packed and can move around freely.

Model Test Paper-1

Section 1

- A. 1. calyx 2. involuntary muscles
 3. lifestyle diseases 4. germination 5. heart
- B. 1. ventricles 2. Junk 3. Posture
 4. Thalamus 5. Ventilators
- C. 1. T 2. T 3. T
 4. T 5. F
- D. 1. Femur 2. Beri Beri 3. Venules
 4. Spores 5. Immiscible liquids
- E. 1. The five major components of food such as carbohydrates,
fats, proteins, vitamins, and minerals which give energy
to our body are called nutrients.
2. The transfer of pollen grains from a mature anther to the
stigma is called pollination.
3. The entire framework of bones in the body is called a
skeleton.
4. Reproduction is the process by which living organisms
produce young ones of their own kind.
5. The process by which a seed grows into a baby plant or
seedling is called germination.

F.



- G. 1. Warm air is lighter than cold air. Because of this, when air gets heated, it rises. This movement of air causes the formation of wind.

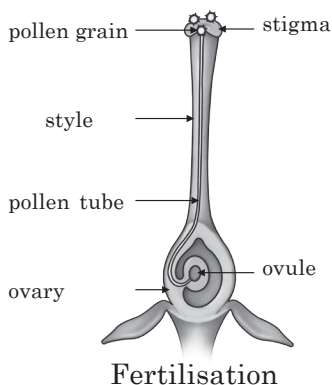
2. The three properties of air are given below:
 - a. Air is invisible.
 - b. Air occupies space.
 - c. Air has weight.
 3. The backbone is long bony structure that extends from the base of the skull to the hip bones. It is made up of 33 small individual bones called vertebra stacked one on top of the other. Each vertebra has a hole in the centre through which the spinal cord runs.
 4. Food adulteration is an act of adding unwanted or unsafe substances to the food items. Water, chalk, urea, caustic soda, brick powder, and mineral oil are some common food adulterations.
 5. The function of the human circulatory system is to transport substances, such as nutrients, water, and oxygen to all parts of the body and remove waste gases, such as carbon dioxide, from the body.
- H. 1. Blood is the red-coloured fluid that flows inside the human body through blood vessels.
The four functions of blood are given below:
- a. Blood transports oxygen and carbon dioxide throughout the body.
 - b. Blood carries nutrients from the digested food to all cells of the body.
 - c. Blood carries the waste generated by the cells of the body to the kidneys for filtration.
 - d. Blood regulates body temperature and prevents it from becoming either too hot or too cold.
2. The importance of bones, joints, and muscles are given below:
 - a. **Importance of bones:**
 - i. Bones provide shape and support to the body.
 - ii. Bones protect the delicate internal organs of the body.
 - iii. Bones form joints and act as levers, allowing muscles to pull on them to produce movement.

- iv. Bones contain bone marrow which produces the red blood cells.

b. Importance of muscles:

- i. Muscles provide support to the bones.
- ii. Muscles assist the skeleton in moving the limbs and other parts of the body.
- iii. Muscles maintain our posture and balance during movements.
- iv. Muscles inside the internal organs help them to carry out important functions.

3. The process of sexual reproduction in plants takes place in a flower, the reproductive part of a plant. A flower may contain either the male or female reproductive organ or both. When the pollen grains fall from the anther of a flower to the stigma of the same kind of flower, pollination takes place.



After pollination, pollen grain on stigma develops pollen tube. Pollen tube moves down through the style and reaches the ovary. The male gamete then enters the ovule and fuses with the female gamete to form a fertilised cell called the zygote. This process is called fertilisation.

4. a. In the daytime, the Sun heats both land and sea. The land surface heats up faster than the sea surface. Therefore, the air above the land is warmer and lighter, and the air above the sea is cooler and heavier. Hence, warm air above the land rises. The cooler air above the sea rushes to the land to fill up the space. This cooler air (wind) thus formed is called sea breeze.

At night, the land surface cools up faster than the sea surface. Therefore, the air above the sea is warmer and lighter, and the air above the land is cooler and

heavier. Hence, warm air above the sea rises. The cooler air above the land rushes to the sea to fill up the space. This cooler air (wind) thus formed is called land breeze.

- b. The differences between self-pollination and cross-pollination are given below:

Self-Pollination: The process in which pollen grains from the anther of a flower fall on the stigma of the same flower or another flower, on the same plant is called as self-pollination.

Self-pollination is commonly seen in tomato, pea, and rose flowers.

Cross-Pollination: The process in which pollen grains from the anther of a flower are transferred to the stigma of another flower on a different plant of the same kind is called as cross-pollination.

Cross-pollination is commonly seen in apple, pear, and lavender flowers..

6. Diseases caused due to the deficiency of a particular nutrient in diet over a long period of time are called deficiency diseases.

Three deficiency diseases with their symptoms, causes, and prevention are given below:

Deficiency diseases	Symptoms	Causes	Prevention
Kwashiorkor	• Loss of appetite • Swelling in the ankles, feet, and belly due to accumulation of fluids • Flaky and dry skin • Reduced growth • Frequent infections	Deficiency of proteins	Eat food rich in proteins, fats, and carbohydrates, such as pulses, milk, eggs, meat, fish, wheat, rice, potatoes, jaggery, nuts, oil, butter, and cheese.

Marasmus	• Weight loss • Stunted growth • Chronic diarrhoea • Loose and dry skin • Brittle hair • Stomach shrinkage	Deficiency of proteins and carbohydrates	Eat food rich in proteins and carbohydrates, such as cereals, milk, meat, and eggs.
Night Blindness	• Inability to see well at night or in poor light	Deficiency of Vitamin A	Eat food rich in Vitamin A, such as green leafy vegetables, carrots, papayas, pumpkins, milk, and eggs.

7. Interdependence in Living Beings-Plants and Animals

Section 1

- | | | |
|------------------|-------------------|----------------|
| A. 1. scavengers | 2. omnivores | 3. producers |
| 4. carnivores | 5. decomposers | |
| B. 1. consumers | 2. Producers | 3. Decomposers |
| 4. food chain | 5. carbon dioxide | |
| C.1. animals | 2. pollination | 3. grass |
| 4. floods | 5. decomposers | |
| D. 1. T | 2. F | 3. T |
| 4. T | 5. F | |

- E. 1. man, bear 2. bacteria, worm
3. vulture, hyena 4. cow, goat
5. lion, tiger

Section 2

A. 1. Three ways in which plants depend on animals are given below:

- a. Plants depend on animals for carbon dioxide to do photosynthesis.
- b. Plants depend on animals for pollination.
- c. Plants depend on animals for dispersal of seeds.

2. Three ways in which animals depend on plants are given below:

- a. All animals depend on plants for their food directly or indirectly.
- b. Animals depend on plants for oxygen which is released by plants during photosynthesis.
- c. Animals depend on plants for their shelter, shade, and protection.

3. Producers are the organisms that can produce their own food. Green plants are the producers.

Thus, producers are important as they are the main source of food and energy for other living organisms.

4. Decomposers are the organisms that feed on dead remains of other organisms. They play an important role by breaking down the nutrients present in decaying matter into simpler forms which then get mixed with the soil.

5. Natural hazards such as floods, droughts, cyclones, earthquakes, landslides, tsunami, and volcanic eruptions can cause imbalance in nature.

B. 1. A food chain shows how each living thing gets food, and how nutrients and energy are passed from creature to creature.

A food chain begins with plant-life and ends with animal-life.



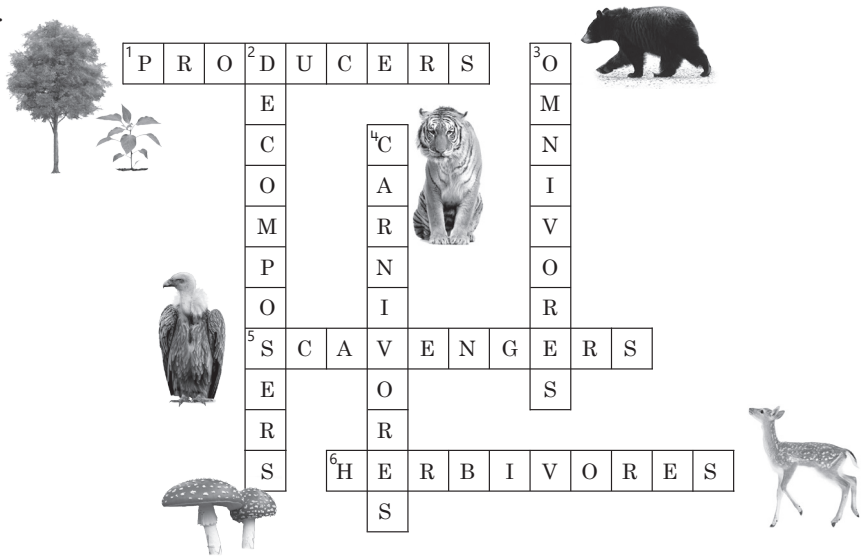
Food chain

2. The four types of consumers are given below:
 - a. **Herbivores:** These types of animals eat only plants and plant products. Cow, goat, elephant, giraffe, and deer are some examples of herbivores.
 - b. **Carnivores:** These types of animals eat other animals. Lion, tiger, and wolf are some examples of carnivores.
 - c. **Omnivores:** These types of animals eat both plants and animals are called omnivores. Bear, dog, and human beings are some examples of omnivores.
 - d. **Scavengers:** These types of animals feed on dead animals and plants. Vultures, hyenas, jackals, and termites are some examples of scavengers.
3. A balance between plants and animals is essential in nature. A food chain in nature helps to maintain this balance. An increase or a decrease in the population of some animals from a food chain will upset the balance in nature and may even cause other animals and plants to die.
4. Some major causes that cause imbalance in nature are given below:
 - a. **Land clearing:** The destruction of plants and trees in the forest results in the destruction of other living organisms and an increased amount of carbon dioxide in the atmosphere and decreased rainfall.
 - b. **Forest fires:** Humans burn down parts of a forest for farming or for making human settlements. A forest fire can destroy all living organisms present in the forest.
 - c. **Hunting:** Some people kill or capture wild animals for leather, fur, horns and other body parts. If this practice continues, many animals will soon become extinct.

- d. **Pollution:** Human activities such as throwing wastes on lands, in water, and releasing poisonous gases by the factories and vehicles into the air, pollute land, water and air. It can cause harm to human beings, other living organisms and the environment.

Think and Answer

1.



Picture Study

1. a. 3 1 1
 b. 2 4 3 1

8. Sound and Noise

Section 1

- A. 1. creaking 2. crackling 3. fire engine siren
 4. noise 5. pleasant
 B. 1. noise pollution 2. headache 3. clock
 4. planting trees 5. chirping of birds
 C. 1. F 2. T 3. T
 4. F 5. T

Section 2

A. 1. Four sounds produced by common objects are given below:

- a. A doorbell produces a loud musical sound.
- b. A clock makes a soft ‘tick-tock’ sound.
- c. A pressure cooker makes a loud whistling sound.

2. Sounds that make us feel happy, relaxed, and evokes positive emotions are called pleasant sounds. Chirping of birds, sound of waves on a beach, sound of gentle rain showers are three examples of pleasant sounds.

3. Sounds that make us unhappy, uncomfortable, and evokes negative emotions are called unpleasant sounds. Honking of vehicles on a road, sound from factories and generators, and bursting of crackers are three examples of unpleasant sounds.

4. Three harmful effects associated with the noise pollution are given below:

- a. Noise pollution can cause headache, nausea, and mental stress.
- b. Constant loud noise can distract concentration and affect work efficiency.
- c. Noise pollution can lead to sleep disturbances and high blood pressure.

B. 1. All living beings such as plants, animals, and humans produce different sounds.

Plants and trees make a rustling sound when their leaves and branches move on a windy day.

Animals and birds use different sounds to convey to others about the location of food or warn them from the dangers of predators.

Human beings use different sounds such as talking, laughing, and singing to communicate their feelings.

2. Warning sounds are loud sounds used to warn people about a danger or an emergency.

Three common warning sounds used in different situations are given below:

- a. **Fire alarm:** A fire alarm produces a loud noise to warn people about a fire inside the building.
 - b. **Ambulance siren:** An ambulance siren makes a loud noise that warns the pedestrians and vehicles on the roads to give way.
 - c. **Police siren:** A police siren makes a loud noise that warns the pedestrians and vehicles on the roads to make way for the police vehicle.
3. Excessive and continuous noise that may cause adverse effects on humans and other living organisms is called noise pollution.

Some causes of noise pollution are as follows:

- a. Continuous honking by vehicles on the roads.
 - b. Noise produced by machines in factories, industries, and construction sites.
 - c. Bursting of crackers.
 - d. Noise produced by loudspeakers, televisions, radios, coolers, and air conditioners.
4. Five measures to reduce noise pollution are as follows:
- a. Plant more and more trees as they absorb noise.
 - b. Keep the volume of television and music system, etc. low.
 - c. Avoid bursting crackers as they produce loud and unpleasant sound.
 - d. Relocate industries, airports, and railway stations away from residential areas.
 - e. Avoid honking especially near schools, hospitals and residential areas.

Think and Answer

1. Sound refracts less and thus gets transmitted farther at night than during daytime. Thus, the sound of clock appears to be much clearer at night than daytime.
2. Loud noise of the students can distract concentration and effect efficiency.

Picture study

- a. Noise pollution has been shown in the picture.
- b. The adverse effects of this type of pollution include headache, nausea, irritation, and mental stress, and high blood pressure.
- c. Avoiding honking and keeping the volume of music system low are the two measures to reduce this type of pollution.

9. Work and Energy

Section 1

- | | | |
|---------------------|--------------------------------|-----------------|
| A. 1. energy | 2. light energy | 3. sound energy |
| 4. Sun | 5. renewable sources of energy | |
| B. 1. Sun | 2. renewable | 3. work |
| 4. electrical | 5. mechanical | |
| C. 1. sound energy | 2. crude oil | 3. heat energy |
| 4. renewable energy | | 5. wind energy |
| D. 1. T | 2. F | 3. T |
| 4. F | 5. F | |

Section 2

- A. 1. Work is said to be done when a force applied on an object causes it to move a certain distance in the direction of the force. A student carrying a bag from home to school and a woman pulling out water from a well are two examples of work being done.
2. Work is said to be 'zero' when an object does not show any displacement or movement even after applying the force. For example, sleeping and sitting are the two activities where zero work is done.
3. Energy is the capacity or ability to do work. Work and energy are interrelated because whenever work is done, there is always a change or transfer of energy.
4. The energy derived from renewable sources is called renewable energy.
- The energy derived from non-renewable sources is called non-renewable energy.

B. 1. a.

Renewable sources of energy	Non-renewable sources of energy
i. These are infinite and replenishable sources	i. These are limited and cannot be replenished sources
ii. The energy derived from these sources are affordable, reliable, and clean.	ii. The energy derived from these sources cannot be renewed or regenerated.
iii. Sun, wind, tides, and water are some examples.	iii. Fossil fuels such as coal, crude oil, and natural gas are some examples.

b.

Work	Energy
i. When a force applied on an object causes it to move a certain distance in the direction of the force.	i. The capacity or ability to do work. There is always a change or transfer of energy, whenever work is done.
ii. A porter pulling a cart through some distance.	ii. Running needs more energy than walking

2. The different forms of energy we get from the Sun are light energy, heat energy and solar energy.

- Uses of light energy:
 - a. It is used to help us see things around us.
 - b. It is used by plants to prepare food.
- Uses of heat energy:
 - a. It is used to cook food.
 - b. It is used to dry things, generate electricity, and run automobiles.
- Uses of solar energy:
 - a. It is used to dry out wet clothes.
 - b. It is used to generate electricity.

3. Electrical energy is generated at power plants and supplied to homes, schools, offices, and industries.

It is used to run electrical appliances, such as computers, ceiling fans, tube lights, air conditioners, refrigerators, televisions, etc. This energy is also used in public transportation systems.

4. a. Mechanical energy is the energy possessed by an object due to its position or motion. For example, a moving car possesses mechanical energy due to its motion.
- b. Wind energy is the energy obtained from the wind. Wind energy is used in windmills to generate electricity. It is also used for sailing boats and flying gliders.

Think and Answer

1. Fossil fuels such as coal, petroleum, natural gas should be used only for the purpose where there is no other alternative source of energy available.

Picture Study

1. a. wind energy b. solar energy
c. electrical energy

10. Light and Shadow

Section 1

- | | | |
|-----------------------|-------------------------|------------------|
| A. 1. firefly | 2. opaque object | 3. rotation |
| 4. translucent object | | 5. solar eclipse |
| B. 1. Light | 2. revolution | 3. rotation |
| 4. solar | 5. lunar | |
| C. 1. shadow | 2. transparent object | |
| 3. electric bulb | 4. 365 days and 6 hours | |
| 5. 24 hours | | |
| D. 1. T | 2. T | 3. F |
| 4. F | 5. T | |
| E. 1. Transparent | | c. Clear glass |
| 2. Opaque | | d. wooden door |

- | | |
|-------------------------------|------------------|
| 3. Light | e. energy |
| 4. Artificial source of light | b. electric bulb |
| 5. Natural source of light | a. sun |

Section 2

A. 1. Light is a form of energy that enables us to see things around us. The Sun, stars, glow worms, and torches are some sources of light.

2. A shadow is dark patch which is formed when an opaque object comes in front of a source of light and blocks the light.

The conditions required for the formation of shadows are a source of light, an opaque or translucent object and, a surface on which shadow would form.

3. The Sun seems to move in the sky from the morning to evening. Accordingly, the length and position of the shadows change. Shadows are longest in the morning and evening; and are shortest at noon.

4. Spinning movement of Earth about its axis is called rotation of earth. It is important as it causes day and night.

5. The movement of Earth around the Sun in its orbit is called revolution of Earth. It is important as it causes different seasons in a year.

6. An eclipse takes place when one heavenly body such as a Moon or planet moves into the shadow of another heavenly body. The different types of eclipses observed on Earth are the lunar eclipse and the solar eclipse.

B. 1. Based on their ability to pass the light, objects can be divided into three categories: transparent, translucent, and opaque.

Transparent objects: These objects allow light to pass through them completely. Cellophane paper, clear water, clear glass, and clear air are some transparent objects.

Translucent objects: These objects allow only a part of light to pass through them. Coloured glass, frosted glass, and butter paper are some translucent objects.

Opaque objects: These objects do not allow light to pass through them. Wood, stones, and metals are some opaque objects.

2. *Aim:* To show that light travels in straight lines.

Materials required: A candle and a drinking straw.

Procedure:

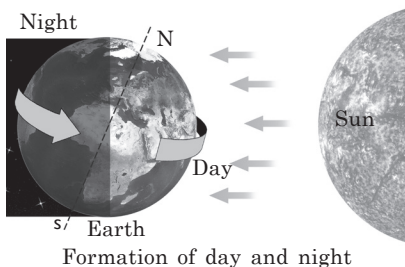
1. Light the candle.
2. Take the straw and look through it at the flame of the candle.
3. Bend the straw from the centre and again try to look at the candle flame through it.



Observation: The candle flame can be seen through the straight straw but not through the bent straw.

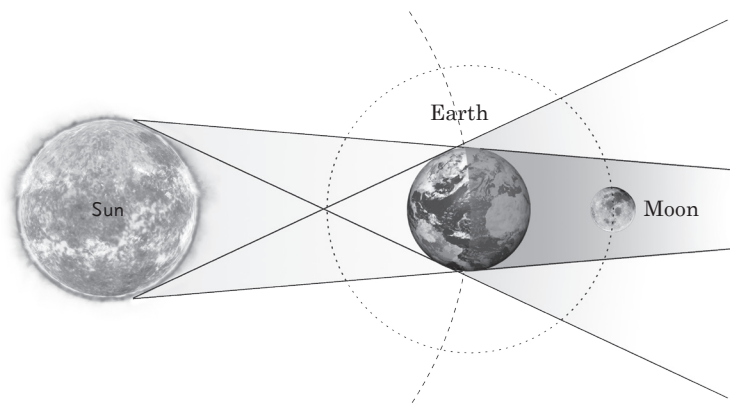
Conclusion: Light travels in straight lines.

3. Five characteristics of a shadow are listed below:
- a. A shadow is always formed on the opposite side to the source of light.
 - b. A shadow is always black in colour irrespective of the colour of the object.
 - c. A shadow only shows the outline of the shape of an object but not the details of the object.
 - d. A shadow is longer if the source of light is far from the object and vice-versa.
 - e. A shadow moves if the source of light or the object moves.
4. The formation of day and night is caused by the rotation of Earth. As Earth rotates, only one half of Earth that faces the Sun gets sunlight and forms the day. The other



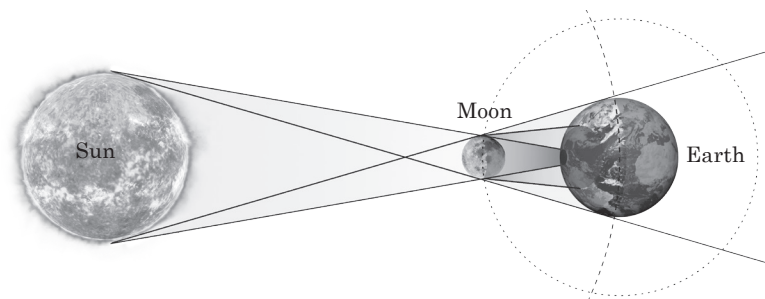
half part that remains behind the Sun receives no sunlight and forms the night. Earth always keeps rotating. So, the cycle of days and nights goes on.

5. **Lunar eclipse:** Occurs while Earth revolving around the Sun, sometimes comes in between the Sun and the Moon, blocking the sunlight to reach Moon. During a lunar eclipse, Earth casts a shadow onto Moon.



Lunar eclipse

6. **Solar eclipse:** Occurs while Moon revolving around Earth, sometimes comes in between the Sun and Earth, blocking the sunlight to reach Earth. During a solar eclipse, the Moon casts a shadow onto Earth.



Solar eclipse

Think and Answer

1. Clear water can be made translucent by putting 2 tablespoons of lemon into it.

Clear water can be made opaque by putting equal amount of black colour into the water.

2. The shape of shadow formed will be the same as the image of flower. The colour of the shadow would be black, although the image of flower pasted is coloured.

Picture Study

1. a. Sun b. Earth c. Moon
- d. Lunar eclipse
- e. A lunar eclipse occurs when Earth comes between the Sun and the moon while revolving.
- f. Yes, it is safe to watch lunar eclipse with naked eyes.

11. Simple Machines

Section 1

- | | | |
|--|----------------------|--------------------|
| A. 1. Machines | 2. effort | 3. wedges |
| 4. class-one | 5. screw | |
| B. 1. load | 2. pulley | 3. inclined plane |
| 4. class three lever | 5. axe | |
| C. 1. T | 2. T | 3. F |
| 4. F | 5. T | |
| D. 1. sea-saw, a pair of scissors | 2. fish rod, stapler | |
| 3. ramps in hospital, sloping roads in hills | | |
| 4. spinning top, bicycle wheel | | |
| 5. axe, knife | | |
| E. 1. class-three lever | 2. wedge | 3. class-one lever |
| 4. pulley | 5. wheel and axle | |

Section 2

- A. 1. A simple machine uses a single applied force to make the work easier and save time. A bottle opener and a stapler are some two examples of simple machines.
2. Wheel and axle arrangement is a type of simple machine in which the centre of the wheel is connected to the rod called an axle.
3. A screw is a modified inclined plane, wrapped around a cylinder. A screw is used to hold things tightly together.

4. An inclined plane is a flat supporting surface tilted at an angle, with one end higher than the other. An inclined plane requires less force rather than lifting it straight up.
 5. A wedge is a triangular shaped simple machine made up of two inclined planes that meet to form a sharp edge. It can be used to separate two objects or portions of objects, through the application of force.
- B. 1. A lever is the simplest machine which consists of a rigid bar or rod that can turn about a fixed point.
- A lever consists of three parts: fulcrum, load, and effort.
- Fulcrum:** The fixed point around which the lever moves is called the fulcrum (F).
- Load:** The object on which work is to be done is called the load (L) or weight.
- Effort:** The force applied on the lever to do work on an object is called the effort (E).
2. Depending upon the location of the load, the effort, and the fulcrum, levers can be classified into three types.
 - a. Class-one lever
 - b. Class-two lever
 - c. Class-three lever

Class-one lever: It is a lever in which the fulcrum is located between the load and the effort. A see-saw and a pair of scissors are some examples of class-one lever.

Class-two lever: It is a lever in which the load is located between the fulcrum and the effort. A wheelbarrow, a bottle opener, and a lemon squeezer are some examples of class-two lever.

Class-three lever: It is a lever in which the effort is applied between the fulcrum and the load. A stapler and a pair of tongs are some examples of class-three lever.
 3. The pulley is a simple machine which consists of a grooved rotating wheel around an axle with a rope, chain or belt wound around it.

It is used to lift and move heavy things to some height. The grooved wheel is fixed to a support high up. The load is fixed to one end of the rope. The effort is applied downwards at the other end of the rope. It pulls the load upwards. The load and the effort move equal distances but in opposite directions.

4. The different types of pulleys are given below:
 - a. **Fixed pulley:** It has a wheel which rotates the fixed axle, thereby doing work.
 - b. **Movable pulley:** A movable pulley has an axle in a movable block. It is used along with a fixed pulley.

Think and Answer

1. Screwdriver is being used as a class-one lever when used to prise open a can.
2. A broom is a class 3 lever. The fulcrum is the end point(hand), the effort is in the middle, the place where you grip, and the load is the things you are sweeping away.

Picture Study

1. a. a modified inclined plane wrapped around a cylinder
- b. a wheel with an axle around its centre.
- c. a flat surface tilted at an angle, with one end higher than the other.
- d. two inclined planes that meet to form a sharp edge.



2. a. wheel and axle
- b. modified inclined plane
- c. class-one lever
- d. wedge
- e. inclined plane
- f. class-two lever

12. Cleanliness and Hygiene

Section 1

- A. 1. germs 2. Degradable 3. infected
4. Non-degradable 5. Recycling
- B. 1. splashing eyes with clean water twice or thrice daily
2. plastic bag 3. dermatologist 4. typhoid
5. green coloured bins
- C. 1. F 2. T 3. F
4. T 5. F
- D. 1. Flu Cold 2. Malaria Dengue
3. Cough, typhoid 4. Rotten food leaves
5. Plastic metal
- E. 1. Yes 2. Yes 3. No
4. No 5. Yes 6. No
7. Yes 8. No

Section 2

- A. 1. Personal cleanliness includes practices or habits to keep our body parts clean and healthy. It is important to remain healthy and disease-free.
2. We can take care of our teeth by brushing them twice a day.
3. Three healthy habits to take care of eyes are given below:
- a. Splash eyes with clean water twice or thrice daily to keep them clean.
 - b. Never rub the eyes with hands to avoid infection.
 - c. Never put any unsafe cosmetic in the eyes.
4. We can take care of hair by following ways:
- a. Wash the hair with a gentle shampoo to remove dirt.
 - b. Oil the hair once or twice a week with a good hair oil.
 - c. Comb and brush the hair regularly to keep it neat.
5. Correct way to wash hands is as follows:
- a. Place the hands under running water from a tap to wet them.

- b. Apply soap and lather the hands by rubbing them together for at least 20 seconds.
 - c. Rub palms, at the back of hands, in between fingers and under the nails.
 - d. Rinse the hands under running water to wash off the soap properly.
 - e. Dry the hands with a clean towel or an air dryer.
6. Diseases that can spread from one person to another are called communicable diseases. Communicable diseases can spread through various means, such as air, water, food, insects, or through direct contact.
7. Communicable diseases spread through air when a sick person sneezes, coughs or even breathes. When a healthy person breathes in this air, the germs may enter the body and make the person fall ill. Two common diseases that can spread through air are flu (influenza) and cold.
8. Unclean or contaminated water contains a lot of germs which can spread through water while bathing, washing, or drinking.
- Contaminated food contains a lot of germs which can spread through consuming. Germs may enter the body and make the person fall ill.
9. Garbage is a waste which is generated at houses, offices, shops, industries, educational institutions everyday.
- Segregation makes them easy to recycle, reducing time, cost, and effort.
10. The three problems caused by garbage are given below:
- a. Biodegradable garbage disposed of in the open causes bad smell in the surroundings leading to air pollution and various diseases through mosquitoes, flies, and rats.
 - b. Non-biodegradable garbage may release poisonous substance that contaminate the soil. They also stop rainwater to penetrate Earth.

- c. Liquid garbage released from homes and industries pollutes water sources and causes diseases.
- B. 1. Some insects such as houseflies carry germs when they sit on garbage, sewage, and animal excreta. Later, these flies transfer germs to the uncovered food items and contaminate them. When a person eats this contaminated food, germs may enter the body and make the person fall ill. Insects such as mosquitoes pass germs through their bites. For example, when the female anopheles mosquito bites a person suffering from malaria, it sucks the blood which contain germs. When this mosquito bites a healthy person, it injects these germs into the body and causes malaria.
2. Degradable garbage is a waste that can be decomposed easily by the action of microorganisms over a period. This type of garbage mixes up with the soil and can be easily converted into manure (compost) by burying into the pits. Non-degradable garbage is a waste that cannot be decomposed by the action of micro-organisms. This type of garbage does not mix with the soil and remain in its original form for years.
3. We must follow the given steps to maintain the good hygiene:
- a. Always use a handkerchief to cover the mouth and nose while sneezing and coughing.
 - b. Avoid close contact with the sick person and sharing of personal things, such as towel, clothes, and handkerchief with the others.
 - c. Store the drinking water in the clean containers.
 - d. Always keep the water and food covered. Do not allow water to stagnate in pots, coolers, and in and around the house to avoid spread of diseases.
 - e. Clean the house regularly with disinfectants.
 - f. Wash hands before and after eating meal, and after using the toilet.

- g. Open the windows of the room for some time to let the fresh air and sunlight come in, especially in the morning.
4. We can keep the environment clean in the following ways:
- a. Clean the house properly everyday by sweeping and mopping the house to remove dirt from every nook and corner.
 - b. Dump garbage inside the dustbins.
 - c. Never throw garbage on the road or in public places to prevent dirty looks and foul smell.
 - d. Always spit in a washbasin instead of public places.
 - e. Drains must be covered and should be cleaned regularly.
 - f. Spread awareness about the importance of keeping the surroundings clean.
5. The simplest way to control garbage lies in the three R's - Reduce, Reuse and Recycle.
- a. **Reduce:** Buy only what you need and in required amount. Use products with less packaging or with packaging that can be reused or refilled.
 - b. **Reuse:** Use washable cups and plates instead of disposables. Use cloth napkins, handkerchiefs, or towels instead of tissue paper. Donate old clothes to needy people or use them for dusting and cleaning.
 - c. **Recycle:** Processing of old materials such as glass and metals (aluminium, iron etc.) into new products conserves natural resources and reduces energy use.

Think and Answer

- | | |
|--------------------------------|---------------|
| 1. a. rotten food | a. metal |
| b. leaves | b. plastic |
| c. peels of vegetable & fruits | c. fibre tyre |
| d. paper | d. rubber |

Picture Study

- a. The person shown in the picture is a scrap dealer.
- b. He collects and sends common materials such as glass, metals, paper and plastic in bulk to mills for recycling.

- c. His work plays a vital role in the management of garbage by disposing it to the right authorities, thereby contributing to the cleanliness of the environment.

Model Test Paper 2

Section 1

- A. 1. noise 2. producers 3. screw
4. rotation 5. recycling
- B. 1. Rotation 2. Machine 3. lunar
4. scavengers 5. Warning sounds
- C. 1. T 2. T 3. F
4. T 5. T
- D. 1. floods 2. pulley
3. green coloured bins 4. heat energy
5. transparent object
- E. 1. Machines are devices used to perform our work efficiently with less efforts by reducing the force applied.
2. An eclipse takes place when one heavenly body such as a Moon or planet moves into the shadow of another heavenly body.
3. Work is said to be done when a force applied on an object causes it to move a certain distance in the direction of the force.
4. Energy is the capacity or ability to do work.
5. Personal cleanliness includes practices or habits to keep our body parts clean and healthy.
- F. 1. Sound pollution has been shown in this picture.
2. The adverse effects of the noise pollution are headache, nausea, mental stress, and high blood pressure.
3. Avoid listening to loud noises for a long period and avoid bursting crackers.

- G. 1. An inclined plane is a flat supporting surface tilted at an angle, with one end higher than the other. An inclined plane requires less force rather than lifting it straight up.
2. Unclean or contaminated water contains a lot of germs which can spread through water while bathing, washing, or drinking.

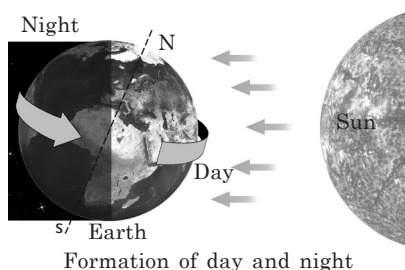
Contaminated food contains a lot of germs which can spread through consuming. Germs may enter the body and make the person fall ill.

3. Decomposers are the organisms that feed on dead remains of other organisms. They play an important role by break down the nutrients present in decaying matter into simpler forms which then get mixed with the soil.
4. A sound that makes us feel happy, relaxed, and evokes positive emotions is called a pleasant sound. Honking of vehicles on a road and bursting of crackers are two examples of unpleasant sounds.
5. A shadow is dark patch which is formed when an opaque object comes in front of a source of light and blocks the light.

The conditions required for the formation of shadows are a source of light, an opaque or translucent object and, a surface on which shadow would form.

- H. 1. The different forms of energy we get from the Sun are light energy, heat energy and solar energy.
- Uses of light energy:
 - a. It is used to help us see things around us.
 - b. It is used by plants to prepare food.
 - Uses of heat energy:
 - a. It is used to cook food.
 - b. It is used to dry things, generate electricity, and run automobiles.

- Uses of solar energy:
 - a. It is used to dry out wet clothes.
 - b. It is used to generate electricity.
- 2. The formation of day and night is caused by the rotation of Earth. As Earth rotates, only one half of Earth that faces the Sun gets sunlight and forms the day. The other half part that remains behind the Sun receives no sunlight and forms the night. Earth always keeps rotating. So, the cycle of days and nights goes on.



3. Depending upon the location of the load, the effort, and the fulcrum, levers can be classified into three types.
 - a. Class-one lever
 - b. Class-two lever
 - c. Class-three lever

Class-one lever: It is a lever in which the fulcrum is located between the load and the effort. A see-saw and a pair of scissors are some examples of class-one lever.

Class-two lever: It is a lever in which the load is located between the fulcrum and the effort. A wheelbarrow, a bottle opener, and a lemon squeezer are some examples of class-two lever.

Class-three lever: It is a lever in which the effort is applied between the fulcrum and the load. A stapler and a pair of tongs are some examples of class-three lever.

4. a. The main differences between solar eclipse and lunar eclipse are as follows:

Solar Eclipse	Lunar Eclipse
i. It occurs when Moon while revolving around Earth, comes in between the Sun and the Earth, blocking the sunlight to reach Earth.	i. It occurs when Earth while revolving around the Sun, comes in between the Sun and the Moon, blocking the sunlight to reach Moon.
ii. The Moon casts a shadow onto Earth.	ii. Earth casts a shadow onto Moon.
iii. A solar eclipse always takes place on a new moon day.	iii. A lunar eclipse always takes place on a full moon night.

- b. The main differences between renewable and non-renewable sources of energy are as follows:

Renewable sources of energy	Non-renewable sources of energy
i. These are infinite and replenishable sources	i. These are limited and cannot be replenished sources
ii. The energy derived from these sources are affordable, reliable, and clean.	ii. The energy derived from these sources cannot be renewed or regenerated.
iii. Sun, wind, tides, and water are some examples.	iii. Fossil fuels such as coal, crude oil, and natural gas are some examples.

5. The simplest way to control garbage lies in the three R's - Reduce, Reuse and Recycle.

- a. **Reduce:** Buy only what you need and in required amount. Use products with less packaging or with packaging that can be reused or refilled.

- b. **Reuse:** Use washable cups and plates instead of disposables. Use cloth napkins, handkerchiefs, or towels instead of tissue paper. Donate old clothes to needy people or use them for dusting and cleaning.
 - c. **Recycle:** Processing of old materials such as glass and metals (aluminium, iron etc.) into new products conserves natural resources and reduces energy use.
6. A food chain shows how each living thing gets food, and how nutrients and energy are passed from creature to creature.

A food chain begin with plant-life and end with animal-life.



Food chain

