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Beginner's

SCIENCE

HELP KIT : 6-8



Oral Questions

- Ans.** 1. Do it your self.
2. Food come from both plants and animals sources.
3. Curd, Cheese, Butter, Khoya
4. Radish, Carrot, Turnip, Beetroot.

Oral Questions

- Ans.** 1. Food ingredients added during cooking a dish to make tasty and edible.
2. Broccoli — Flower
Beans — Seed
Ginger — Stem
Tomato — Fruit
3. Crows, Bears, Cockroaches, Human beings, Dogs.
4. The animals that kills other animals is called Predator.

Summative Assessment

A. Very Short-Answer Questions :

- Ans.** 1. Food is a combination of various substances eaten for Providing nourishment and for living.
2. Milk, Eggs, Meat, Honey, Fish, Chicken.
3. Curd, cheese, butter and khoya.
4. a. Elephant : eat plants
b. Crow : eat insects and plant products.
c. Kingfisher : eat fishes
d. Cat : eat flesh and bread.

B. Short-Answer Questions :

- Ans.** 1. Food is taken into the body for keeping the body 'alive and working'.
2. a. Seed b. Fruits c. Root
d. Stem e. Leaf
3. As animal can not make their own food and depend on producers [plant] for their food, these are called consumers.
4. Animals that eat flesh of dead and decaying animals body [carcass] are called scavengers. They keep the surroundings clean.
5. a. Cow, Goat b. Tiger, Snake
c. Crow, Bear

C. Long-answer Questions :

- Ans.** 1. Human beings get food from two sources—plants and animals. Plants make their own food. Plants have green leaves where they make their food from carbon dioxide and water in presence of sunlight. This process is called photosynthesis. Therefore, plants are called autotrophs (auto means self, trophs means organisms). They are also called producers of food for other organisms.

Plant Parts as Source of Food

The food prepared by the plants for itself when exceeds its requirement, the excess of it is stored in different parts of plants. These parts of plants are eaten by us as source of food. Thus, the excess of food prepared by the plants is stored in their leaves, stems, roots, flowers, fruits and seeds.

2. On the basis of their food habits, animals are grouped as follows :



1. **Herbivores** : Animals that eat plants or their parts are called plant eating animals or herbivores. Herbivores are cow, buffalo, rabbit, giraffe, sheep etc.
2. **Carnivores** : Animals that eat flesh of other animals are called flesh eating animals or carnivores. Carnivores are lion, tiger etc.
3. **Omnivores** : Animals that eat both plants and flesh of other animals are called omnivores. Omnivores are crows, beasts, human beings, etc.
4. **Other types of food habits** : There are many other animals that do not follow the above food habits such as :
a. Animals that feed or eat flesh of dead and decaying animals' body (carcass) are called scavengers. They keep the surroundings clean. Scavengers are crow, vulture, hyena, jackal, etc.
b. Animals that feed on animal blood are called sanguivores such as cattle, leech.
c. Animals that eat fruits are parrot (parakeet), monkey, etc.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself.

Formative Assessment

A. Multiple Choice Questions (MCQs)— Choose the correct option :

- Ans.** 1. c. 2. b. 3. a. 4. a.
5. d. 6. d. 7. b. 8. d.

B. Fill in the blanks :

- Ans.** 1. Food gives us **energy** to do work.
2. Food gives us materials needed for **repairing** of the damaged tissues of our body.
3. **Photosynthesis** is the process by which green plants make their own food.
4. **Milk** is used to make milk products.
5. Farmer gives **Fodder** to cattle as feed.
6. Human beings get food from **two** sources.
7. Beetroot is **root** of a plant.
8. **Ginger** is stem of a plant found underground.

C. Write True or False :

- Ans.** 1. True 2. False 3. True
4. False 5. True

D. Match the columns :

Animal	Category	Food eaten
1. Buffalo	a. Herbivore	i. Grass, grains, oil cakes, etc.
2. Tiger	b. Carnivore	ii. Plants and animals
3. Man	c. Omnivore	iii. Animals
4. Cow		
5. Crow		
6. Lion		

E. Project Report

Ans. Do it yourself

F. Symposium

Ans. Do it yourself

Oral Questions

- Ans.** 1. Carbohydrates, Vitamins, Fats, Proteins, Minerals, Fibre, Water.
 2. Carbohydrates : Potato, Rice
 Fat : Milk, Butter
 3. Proteins : Milk, Pulses.
 4. Water, Roughage
 5. Vitamin A

Oral Questions

- Ans.** 1. a. **Balanced diet** : A diet containing all the nutrients in adequate quantities is known as balanced diet.
 b.&c. **Obesity and overeating** : Excessive intake of food is called over eating and it leads to a condition called obesity.
 d. **Malnutrition** : A condition in which people become weak and sick due to the lack of one or more nutrients in his their is termed as malnutrition.
 2. a. Kwashiorkor b. Marasmus
 c. Vitamin C d. Iodine
 e. Calcium

Summative Assessment**A. Very Short–Answer Questions :**

- Ans.** 1. Nutrients.
 2. Proteins
 3. Dehydration is the excess excessive loss of body water with an accompanying disruption of metabolic process.
 4. A condition in which people become weak and sick due to the lack of one or more nutrients in his their is termed as malnutrition.

B. Short–Answer Questions :

- Ans.** 1. a. **Carbohydrates** : Potato, bread, Rice, Wheat, Jaggery.
 b. **Fats** : Butter, Ghee, Cheese, Vegetable oil, Cream.
 c. **Proteins** : Pulses, Milk, Eggs, Fish, Soyabean.
 d. **Dietary fibre** : carrot, Cabbage, Apples, Wheat, Rice.
 2. Potatoes and starch are two foods rich in starch.
 3. The three major food groups are carbohydrates, fat and Protein.
 1. **Carbohydrates** : Rice, Potatoes, Honey
 2. **Fat** : Butter, Ghee, Cheese.
 3. **Protein** : Egg, Pulses, Milk.
 4. We should not eat only one type of food because no single food item can provide all the nutrients required by our body.

C. Long-answer Questions :

- Ans.** 1. a. **Carbohydrates**: Carbohydrates are energy giving
 2.

compounds. The bulk of our food consists of Carbohydrates. The two types of carbohydrates are sugars and starches. Foods rich in carbohydrates are potato, Rice. Honey etc.

- b. **Fats** : Fats are also energy-giving compounds. But they give much more energy than carbohydrates.

Food rich in fats include :

Milk products such as butter, ghee and cheese (animal fats).

Meat (animal fat).

Vegetable oils such as groundnut oil and coconut oil.

Dry fruits like cashew nut and almond.

- c. **Protein** : Foods rich in proteins are often called body-building foods. Proteins required by the body :

- For growth and repair of body tissues.
- To regulate body functions.
- To protect the body from infections.

Like carbohydrates and fats, proteins can also provide energy.

Proteins can be obtained from plant sources as well as animal sources.

Pulses, wheat Milk, Eggs, Cheese.

- d. **Vitamins** : Vitamins are very important for proper functioning of our body. These are required in very small quantities in comparison to carbohydrates, fats and proteins. They are known as protective foods as they :

- e. **Minerals** : Just like vitamins, minerals are also protective foods. They help our body to remain healthy. They are also required in small quantities like vitamins. Some important minerals include calcium, sodium, potassium, phosphorus, iron and iodine.

- f. **Dietary fibre** : Also known as roughage, fibre has no nutritive value Yet, it is needed by our body as it performs the following functions :

- It prevents constipation.
- It assists in the process of digestion.
- It helps to get rid of undigested food.

Roughage is provided by the plant products in our foods. Its main sources are vegetables (carrots, cabbage), fruits (apple, peaches) etc.

- g. **Water** : We get water from the liquids we drink water, milk and tea. Even the fruits and fresh vegetables we eat contain plenty of water. Even while cooking, a lot of water is added to food.

Vitamins	Functions	Deficiency diseases	Symptoms	Sources
A	Keeps the eyes and skin healthy	Loss of vision (night blindness)	Loss of vision in the dark (night).	Carrot, tomato, green vegetables, mango, milk, butter and fish liver oil

B Complex B ₁	Helps in energy release	Beri-beri	Very little energy to work. Weak muscles.	Cereals, peas, potatoes, yeast, meat and milk
C	Keeps teeth, gums and bones healthy	Scurvy	Swelling and bleeding of gums. Swelling of joints.	Citrus fruits (lemon, orange), tomato and sprouts
D	Formation of strong bones and teeth	Rickets	Weak bones Decaying teeth, Low legs	Sunlight, milk, fish and eggs
Calcium	Healthy bone and teeth formation Helps in blood clotting	Bones and tooth decay (rickets in children)	Brittle bones. Tooth decay. Excessive bleeding.	Milk, cheese and green vegetables
Iron	Formation of red pigment of blood (haemoglobin)	Anaemia	Pale body colour. Whitish nails. Body weakness.	Cereals, pulses, green leafy vegetables, meat, eggs and liver
Iodine	Thyroid gland function	Goitre	Enlargement of Thyroid gland. Mental retardation in children.	Sea food and iodised salt

3. (i) **Kwashiorkor** : Kwashiorkor is caused by the deficiency of proteins and carbohydrates in diet. This disease occurs mostly in the children of 1-5 years of age.

A child suffers from kwashiorkor when he is not fed on proteinrich mother's milk [breast feeding]. The child suffering from kwashiorkor shows the following symptoms.

Irritable with pathetic facial looks.

Skin cracks and becomes scaly.

Swollen abdomen and weak legs.

Hairs turn reddish.

Lower body weight and retarded growth.

Kwashiorkor can be cured by giving protein and carbohydrates rich food to the patient.

(ii) **Marasmus** : Marasmus is caused by the deficiency of protein and carbohydrates.

A Marasmic child shows all the symptoms shown by a child suffering from kwashiorkor. The child becomes so thin that loose folds of skin can be seen all over the body muscles get wasted.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself.

Formative Assessment

- A. Multiple Choice Questions (MCQs)— Choose the correct option :

Ans. 1. d. 2. c. 3. c. 4. a. 5. c.

B. Fill in the blanks :

- Ans. 1. Loss of vision or night blindness is caused due to the deficiency of **Vitamin A** in our diet.
2. Processed foods are rich in **carbohydrates**.
3. Sea food is a rich source of **iodine**.
4. Protective foods include **vitamins** and minerals.
5. Deficiency of vitamin C causes a disease known as **scurvy**.
6. Proper functioning of our digestive system is due to the presence of **water** in our diet.
7. **Rickets** is caused due to the deficiency of vitamin D.

C. Match the columns :

Ans.	Column A	Column B
1.	Sea food	d. Iodine
2.	Vitamin D	f. Rickets
3.	Protein	e. Pulses
4.	Starch	a. Potato
5.	Fat	b. Butter
6.	Vitamin B12	c. Anaemia

D. Write True or False :

- Ans. 1. False 2. False 3. True 4. False
5. True 6. True 7. True

E. Laboratory Experiments

Ans. Do it yourself.

Oral Questions

- Ans. 1. Handpicking 2. Sugar, Common salt
3. Magnet
4. Liquified chlorine, fluosibicic acid, Aluminium sulphate, Calcium hydroxide, sodium silicofluoride
5. Handpicking

Oral Questions

- Ans. 1. Some uses of filtration at home are screening out large minerals deposits from water taps. Removing dust with the help of an air filter in central A.C and removing tea leaves from tea with the help of a filter.
2. Salt is obtained from sea water by evaporation.
3. We can separate a mixture of pulses, mud, salt and water by combining the process of decantation, sedimentation, evaporation and distillation.
4. The process in which heavier insoluble particles are allowed to settle down is called sedimentation.
5. The process of converting a liquid vapour by heating is called evaporation.

Summative Assessment

A. Very Short-Answer Questions :

- Ans. 1. Evaporation 2. Loading
3. Yes, We can separate a mixture of sawdust in water by sedimentation and decantation.
4. Threshing 5. Winnowing

B. Short-Answer Questions :

- Ans. 1. It is essential to clean food because clean food helps in our growth and does not harms our body.
2. The pebbles from the given mixture can be separated by handpicking where is sand and salt can be separated by the process of evaporation. This can be done with the help of falling two processes. 1. Filtration of the mixture of sand and water. 2. Evaporation.
3. Separating a lighter component from its mixture by means of wind is called winnowing.
4. The process of transferring the clear liquid [after sedimentation] into another container with out disturbing the sediment is called decantation.
5. The process by which we separate the insoluble and suspended solids of various sizes from a liquid "using a filter" is known as filtration.

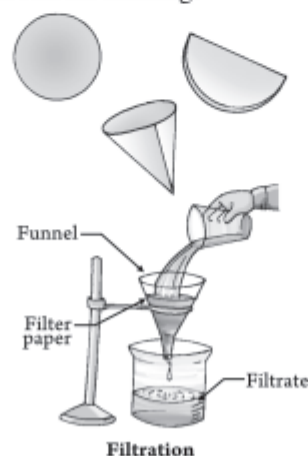
C. Long-answer Questions :

- Ans. 1. **Loading** : The finer particles of impurities take a lot of time to settle down. Loading is the process by which particles of impurities are made heavier in order to speed up sedimentation. The rate of sedimentation is increased by adding some chemicals. For example, alum is added to water to increase sedimentation. The alum helps the clay particles to combine with each other, which makes them heavier. The clay particles loaded with alum settle down quickly as sediment. The upper layer of clear water can then be decanted or filtered.
2. **Evaporation** : The process of converting a liquid vapour by heating is called evaporation. Evaporation takes place continuously wherever water is present. When impure water is heated, water changes into its vapour state leaving behind solid impurities. The water vapour is collected in a separate container and cooled down to obtain pure drinking water. This method is largely employed to obtain common salt from sea water.

Salt is obtained from sea water by evaporation. The sea water is collected in shallow ponds and allowed to evaporate in the Sun. Water evaporates in a few days, leaving the salt behind. Common salt is then obtained by further purification. The shallow ponds used for making salt from sea water are called salt pits.

3. Now-a-days modern water filters are used for filtering water in our home. In this filter, special type of materials called resins are used for filtering off solid particles present in water. It is then passed through another filter in which harmful organisms present in water are killed by using ultra violet rays. The water so obtained is safe for drinking.

4.



D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself

Formative Assessment

A. Multiple Choice Questions (MCQs)— Choose the correct option :

Ans. 1. d. 2. a. 3. b. 4. b. 5. c.

B. Fill in the blanks :

- Ans. 1. The process of settling down of solid particles in a liquid is called **sedimentation**.
2. Salt is separated from sea water by **Evaporation**.
3. **Thresher** is a machine used for threshing.
4. The substances which are made of only one kind of particles are called **pure** substances.
5. Sand can be separated from water by the process of **sedimentation and decantation**.

C. Write True or False :

Ans. 1. False 2. True 3. False 4. False 5. True

D. Match the columns :

Ans.	Column A	Column B
1.	Salt in water	b. Evaporation
2.	Wheat grain and husk	a. Winnowing
3.	Chalk dust in water	d. Filtration
4.	Sand in water	c. Decantation

E. Differentiate between each pair :

- Ans. 1. Differentiate **Winnowing**
Separating a lighter component from its mixture by means of wind is called winnowing.
Threshing
Removal of grains from the stalk is called threshing.
2. Differentiate

Decantation

The process of transferring the clear liquid [after sedimentation] into another container without disturbing the sediment is called decantation.

Filtration

The process by which we separate the insoluble and suspended solids of various sizes from a liquid 'using a filter' is known as filtrations.

3. Differentiate

Sedimentation

The process is which heavier insoluble particles are allowed to settle down is called sedimentation.

Loading

The process where one chemical helps in the sedimentation of the dust particles from its solution is called loading.

- F. Here are some pictures. Name the processes shown in them :

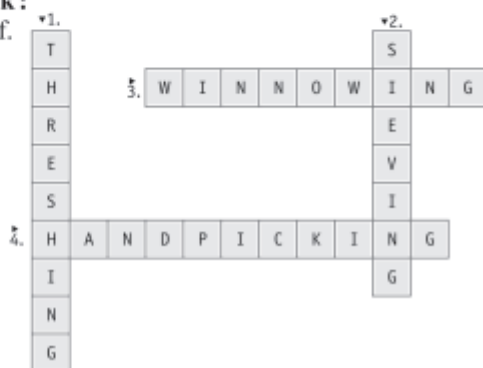
Ans. Evaporation winnowing Decantation Filtration

G. Project Work :

Ans. Do it yourself.

H. Fun Time :

Ans.



Formative Assessment-I

- A. Multiple Choice Questions (MCQs)—Choose the correct option :

Ans. 1. c. 2. a. 3. c. 4. a.

- B. Fill in the blanks :

- Ans. 1. **Photosynthesis** is the process by which green plants make their own food.
 2. **Milk** is used to make milk products.
 3. Sea food is a rich source of **Iodine**.
 4. Protective foods include **vitamins** and **minerals**.

- C. Write True or False :

Ans. 1. False 2. True 3. False 4. True

- D. Match the columns :

Ans. **Column A** **Column B**

1. Sea food	d. Iodine
2. Vitamin D	c. Rickets
3. Protein	b. Pulses
4. Starch	a. Potato

- E. Answer the following questions :

- Ans. 1. Food is a combination of various substances eaten for providing nourishment and living.
 2. Curd, Cheese, Butter and Khoya
 3. A condition in which people become weak and sick due to the lack of one or more nutrients in his their is termed as malnutrition.
 4. Evaporation

4

Cloth Materials-Fibre to Fabric

Unit:2 Our Materials

Oral Questions

- Ans. 1. The materials that we use for clothing is called fabric.
 2. All Fabrics are made of loose thread called yarns.
 3. Fibres are broadly classified into two main groups :
 (a) Natural fibres (b) Man made fibres
 4. The process of making yarn from fibre is called spinning.
 5. Stem.
 6. Meghalaya, Bihar, Assam, west Bengal and Odisha.
 7. The process of making yarn from fibre is called spinning.

Oral Questions

Ans. 1. natural 2. absorbent 3. Ganga

Summative Assessment

- A. Very Short-Answer Questions :

- Ans. 1. The fibres which are obtained from natural things such as animals and plants are called natural fibres.
 2. Wool, silk
 3. The fibres are obtained artificially by chemical processes are called man made fibres.
 4. Nylon, Rayon
 5. They do not wrinkle easily.
 They are very strong.
 They dry quickly.

- B. Short-Answer Questions :

Ans. 1. Differentiate
Fibres
 Clothes are made mostly from fibres. Fibres are thin

strands of thread that are woven to make fabric, for example, cotton fabric, silk fabric etc.

Fabrics

The fabrics is stitched to make clothes for example cotton fabric can be stitched into a cotton frock or a cotton Kurta. These are two main processes of making fabric from fibre weaving and knitting.

2. Natural fibres are mainly obtained from these sources :
 Plants [from their stem, bark leak, seed, etc.]
 Animals [hair or insect cocoon]
 3. Cotton is grown in Maharashtra, Madhya Pradesh, Tamil Nadu, Karnataka, Gujarat, Uttar Pradesh, Andhra Pradesh, Haryana and Punjab.
 4. Cotton gin is a machine used to separate cotton fibres from seeds quickly and easily.
 5. Jute is mainly grown in Meghalaya, Bihar, Assam, West Bengal and Odisha.
 6. Jute grows best in warm, humid climates, where the annual rainfall is 150 cm or more, with temperature fluctuating between 24°C and 37°C, the optimum being around 34°C.
 7. 1. Silk is strong, shiny and keeps our body warm in cold weather.
 2. It is a good absorbent of heat.

- C. Long-answer Questions :

Ans. 1. We get cotton from cotton plants. The fruits of cotton plants are called cotton bolls. The cotton bolls are white in colour and roughly spherical in shape. They are quite

fluffy. Once the cotton bolls are mature, they burst open and we can see the seeds with cotton fibres.

The seeds with cotton fibres are picked (removed) from the cotton bolls by hand. After picking, they are taken to the ginning plant where the fibres are separated from seeds by combing. The process of separating cotton fibres from the seeds by combing is called ginning.

Ginning was previously done by hand. Now-a-days, ginning machines called cotton gins are used for this purpose. Cotton gin is the short form of cotton engine. It is a machine used to separate cotton fibres from seeds quickly and easily. The separated seeds can be used again to grow more cotton, if the seeds are badly damaged, they are disposed off.

- Jute fibre is obtained from the stem of jute plant. The plant is harvested at the flowering stage. Once harvested, the stems of the plants are cut and kept in water for some days. Gradually the stems rot. The fibres are then separated by hand.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself

Formative Assessment

A. Multiple Choice Questions (MCQs)— Choose the correct option :

Ans. 1. b. 2. b. 3. c.

B. Fill in the blanks :

- Ans. 1. Fibres are classified as **Natural fibres** and **Man made fibres**.
- Cotton fibres are **soft** and **durable**.
 - The fruits of cotton plants are called **Cotton bolls**.
 - The process of making yarn from fibre is called **spinning**.
 - Linen is obtained from **flax** plant.
 - Jute is obtained from the **stem** of jute plant.
 - warm** and **humid** climate is best for growing jute.
 - Jute** is a natural fibre whereas **Nylon** is a man-made fibre.

- Wool traps the **Air** between its fibres.

- Weaving is done by special machines called **looms**.

C. Give one word for the following :

- Ans. 1. Fibres 2. Man made fibres
3. Ginning 4. sericulture

D. Write True or False :

- Ans. 1. False 2. True 3. False
4. False 5. False 6. True

E. Differentiate between the following :

- Ans. 1. Differentiate

Natural fibres

Natural fibres come from plants and animals. Jute, wool, silk, cotton and linen are examples of natural fibres. Jute comes from the jute plant, wool from sheep, silk from silkworms, cotton from cotton plant and linen is obtained from flax plant.

Man-made fibres

Man-made fibres are also called synthetic fibres. Nylon, rayon, acrylic and polyester are some examples of man-made fibres. These fibres are manufactured in factories.

- Differentiate

Ginning

The process of separating cotton fibres from the seeds by combing is called ginning.

Spinning

The process of making yarn from fibre is called spinning.

F. Give reasons for the following :

- Ans. 1. Jute is a readily available natural fiber which is grown on a large scale in many areas. As it is a natural fibre, it does not cost much. This is the reason why it is used in packing industry. Also it can resist a big amount of force.
- We wear woollen clothes during winter season because it is warm to wear and is a good absorbent of heat.
 - People simply draped these fabrics to cover their bodies as stitching was not known at that time.

5

Sorting Materials Into Groups

Oral Questions

- Ans. 1. a. organize b. have
2. a. wood b. Cotton

Summative Assessment

A. Very Short-Answer Questions :

- Ans. 1. Grouping things together on the basis of a certain similar property is called classification.
- Materials can be classified as hard or soft on the basis of hardness.
 - Sand, chalk.
 - Liquids that dissolve in water are said to be miscible in water.
 - Floatation is the ability of some materials to float on water.

B. Short-Answer Questions :

- Ans. 1. Materials are need to be classified for the following reasons.
- By classification we can organise the object into various categories.
 - With the help of classification we can differentiate one object from another.

- Rough surface : Bark of a tree.
Smooth surface : Flower petals.
- Materials that allow light to pass through them are called transparent. for example : Plain glass, water and air.
- Materials that allow light to pass through them partially are called translucent. For example : Oiled paper and certain plastics.
- Materials that do not allow light to pass through them are called opaque. For example, wood and metals.

C. Long-answer Questions :

- Ans. 1. Materials can be classified based on the following properties : Lustre, roughness, hardness, transparency and floatation.

Lustre is the ability of some materials to shine. Based on whether or not they have lustre, materials can be classified as follows.

Materials that have lustre : Metals such as gold silver, copper, and iron are examples of materials that have lustre.

Materials that lack lustre : Paper, cardboard, wood and rubber are examples of materials that lack lustre.

Roughness

Based on the roughness of their surfaces, materials can be classified as rough or smooth.

Rough : Bark of a tree, road, and brick are examples of rough surfaces.

Smooth : Flower petals, surface of a mirror, and a baby's skin are examples of smooth surfaces.

Hardness

Based on their hardness, materials can be classified as hard or soft.

Hard : Wood and metals are examples of hard materials.

Soft : Cotton and sponge are examples of soft materials.

Transparency

Based on the amount of light that can pass through them, materials can be classified as transparent, translucent, and opaque.

Transparent : Materials that allow light to pass through them are called transparent. For example, plain glass, water, and air.

Translucent : Materials that allow light to pass through them partially are called translucent. For example, oiled paper and certain plastics.

Opaque : Materials that do not allow light to pass through them are called opaque. For example, wood and metals.

Floatation

Floatation is the ability of some materials to float on water. Based on whether or not they can float on water, materials can be classified as follows.

Materials that float : Wood and plastic are examples of materials that float on water.

Materials that sink : Rock and metals are examples of materials that sink in water.

2. **Solids** : All solids have the following characteristics.

- They have a definite shape and volume.
- They cannot be compressed easily.
Examples : Gold and wood.

Liquids : All liquids have the following characteristics.

- They have a definite volume but no definite shape.
- Liquids take the shape of the container they are poured in.
- Liquids can be compressed more easily than solids.
- The particles they are made-up of are not so tightly packed as in solids.
Examples : Water and tea.

Gases : All gases have the following characteristics.

- They have no definite shape or volume.
- They can be compressed very easily.
- The particles they are made up of are packed loosely.
Examples : Oxygen and carbon dioxide.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself.

Formative Assessment

A. Multiple Choice Questions (MCQs)— Choose the correct option :

Ans. 1. d. 2. c. 3. a. 4. a. 5. b.

B. Fill in the blanks :

- Ans. 1. Paper and cardboard **do not have** lustre.
2. Air and water are **transparent**.
3. **Solids** have a definite shape and volume.
4. Sand is **insoluble** in water.
5. Wood and plastic **float on** water.

C. Which property of liquids do the following pictures show ?

Ans. Liquids take the shape of the contains they are poured in also their particles are loosely packed.

D. Prepare a report containing the following information on any ten objects found in your house :

Ans. Do it yourself.

6

Changes Around Us

Unit 3 Things Around Us

Oral Questions

Ans. 1. Melting of Chocolate.

Oral Questions

Fill in the blanks :

Ans. 1. Ice 2. Material 3. Irreversible

Summative Assessment

A. Very Short-Answer Questions :

- Ans. 1. A change which can be undone or reversed is called a reversible change.
2. A change which can not be undone or reversed is called an irreversible change.
3. A change in which no new material is formed is called a physical change.
4. A change in which a new material is formed is called a chemical change.

B. Short-Answer Questions :

- Ans. 1. (a) **Reversible change** : A reversible change is the one where we can get back the original substance by revering the change for example : we can fold a paper to make a paper boat and then unfordate to get back the paper.
(b) **Irreversible change** : On the other hand an

irreversible change can not we reversed back.

For example : The cooked egg can not be changed back into raw egg.

2. **Physical changes** : A physical changes is the one in which no new substance is formed. For example : When we stretched a rubber band its shape changes. In this no new material is formed.

On the other hand a new material is formed in a chemical change. Fox example : when we burn coal or wood new materials such as smoke and ash are formed.

C. Long-answer Questions :

Ans. 1. Material on heating and cooling undergo various types of changes. These changes can be both reversible and irreversible.

On heating a matter in a liquid state can change its form to gaseos state. Similarly, a solid can change to a liquid when heated. These are examples of reversible changes. These can be seen in making salt. Also on heating a solid can permanently change its form. This can be seen in cooking in which we turn different things into eatables. In the same way, changes happen due to cooling can be both reversible. For example, we can freeze water to obtain ice. On the other land, cooling down of coffee is an irreversible process.

- When we heat ice, it gets change into water. This change can term as a reversible change. This is so because we can reverse this process at any time if we want to. We can again get ice by lowering the want to. We can again get ice by lowering the temperature the water is kept into. As no chemical change takes place in this whole process, we can say that it is a reversible change.
- When we mix lemon juice with baking powder, we get a new substance that is carbon dioxide. As in a chemical reaction we get a new substance which is totally different from the ones taking place in the process, the above change can be termed as a chemical change.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself.

Formative Assessment

A. Multiple Choice Questions (MCQs)— Choose the correct option :

Ans. 1. a. 2. d. 3. c. 4. d. 5. b.

B. Fill in the blanks :

- Ans. 1. In a **chemical** change, new substances are formed.
 2. In a **physical** change, no new substances are formed.
 3. Squeezing of a rubber ball is an example of a **physical** change, while burning of a candle is a **chemical** change.
 4. Most chemical changes are **irreversible**.

C. Write True or False :

Ans. 1. False 2. False 3. True 4. False

D. Encircle the odd-one out. Give reasons for your choice.

- Ans. 1. **Inflating a balloon** : It is a reversible change whereas all others are irreversible changes.
Frying of potatoes : It is a irreversible change whereas all others are reversible changes.

E. Give reasons for the following :

- Ans. 1. While changing water to water vapour we do not create any new substance, and we can easily change water

vapour again into water that is why it is a physical change.

- Sand is insoluble in water hence it retains its original properties by the method of filtration we can separate the two from one another. That is why it is considered a reversible change.
- Cement is completely soluble in water and we can not get back it in its rough form that is why it is considered and a irreversible change.

Formative Assessment-II

A. Multiple Choice Questions (MCQs)— Choose the correct option :

Ans. 1. b. 2. a. 3. c. 4. a.

B. Fill in the blanks :

- Ans. 1. Wool is a good **absorbent** of heat.
 2. The fruits of cotton plants are called **cotton bolls**.
 3. Metals such as gold have **lustre**.
 4. Sand is **insoluble** in water.
 5. Burning of a substance is a **chemical** change.

C. Write True or False :

Ans. 1. True 2. False 3. True 4. True 5. True

D. Match the following :

Ans.	Column A	Column B
1.	Wool	d. Sheep
2.	Lustre	a. Gold
3.	Opaque	b. Wall
4.	Wood	c. Float in water

E. Answer the following questions :

- Ans. 1. The process of making yarn from fibre is called spinning.
 2. The fibres are obtained artificially by chemical processes are called man-made fibres.
 3. A change which can be undone or reversed is called a reversible change.
 4. A change in which a new material is formed is called a chemical change.

7

Living Things Around Us

Oral Questions

- Ans. 1. All living things need food to live.
 2. Food
 3. No, Some of them are also non-living.
 4. No, They differ greatly in shape, size and mass.

Oral Questions

- Ans. 1. Latex is a waste product of rubber tree.
 2. Balloon, Sugar crystal.

Summative Assessment

A. Very Short-Answer Questions :

- Ans. 1. The making of food by the living being on their own is called autotrophic nutrition.
 2. The process of intake of oxygen and giving out of carbon dioxide is known as breathing.
 3. Plants remove their waster like water and carbon dioxide through stomata in leaves whereas other waste materials are deposited in dead leaves, bark etc.
 4. Animals move from one place to another in search of food and shelter to live. It is called locomotion.
 5. The average life span of man is 60 to 80 years.
 6. Plants also absorb water and mineral salts from soil. This is called mineral nutrition.
 7. Food + oxygen → Energy + Carbon dioxide
 8. Living things reproduce to continue their 'race' or 'species'.

- Growth is a permanent and irreversible change in the shape and size of an organism.
- Difference

Plants : The growth in plants takes place in certain specific regions such as shoot tip, root tip and some other regions.

Animals : The growth in animals is not specific to regions.

B. Short-Answer Questions :

- Ans. 1. (i) **Both have a definite shape, mass and occupy space.**

Living things have a variety of shape and mass. some living things are very light in weight and some are very heavy.

Non living things have a variety of shape, size and mass. Both living and non-living things are matter.

(ii) **Both have structural units** : All the living things are made up of small structures called cells.

- Structural units of living things : Living things have cells of different shapes, sizes and numbers.
- Structural units of non-living things : The structural units of non-living things are tiny particles called molecules.

- (a) **Plants** : 1. Turning of shoot tip to wards the source of light occurs when a plant is kept in a darkroom for a few days.

2. Opening and closing of stomata occurs due to presence of sunlight and water.

(b) **Animals** : 1. Wagging of tail by a dog when you call it.

2. Flying away of birds when you approach them.

3. (a) Sunflower facing the sun

(b) Heaves of touch-me-not plant.

4. Plants reproduce by different methods. Some plants reproduce by producing young plants from buds in their roots, stems or leaves. This type of reproduction is called vegetative reproduction such as in potato, ginger, mint, Bryophyllum, etc. Some plants reproduce by producing seeds. These seeds are produced in fruits. Seeds after some time give rise to seedlings and seedlings to plants/trees. Even a big banyan or a peepal tree is formed from a seed.

Animals reproduce either by laying eggs or by giving birth to young ones. The eggs hatch into young animals, which develop into adults like individuals after some time.

5. No, we can't grow plants without light.

6. Example : (a) Removal of your finger when you accidentally touch a hot plate or hot object.

(b) Closing your eyelids when an object is brought close to your eyes.

(c) Watering of mouth when you smell, think or see some food.

(d) Pricking of pin to your body has response in the form of jumping, crying or moving away.

7. A sugar crystal is a nonliving thing a grows by attractive other sugar crystal its growth is uneven and irregular on the other hand a plant is a living thing which grows in a regular and uniform manner.

C. Long-answer Questions :

Ans. 1. **Living things**

1. They have life.

2. They are made up of cells.

3. They have a definite shape and size.

4. They move from one place to another in search of food and shelter to live, e.g., animals.

5. They grow in size by multiplication of cells in their body.

Non-Living things

1. They do not have life.

2. They are made up of molecules.

3. They may or may not have a definite shape and size, e.g., stone.

4. They do not move for food and shelter, neither they need it.

5. They do not grow in size like living things, e.g., crystal formation, cloud formation, etc.

2. 1. Living things respire : All living things respire. The process of intake of oxygen and giving out of carbon dioxide is known as breathing (external

respiration).

Oxygen is needed for the breakdown of food molecules in cells to release energy and carbon dioxide by the process of respiration (Internal respiration).

2. Living things remove wastes : Living things remove waste materials and harmful chemicals from the body to keep themselves healthy. Removal of nitrogenous waste materials from the body of an organism is called excretion.

3. Living things respond to stimuli : Stimuli (Stimulus—singular) are internal or external factors that evoke response in living things such as touch, pressure, light, heat, sound, chemicals, water, smell, etc. They can cause response in living things, hence, called stimuli.

4. Living things reproduce : All living things reproduce or give rise to young ones. They do so to continue their 'race' or 'species'. This is called reproduction.

5. Living things have a lifespan : All living things have a definite lifespan. Lifespan is the period during which the organism completes its life cycle. Some organisms have short lifespan while others may live for many hundreds of years. Some plants live for a season, some plants live for one year and trees live for many years. They are called seasonal, annual and perennial plants respectively, e.g., cereal crops live for 3-6 months, peepal tree, banyan tree and mango tree live for many years. Some animals have short lifespan while others may live for many years, e.g., tortoise, elephant, etc.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself.

Formative Assessment

A. **Multiple Choice Questions (MCQs)— Choose the correct option :**

Ans. 1. c. 2. d. 3. c. 4. a. 5. d.
6. c. 7. d. 8. c. 9. d. 10. b.

B. **Fill in the blanks :**

Ans. 1. Structural units of living things are called **cells**.

2. Shoot tip moves towards **the light**.

3. Onion peel is made up of **plant** cells.

4. The tiny particles of non-living matter are called **molecules**.

5. A hen develops from an **egg**.

6. **Shoots** of plants move towards the light.

C. **Write True or False :**

Ans. 1. False 2. True 3. True 4. True
5. True 6. False 7. False

D. **Group Discussion :**

Ans. Do it yourself.

E. **Science Quiz :**

Ans. Do it yourself.

8

Plants : Form and Function

Oral Questions

Ans. 1. a. **Herb** : Small plants with tender green stems are called herbs.
b. **Shrub** : Medium sized plants with hard stems are called shrubs.
c. **Tree** : Tall plants with a hard and thick brown stem are called trees.

d. **Creeper** : Plants that can not stand upright and spread on the ground are called creepers.

e. **Climber** : Plants which climb up with the support of neighbouring structures are called climbers.

2. a. **Herbs** : Cariander, mustard.

b. **Shrubs** : Rose, Lemon

c. **Trees** : Neem, Mango

- d. **Creepers** : Mint, gourd plants
 e. **Climbers** : Money plant, Pea plant
3. a. Root system, shoot system
 b. Root c. Shoot system
 d. Stem, flower c. Tap root, fibrous root
4. Pea **Tap root** Tulsi **Tap root**
 banana **fibrous root** grass **fibrous root**
 wheat **fibrous root** mustard **Tap root**

Summative Assessment

A. Very Short-Answer Questions :

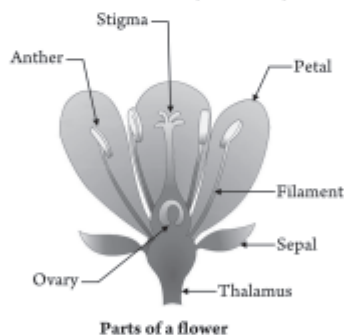
- Ans.** 1. Small plants with tender green stems are called herbs.
 2. Plants that cannot stand upright and spread on the ground are called creepers.
 3. A main root from which a number of branch roots arise. Such a root is called a tap root.
 4. The place from where the branches and leaves arise on the stem is called the node.

B. Short-Answer Questions :

- Ans.** 1. The plant can be divided into two main parts :
 (i) An underground part in the soil, called the root system.
 (ii) An above ground part (above the soil), called the shoot system.

The root system consists of the roots. The shoot system consists of the stem branches, leaves, buds, flowers, fruits and seeds.

2. a. Tap root : mustard, pea
 b. Fibrous root : wheat, banana.
 c. Reticulate leaf venation : Pea, Gram.
 d. Parallel leaf venation : Grasses, Palm.
3. **Reticulate venation** : Pea, rose, mango, hibiscus, coriander, tulsi.
Parallel venation : Grass, banana, maize, wheat.
- 4.



Parts of a flower

C. Long-answer Questions :

- Ans.** 1. a. **Root** : Roots anchor the plant to the soil.
- Roots take in water and minerals from the soil
 - Roots help in holding the soil together. Thus, Erosion of soil particles by wind or water is prevented.
 - In some plants, food is stored in the roots. These roots as in case of carrot, turnip and radish are eaten by us.
- b. **Stem** : Functions
- The stem helps to keep the plant upright.
 - The stem and its branches bear the leaves and hold the leaves in such a manner that they get enough light for photosynthesis.
- When young the green stem prepares food.
- c. **Leaf** :
Functions
- Leaves make food for the plant by a process

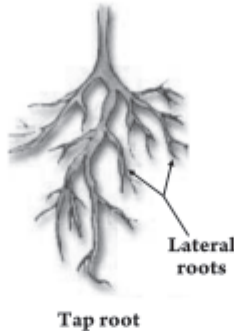
called photosynthesis. Leaves require water and carbon dioxide from air. In the presence of sunlight and a green pigment present in the leaves (chlorophyll), food is prepared by the leaves. Oxygen is given out in this process.

- Tiny pores called stomata are present on the leaf surface. There is an exchange of gases (carbon dioxide and oxygen) which takes place during respiration and photosynthesis. The gases produced during these processes are given out through the stomata.
- d. **Flower** : The function of a flower is reproduction. The flower gives rise to a fruit with seeds. Seeds on germination give rise to young plants.
- Cut flowers are used for bouquets and interior decoration.
 - Plants are grown in gardens, residences and on road-sides. They add colour to the surroundings and purify the environment with their fragrance.
2. a. **Root and Stem Differences**
- Root** : Root is the underground, non-green part of the plant body which fixes it to the soil.
Stem : Stem is the main axis of the shoot system which bears the branches, leaves flowers buds, fruits and seeds.
- b. **Node and inter node. Difference**
- Node** : The place from where the branches and leaves arise on the stem is called the node.
Inter node : The portion of the stem between two nodes is called an inter node.
- c. **Difference**
- Herb** : Small plants with tender green stems are called herbs. In herbs, branches are not present.
Shrub : Medium sized plants with hard stems are called shrubs. In shrubs branches are present and these arise near the base of the plant.
- d. **Difference**
- Creepers** : Plants that cannot stand upright and spread on the ground are called creepers.
Climbers : Plants which climb up with the support of neighboring structures are called climbers.
- e. **Difference**
- Reticulate venation** : Veins are arranged in a net-like pattern on both sides of the midrib. This is seen in leaves of plants like pea, mango.
Parallel venation : Veins run parallel to one another. This is seen in leaves of plants like grasses, banana and palms.
- f. **Difference**
- Stamen** : Many little stalks with swollen tops around the centre of the flower are called stamens. Stamens are the male parts of the flower.
Pistil : A flask-shaped structure in the centre of the flower is called pistil.
 Pistil is the female part of the flower.
3. **Functions of various parts of a flower.**
- (i) **Sepals** : Sepals protect the flower at the bud stage.
 (ii) **Petals** : In most flowers, petals give pleasant fragrance. The bright colour and fragrance of the petals attract insect that help plants in reproduction.

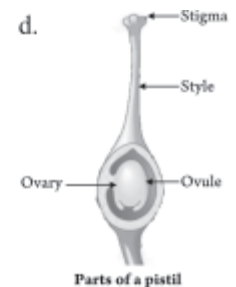
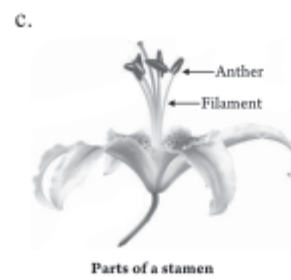
(iii) **Stamens** : Stamens are the male parts of the flower. Each stamen consists of a thin green stalk called filament with a bag like top, called anther. The anther carries several pollen grains. Pollen grains are dust like particles and take part in reproduction.

(iv) **Pistil** : Pistil is the female part of the flower. The lower broader position of the pistil is called ovary. The sticky end at the top of the style is called stigma. The ovary contains female sex cells called ovules.

4. a.



b.



D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself.

Formative Assessment

A. Multiple Choice Questions (MCQs) : Choose the correct option :

Ans. 1. c. 2. c. 3. a. 4. c. 5. a. 6. b.
7. b. 8. a. 9. b. 10. c.

B. Write True or False :

Ans. 1. False 2. True 3. False 4. True 5. True 6. True

C. Give one word for the following :

Ans. 1. Lamina 2. Node of a stem. 3. Sepal
4. Petal 5. Ovary

D. Project Work :

Ans. Do it yourself.

E. Fun Activity :

Ans. Do it yourself.

9

Animals : Skeletal System

Oral Questions

- Ans.** 1. No, Not all the bones of our body same in size, shape and structure.
2. There are 206 bones in the skeleton of an adult.
3. It is a hard structure made up of bones and cartilages that provides a frame for the body of an animals.
4. There are 22 bones in a skull.

Oral Questions

- Ans.** 1. The place where two or more bones join is called a joint.
2. The ends of the bones are covered with a soft material known as cartilage.
3. neck joint
4. finger joints.

Summative Assessment

A. Very Short-Answer Questions :

- Ans.** 1. Birds fly in the air by spreading their wings. They use their chest muscles to flap their wings.
2. Fish use their muscular tail and fins for swimming. During swimming, the front part of the body and the tail part curve in opposite directions.
3. Muscles allow several body parts to move at the joints by contracting and relaxing.
4. Cranium is the upper part of the head that protects the brain.
5. The small bones that make up the backbone are called vertebrae.

B. Short-Answer Questions :

- Ans.** 1. The human skull consists of bones which surround and protect the brain. It has 22 bones of which 8 flat bones are joined together to form the cranium. Cranium is the upper part of the head that protects the brain. The face and jaw have the remaining 14 bones. Teeth are fixed in the jaw bones. The lower jaw bone is the only bone in the skull which can move.
2. a. **A snail** : Snail is a delicate terrestrial air breathing gastropod. It has an exo-skeleton composed of

shell.

It has a flat foot for locomotion.

- b. **An earthworm** : The body wall of an earthworm has circular and longitudinal muscle fibres. Locomotion is brought about by contraction and relaxation of the body muscles. The movement of these muscles pushes blood in the direction of movement and hence, the animal moves forward. When it moves, the front (anterior) end becomes long and thin, while its hind (posterior) end becomes short and thick.

3. It consists of bones of the skull, spine and ribs in the chest.

Skull : The human skull consists of bones which surround and protect the brain. It has 22 bones of which 8 flat bones are joined together to form the cranium.

Spine : It is made up of 33 ring-like bones which are known as vertebrae. These bones are joined to each other. Each of the vertebrae has a hole in it. Spinal cord, a delicate and very important organ of the body, runs through the holes of these vertebrae. It is also known as the vertebral column.

Ribs : Ribs are thin, curved bones which form a delicate cage like structure enclosing delicate organs like the heart and lungs in the chest. The human rib cage has 12 pairs of ribs. All of them are connected to the vertebral column.

4. A group of cell that perform a special function together is known as a tissue. For example, the muscle tissue consists of a group of cells that help in contraction and expansion for the movement of body parts.
5. (a) Functions of the Vertebral Column or Spine
i. It gives support to the body.
ii. It assists in maintaining erect posture.
iii. It helps in the movement of neck and in the bending of the body.
iv. It protects the spinal cord.

- (b) **Functions of Ribs** : The rib cage protects the heart, lungs and parts of the stomach and kidneys.
- (c) **Functions of the Skull** :
- It encloses the brain and protects it from external shocks and jerks.
 - The lower jaw is movable, thus it enables us to chew food and talk.
 - It encloses and protects the sense organs like eyes, ears, nose and tongue.

C. Long-answer Questions :

- Ans.** 1. The place where two or more bones join is called a joint. There are three types of joints depending on the type of movement they allow immovable, slightly movable and freely movable.
- Immovable joints** : These joints are also known as fixed joints as they allow no movement at all. For instance, the bones of the skull are joined together by their serrated margins which are called sutures. The joint in the tooth sockets are also immovable.
 - Slightly movable joints** : Such joints have a pad of soft flexible cartilage between the bones. For example, the adjacent vertebrae in the backbone have joints which allow the vertebrae to slip over each other to make slight movements like bending. These types of joints are known as gliding joints. The wrist and ankle joints are examples of gliding joints.
 - Freely movable joints** : This type of joint allows free movement in various directions. In such joints, the ends of the bones are covered with cartilage. A small space is left vacant between the two bones. This space constitutes a cavity which is known as the joint cavity. Most of the joints in the human body are freely movable joints. These joints have been classified into three kinds of joints.
 - Ball and socket joint** : A ball and socket joint is formed when the ball-like end of the bone fits into a cup-shaped cavity in the other bone. e.g., shoulder and hip joints.
 - Hinge joint** : Hinge joints allow movement in one plane only like the hinges of a door or the lid of a box. The elbow joint, knee joint and finger joints are hinge joints.
 - Pivot joint** : The neck joint is a pivot joint. The joint between the first vertebrae and axis vertebrae is also a pivot joint.
3. Multicellular organisms have specific organs of locomotion which are known as locomotory organs. Locomotion and movement take place in various animals.
- Hydra** : Hydra is a simple multicellular animal. It remains attached to watersheds in freshwater. Its free end has the mouth which is surrounded by tentacles (long arm-like growths). The hydra walks by means of tentacles as shown in the given diagram.
The contraction and relaxation of body cells bring about movement of the body. Locomotion is caused by somersault and looping.
 - Earthworm** : The body wall of an earthworm has circular and longitudinal muscle fibres. Locomotion is brought about by contraction and

relaxation of the body muscles. The movement of these muscles pushes blood in the direction of movement and hence, the animal moves forward. When it moves, the front (anterior) end becomes long and thin, while its hind (posterior) end becomes short and thick.

- Insects** : Insects have two pairs of wings and three pairs of walking appendages (legs) for locomotion.
 - Snail** : Snail is a delicate terrestrial air-breathing gastropod. It has an exo-skeleton composed of shell. It has a flat foot for locomotion.
 - Mammals** : Mammals like tiger, cow and elephant use both their hindlimbs and forelimbs for locomotion. However, human beings use only hindlimbs for locomotion. Forelimbs are used for other activities.
In all the vertebrates, the co-ordination of actions of muscles and bones brings about locomotion.
4. **Functions of the Skeletal System**
The skeletal system performs the following functions in the body :
- It provides form and shape to the body.
 - It protects the delicate internal organs of the body.
 - It helps in the movement of body parts as it provides a surface to which the muscles are attached.
 - The process of formation of red blood cells takes place in the bone marrow. Bone marrow is a soft and spongy substance present inside the bones.
5. **Snakes** : Snakes do not have limbs but broad scales on the lower surface of the body. Snakes move with the help of their ribs, scales and muscles. Backbone, skin and ribs of snakes are joined by thin muscles. These muscles are also interconnected. The body of a snake makes many loops by contracting the muscles. Each loop presses against the ground to give the snake a push forward. Thus, a snake slithers very fast on a curved path.
6. **Downstroke movement** : The wings move downwards during flying. The feathers push the air down, giving the bird the necessary lift.
Upstroke movement : The feathers twist open and air fills the space between them. Hence, air is not pushed up. Thus, upstroke of the birds needs less force than downstroke.
Some birds do not fly at all. Such birds have well-developed legs but reduced wings. For example, ostrich, emu and kiwi. Penguins which live mainly in the polar regions have wings modified into paddles which help them in swimming.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself.

Formative Assessment

A. Multiple Choice Questions (MCQs)— Choose the correct option :

- Ans.** 1. a. 2. d. 3. a. 4. b. 5. a. 6. d.
7. b. 8. a. 9. a. 10. a.

B. Fill in the blanks :

- Ans.** 1. The part of the skeletal system which protects the brain is known as **skull**.
2. The upper arm has only one bone known as **humeras**.
3. Bones of **lower jaw** in the skull are movable.
4. The lower part of the leg consists of two bones called **tibia** and **fibula**.

- A **joint** joins a bone to another bone.
- The small bones of the wrist are called **carpals**.
- A **coxal bone** in a child consists of ilium, ischium and pubis.

C. Write True or False :

- Ans.** 1. False 2. True 3. True 4. True
5. False 6. True 7. False 8. True

D. Match the columns:

- | Ans. | Column A | Column B |
|-------------|-----------------|-----------------------------|
| 1. | Snake | b. Ribs, scales and muscles |
| 2. | Snail | d. Exo-skeleton |
| 3. | Fish | e. Streamlined body |
| 4. | Hydra | c. Tentacles |
| 5. | Mammals | a. Vertebrates |

E. Distinguish between each of the following :

- Difference
Tendon : A flexible but inelastic cord of strong fibrous tissue attaching a muscle to a bone.
Ligament : Bones are held together at the joints by tough tissues called ligaments.
- Difference
Vertebrates : Animals with backbone are known as vertebrates.
Such as mammals, birds, reptiles amphibians and fishes.
Invertebrates : Animals without backbones are known as invertebrates.
Such as an arthropod, mollusc annelid etc.
- Difference
Ball and socket joint : These joints allow free movement in all directions.
Shoulder and hip joints are Ball and socket joint.
Pivot Joint : Pivot joints allow rotation only (backward, forward and sideways) The neck joint is a pivot joint.
- Difference
Gliding joint : The joint which allows only a limited movement due to sliding nature of cartilages is called gliding joint.
Moveable joints of the backbone are gliding joints.
Hinge Joint : The joints which allows movement only in one plane and only up to 180° is called a hinge joint.
The knee joint is a hinge joint.
- Difference
Pectoral girdle : The girdle that supports the bones of the arms is called pectoral girdle.
It consists of three parts. Scapula coracoids and acromion.
Pelvic girdle : The girdle into which the bones of legs are fitted is called pelvic girdle.
In a child each coxal bone is made of three bones ilium, ischium, and Pubis, while in an adult, these bones fuse to form a single bone.

F. Define each of the following :

- Ans.** 1. **Skeletal system** : The skeletal system is the framework of bones and cartilage in the body which provides support and keeps the body erect.
2. **Organ system** : A group of organs which performs a particular function is known as organ system.
3. **Locomotion** : The movement of an organism bodily from one place to another is called locomotion.
4. **Joint** : The place where two or more bones join is called a joint.
5. **Ligament** : Bones are held together at the joints by tough tissues called ligaments.

G. Give one word or two words answers :

- Ans.** 1. Vertebrates 2. Streamlined body 3. Femur
4. Brain 5. Vertebral column

H. Project Work :

- Ans.** Do it yourself

Summative Assessment-I

1. Fill in the blanks :

- Ans.** a. Beetroot is **root** of a plant.
b. **Rickets** is caused due to the deficiency of vitamin D.
c. Sand can be separated from water by the process of **Sedimentation and Decantation**.
d. Wool is a good **absorbent** of heat.
e. Burning of a substance is a **chemical** change.

2. Write True or False :

- Ans.** a. True b. True c. False d. False e. True

3. Very short answer questions :

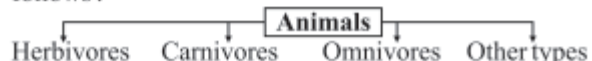
- Ans.** a. Food is a combination of various substances eaten for providing nourishment and for living.
b. A condition in which people become weak and sick due to the lack of one or more nutrients in his their is termed as malnutrition.
c. A change in which no new material is formed is called a physical change.
d. The average lifespan of man is 60 to 80 years.
e. A group of cells that perform a special function together is known as a tissue.

4. Short answer questions :

- Ans.** a. Potatoes and groundnut are two foods rich in starch.
b. The process of converting a liquid vapour by heating is called evaporation.
c. Materials that do not allow light to pass through them are called opaque.
d. A main root from which a number of branch roots arise. Such a root is called a tap root.
e. Fish use their muscular tail and fins for swimming. During swimming, the front part of the body and the tail part curve in opposite directions.

5. Long answer questions :

- Ans.** a. On the basis of their habits, animals are grouped as follows :



- Herbivores** : Animals that eat plants or their parts are called plant eating animals or herbivores.
Herbivores are cow, buffalo, rabbit, giraffe, sheep etc.
 - Carnivores** : Animals that eat flesh of other animals are called flesh eating animals or carnivores.
Carnivores are lion, tiger, leopard, eagle etc.
 - Omnivores** : Animals that eat both plants and flesh of other animals are called Omnivores.
Omnivores are crows, bears, human beings etc.
 - Other types of food habits** : There are many other animals that do not follow the above food habits such as :
 - Animals that feed or eat flesh of dead and decaying animals' body (carcass) are called scavengers. They keep the surroundings clean. Scavengers are crow, vulture, hyena, jackal, etc.
 - Animals that feed on animal blood are called sanguivores such as cattle, leech.
 - Animals that eat fruits are parrot (parakeet), monkey, etc.
- b. We get cotton from cotton plants. The fruits of

cotton plants are called cotton bolls. The cotton bolls are white in colour and roughly spherical in shape. They are quite fluffy. Once the cotton bolls are mature, they burst open and we can see the seeds with cotton fibres.

The seeds with cotton fibres are picked (removed) from the cotton bolls by hand. After picking, they are taken to the ginning plant where the fibres are separated from seeds by combing. The process of separating cotton fibres from the seeds by combing is called ginning.

Ginning was previously done by hand. Now-a-days, ginning machines called cotton gins are used for this purpose. Cotton gin is the short form of cotton engine. It is a machine used to separate cotton fibres from seeds quickly and easily. The separated seeds can be used again to grow more cotton, if the seeds are badly damaged, they are disposed off.

c. **Solids** : All solids have the following characteristics.

- They have a definite shape and volume.
- They cannot be compressed easily.

Examples : Gold and wood.

Liquids : All liquids have the following characteristics—

- They have a definite volume but no definite shape. Liquids take the shape of the container they are poured in.
- Liquids can be compressed more easily than solids.
- The particles they are made-up of are not so tightly packed as in solids.

Examples : Water and Tea.

Gases : All gases have the following characteristics.

They have no definite shape or volume.

They can be compressed very easily.

The particles they are made up of are packed loosely.

Examples : Oxygen and carbon dioxide.

d. 1. **Living things respire** : All living things respire. The process of intake of oxygen and giving out of carbon dioxide is known as breathing (external respiration).

Oxygen is needed for the breakdown of food molecules in cells to release energy and carbon dioxide by the process of respiration (Internal respiration).

Food + Oxygen → Energy + Carbon dioxide.

2. **Living things remove wastes** : Living things remove waste materials and harmful chemicals from the body to keep themselves healthy. Removal of nitrogenous waste materials from body of an organism is called excretion.

3. **Living things respond to stimuli** : Stimuli (Stimulus—singular) are internal or external factors that evoke response in living things such as touch, pressure, light, heat, sound, chemicals, water, smell, etc. They can cause response in living things, hence, called stimuli.

4. **Living things reproduce** : All living things reproduce or give rise to young ones. They do so to continue their 'race' or 'species'. This is called reproduction.

5. **Living things have a life span** : All living things have a definite lifespan. Have a lifespan: Lifespan is the period during which the organism completes its life cycle. Some organisms have short lifespan while others may live for many hundreds of years. Some plants live for a season, some plants live for one year and trees live for many years. They are called seasonal, annual and perennial plants respectively, e.g., cereal crops live for 3-6 months, peepal tree, banyan tree and mango tree live for many years. Some animals have short lifespan while others may live for many years, e.g., tortoise, elephant, etc.

e. Function of various parts of a flower :

(i) **Sepals** : Sepals protect the flower at the bud stage.

(ii) **Petals** : In most flowers petals give pleasant fragrance. The bright colour and fragrance of the petals attract insect that help plants in reproduction.

(iii) **Stamens** : Stamens are the male parts of the flower each stamen consists of a thin green stalk called filament with a bag like tap, called anther. The anther carries several pollen grains. Pollen grains are dust like particles and take part in reproduction.

(iv) **Pistil** : Pistil is the female part of the flower. The lower broader portion of the pistil is called ovary. The sticky end at the top of the style is called stigma. The ovary contains female sex cells called ovules.

10

Habitat of the Living

Oral Questions

A. Fill in the blanks by choosing the correct option :

- Ans. 1. Habitat 2. Biotic
3. Deserts 4. Terrestrial

B. Match the following :

- | Ans. Column A | Column B |
|---------------|-----------|
| 1. Tiger | Forest |
| 2. Camel | Desert |
| 3. Giraffe | Grassland |
| 4. Blue whale | Ocean |

Oral Questions

A. Fill in the blanks by choosing the correct option :

- Ans. 1. drip 2. roots

3. fat 4. cone

B. Match the following :

- | Ans. Column A | Column B |
|-----------------|------------------|
| 1. Stick insect | Camouflage |
| 2. Cactus | Spines |
| 3. Whale | Blowholes |
| 4. Hydrilla | Grows underwater |

Summative Assessment

A. Very Short-Answer Questions :

- Ans. 1. Forest are large areas of land covered with plants and trees.
2. Grasslands are large areas of land covered with grasses or shrubs.

- Deserts are large, dry areas of land that receive little or no rainfall.
- Oceans.
- River.
- Features or habits that help an organism to live in its habitat are called adaptations.
- The type of adaptation shown by sloth and stick insect is called camouflage.
- Grasses, have deep, spread out roots that enable them to absorb water even during periods of scarcity.
- Fish have special organs called gills for breathing.
- Whales and dolphins have nostrils or blowholes on top of their heads for breathing.

B. Short-Answer Questions :

- Ans.** 1. A habitat has two major parts or components.
Biotic (living) components : These include all plants and animals in the habitat.
Abiotic (non-living) components : These include sunlight, water, soil, air, and temperature.
2. **Terrestrial habitats :** Habitats on land are called terrestrial habitats. Forests, grasslands, deserts, and mountain regions are examples of terrestrial habitats.
Aquatic habitats : Habitats in water are called aquatic habitats. Oceans, rivers, ponds, lakes are examples of aquatic habitats.

C. Long-answer Questions :

- Ans.** 1. The place or area where a particular organism lives in nature is its habitat.
Forests : Forests are large areas of land covered with plants and trees. They occupy about one-third of our planet. The following are some examples of plants and animals found in forests.
Plants : Orchids, mango, elm, maple, teak, birch, and willow.
Animals : Macaw, bald eagle, woodpecker, python, lizard, wolf, monkey, fox, and tiger.
Grasslands : Grasslands are large areas of land covered with grasses or shrubs. The following are some examples of plants and animals found in grasslands.
Plants : Grasses and shrubs.
Animals : Deer, giraffe, lion, zebra, and gazelle.
Deserts : Deserts are large, dry areas of land that receive little or no rainfall. Most deserts are very hot during the day and very cold at night. The following are some examples of plants and animals found in deserts.
Plants : Cactus, date palm, acacia, and agave.
Animals : Camel, kangaroo rat, thorny devil (a type of lizard), and rattlesnake.
Mountain Regions : Mountain regions are normally cold and windy. Some even receive snowfall. The following are some examples of plants and animals

found in mountain regions.

Plants : Pine, larch, spruce and fir.

Animals : Snow leopard, yak, and mountain goat.

2. **Adaptations for forest animals :** Animals such as sloth, stick insect, and leaf insect are shaped or coloured to match their surroundings. This type of adaptation, called camouflage, makes these animals difficult to spot and protects them from their enemies.

Adaptations for grassland plants : Grasses, have deep spread out roots that enable them to absorb water even during periods of scarcity.

Adaptations for desert animals : Desert animals such as kangaroo, rat and desert snakes avoid heat by remaining in shade or in underground burrows during the day.

Camel can survive without food or water for days. Excess food is stored as fat in its hump. This fat is broken down to get energy when required. Long, thick eyelashes and flaps over the nostrils prevent sand from entering the camel's eyes and nose.

Adaptations for mountain plants : Trees such as pine and fir are cone-shaped with sloping branches and needle-shaped leaves. This helps snow and rainwater slide off them easily. Otherwise, the branches might break under the weight of snow.

Adaptations for aquatic animals : Fish have fins, tail, and streamlined bodies, which help them move through water. They also have special organs called gills for breathing under water.

Animals such as octopus, squid, and jellyfish form a streamlined shape while swimming, which helps them move through water easily.

Whales and dolphins have nostrils or blowholes on top of their heads for breathing. These animals come to the surface to take in air.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself.

Formative Assessment

A. Multiple Choice Questions (MCQs)— Choose the correct option :

Ans. 1. c. 2. a. 3. c. 4. c. 5. b.

B. Fill in the blanks :

- Ans.** 1. Oceans and rivers are examples of **aquatic** habitats.
 2. **Deserts** are large, dry areas of land that receive little or no rainfall.
 3. Oceans are **saltwater** habitats.
 4. Most desert plants have **long** roots.
 5. Fish have **gills** for breathing under water.

C. Make the components labelled in the following picture as B (biotic) or A (abiotic) :

Ans. Do yourself.

Oral Questions

- Ans.** 1. A Physical quantity has to be measured with respect to some fixed quantity.
 2. The width of a finger was known as one angul.
 3. The length of the foot of a person was known as a foot.
 4. No, A cubit can not be taken as a standard unit because it vary from person to person.
 5. The unit that could be used everywhere as a basic unit of measurement is called a standard unit.

Oral Questions

- Ans.** 1. a. 1000 b. 1/1000 c. 1/100
 2. 7 3. 1,500 4. 3.9
 5. **Column A**
 1. Measuring tape
 2. Scale
 3. Metre rod
 4. Thread
 6. While measuring a given length using a scale we should
- Column B**
 girth of a pole
 width of a pencil box
 dress to be stitched
 length of a room

keep the scale in a correct position. Also we should Positioned our eyes correctly.

7. (a) kilogram (b) second
8. (a) 23.5 kg (b) 54 m

Oral Questions

- Ans.** 1. Rotatory motion
2. The object B moves along a curvilinear path which of these possess translatory motion.
3. Vibratory motion
4. Rolling motion 5. Rolling motion

Summative Assessment

A. Very Short-Answer Questions :

- Ans.** 1. The length between the tip of the thumb and the little finger of a completely stretched hand was known as a hand span.
2. The standard International unit (SI unit) used for length is metre.
3. The standard International unit of mass is kilogram.
4. The state of an object which changes its position with time called motion.
5. Small and rapid oscillations are called vibrations.

B. Short-Answer Questions :

- Ans.** 1. Temperature is measurement of hotness of body.
2. Distance between two stars are called light year.

C. Long-answer Questions :

- Ans.** 1. If one of the edges of the scale is broken or the zero-mark is invisible due to overuse, then any other full-mark which is clearly visible, can be used as shown in the figure.

If you start your scale at one end of the object to be measured, with the full mark 2.0 cm, then '2' is to be subtracted from the reading of the scale at the other end so as to obtain the correct length of the object. Suppose the scale reads 2.0 cm at one end and 4.1 cm at the other end of the object. Therefore, the length of the object is $4.1 \text{ cm} - 2.0 \text{ cm} = 2.1 \text{ cm}$.

2. Place the scale and the object in contact along the length to be measured, so that the scale is also parallel to one of the edges as shown in the given figure.

While noting down the reading, the eye should be correctly positioned; just vertically above the reading of the scale to be noted as shown in the figure.

3. Take a thread and tie a knot at its one end. To measure the length of a curved line as shown in figure, place the knot of the thread at point P of the curved line. Carefully move the thread along the length of the curved line, holding the thread at small distances between your thumb and first finger.

Continue until you reach the point Q of the curved line. Put a mark on the thread using a pen, where it touches the point Q. Now stretch the thread along a metre scale. The length of the thread between the knot and the pen mark is equal to the length of the curved line PQ.

4. $1.75 \times 1000 = 1750 \text{ metres}$
5. $1550 \div 100 = 15.5 \text{ metres}$
6. (i) $142 \div 100 = 1.42 \text{ metres}$

(ii) $142 \times 100 = 14,200 \text{ millimetres}$.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself.

Formative Assessment

A. Multiple Choice Questions (MCQs) : Choose the correct option :

Ans. 1. a. 2. a. 3. a.

B. Fill in the blanks with suitable words :

- Ans.** 1. One-hundredth part of metre is called a **cm**.
2. A 'foot' cannot be taken as a **SI** unit.
3. Quantities that can be measured **physical** quantities.
4. Five centimetres can be written as **5 cm** in symbol.
5. 1 cm is equal to **10** mm.
6. The length of the arm, from elbow to the tip of middle finger was known as a **cubit**.
7. **Thread** can be used to find the girth of a finger.
8. A cloth merchant uses a **metre** to measure the length of the cloth.

C. Give one word for the following :

- Ans.** 1. metre 2. Physical quantity
3. Vibratory motion 4. weighing pan
5. linear motion

D. Match the columns :

- | Ans. | Column A | Column B |
|-------------|-----------------------------------|-----------------|
| 1. | Distance between two stars | b. light year |
| 2. | Distance between Delhi and Jaipur | d. kilometre |
| 3. | Width of a pencil box | e. centimetre |
| 4. | Thickness of a coin | a. millimetre |
| 5. | Length of a fabric | c. metre |

E. Write True or False :

- Ans.** 1. False 2. False 3. True 4. False 5. False

F. Define these terms :

- Ans.** 1. The movement of a body along a curved path is called curvilinear motion.
2. The object which do not change their positions with time are said to be rest.
3. The motion which repeats itself at a regular interval of time is called periodic motion.

G. Give reasons for the following :

- Ans.** 1. A cubit can not be taken as a standard unit because it vary from person to person.
2. Units of all quantities should be standardized internationally so that we may find the same results everywhere.

H. Think About :

Ans. If one of the edges of the scale is broken or the zero-mark is invisible due to overuse, then any other full-mark which is clearly visible, can be used as shown in the figure.

If you start your scale at one end of the object to be measured, with the full mark 2.0 cm, then '2' is to be subtracted from the reading of the scale at the other end so as to obtain the correct length of the object. Suppose the scale reads 2.0 cm at one end and 4.1 cm at the other end of the object. Therefore, the length of the object is $4.1 \text{ cm} - 2.0 \text{ cm} = 2.1 \text{ cm}$.

Oral Questions

- Ans.** 1. Light is a form of energy.
2. Objects which give out light, are called luminous objects.

3. Substances that do not allow light to pass through them, are called opaque objects.
4. Shadow is formed when light is made to fall on an opaque object. Shadow often matches with the object.

- Substances that allow light to pass through them are called transparent objects.

Oral Questions

- Ans.**
- "The process of sending back the light rays which fall on the surface of an object is called reflection of light."
 - The image which we can not obtain on a screen is called virtual image.
 - The change of sides of the image formed in plane mirror is called lateral inversion.

Summative Assessment

A. Very Short-Answer Questions :

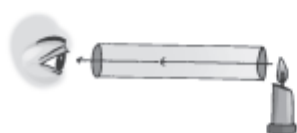
- Ans.**
- Sun is the ultimate source of light.
 - The emission of light by a substance that has not been heated, as in fluorescence and phosphorescence.
 - No, we cannot see light.
 - A candle, a torch, a lantern or an electric bulb or a fluorescent lamp is also a source of light.
 - The path along which light travels is called a ray of light.

B. Short-Answer Questions :

- Ans.**
- Nature of Light : Light consists of electromagnetic waves (you will learn about it in higher classes) which do not require a material medium (like solid, liquid or gas) for their propagation. The speed of light, waves in vacuum is very high, it is 3.0×10^8 metres per second. The speed of light in glass and water is, however, much less than that in air.
 - Difference
Luminous objects : Objects which give out light are called luminous objects.
 Example : Sun, Stars, etc.
Non-luminous objects : The objects which do not produce light on their own, are called non-luminous objects.
 Example Plants, walls etc.
 - If a number of rays emerging from a source of light travel in different directions, they are called divergent beam of rays.
 - The property of light travelling in a straight line, called Rectilinear propagation of light.
 - If you stand before a plane mirror and look at your image, the left hand side pocket in your shirt will appear as the right hand side pocket of the image. Your right eye will appear as the left eye of your image and your right and left hand will appear as the left and right hand respectively of your image. It means side of the image is inverted, i.e., opposite to that of the object. The change of sides of the image formed in plane mirror is called lateral inversion.

C. Long-answer Questions :

- Ans.**
- To show that light travels only in straight line.
 Keep a candle vertically on a plane horizontal surface and light it.
 Take a rubber tube and look through it the flame of the candle as shown in figure. The flame could be seen at the other end. Now, bend the tube and look through it the flame of the candle. This time you cannot see the flame.



This proves that light travels in a straight line.

- Natural source of light : Sun
 Artificial source of light : An electric bulb.
- Difference.
Luminous body : The bodies which emit are called luminous bodies.
 The Sun, stars, burning candle hot filament in an electric bulb are luminous bodies.
Non-Luminous body : The bodies which do not emit light are called non-luminous bodies.
 For example : tables, chairs. The Earth the moon etc. are non luminous bodies.
 Such objects can not be seen in the dark. these objects become visible only when light from a luminous object falls on them and travels from these to reach our eyes.
- (i) **Transparent objects :** Substances that allow light to pass through them are called transparent objects.
 Example : glass, water.
 (ii) **Opaque objects :** Substances that do not allow light to pass through them, are called opaque objects.
 Example : book, wood.
 (iii) **Translucent objects :** Substances that allow only a part of the light to pass through them are called translucent objects. Example : tracing paper, ground glass.
- The effects of rectilinear propagation of light are as follows :

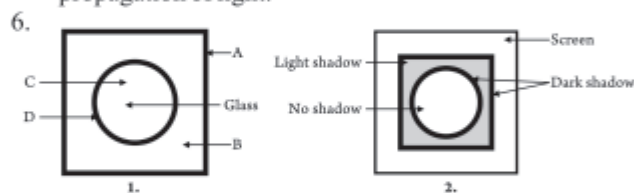
Formation of shadows : If an opaque object comes in the path of light rays, a dark region formed behind the object. This is due to the reason that light rays cannot pass through the opaque object. The dark region thus formed is called shadow of the opaque object. The place where light does not reach at all is completely dark.

When you walk in the Sun, your shadow also moves along with you. Position and length of shadow depends on the position of the source of light. If the source of light is just above the object, then the shadow formed will be shortest. Our shadow is shortest at noon i.e., when the Sun is just overhead. But in the morning and evening, shadow formed by the rising and setting Sun is very long.

Formation of Images : The Pin-Hole Camera

You have seen how light can form or cast shadows of objects. The pin-hole camera demonstrates how light forms images of objects.

It is a type of camera with which pictures of static objects are taken. Due to availability of modern cameras, now-a-days pinhole camera is not being used. Pinhole camera works on the principle of rectilinear propagation of light.



- The word ECNALUBMA was written in this way so, that the vehicles ahead of the Ambulance can see the name properly in their review mirrors and give side to the Ambulance so, that it can reach its destination [Hospital] in a short time.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself.

Formative Assessment**A. Multiple Choice Questions (MCQs)— Choose the correct option :**

Ans. 1. b. 2. d. 3. a. 4. d. 5. a. 6. d. 7. b.

B. Fill in the blanks :

- Ans. 1. In plane mirror **virtual** image is formed.
 2. In **Lunar** eclipse, the Earth comes in between the Sun and the moon.
 3. The moon is **non-Luminous** source of light.
 4. During a **Solar** eclipse, the moon casts its shadow on the Earth.
 5. **Lateral** inversion takes place in a plane mirror.

C. Write True or False :

Ans. 1. False 2. False 3. True 4. True 5. True 6. True

D. Match the columns :

Ans. Column A	Column B
1. Moon	c. Non-Luminous
2. Sun	e. Luminous
3. Brick	b. Opaque
4. Mirror	a. Reflecting surface
5. Tracing paper	f. Translucent
6. Clear glass	d. Transparent

E. Give one word/two words to replace these phrases :

- Ans. 1. Opaque objects 2. Lateral inversion
 3. Translucent object 4. Transparent
 5. Luminous object

E. Project/Activities :

Ans. Do it yourself.

Formative Assessment-III**A. Multiple Choice Questions (MCQs)— Choose the correct option :**

Ans. 1. c. 2. a. 3. a. 4. a.

B. Fill in the blanks :

- Ans. 1. Trees such as pine and fir are **cone** shaped.
 2. A 'foot' cannot be taken as a **S.I.** unit.
 3. Quantities that can be measured are called **physical** quantities.
 4. In plane mirror **virtual** image is formed.

C. Write true or false :

Ans. 1. False 2. False 3. True 4. True

D. Match the columns :

Ans. Column A	Column B
1. Distance between two stars	b. light year
2. Distance between Delhi and Jaipur	d. Kilometre
3. Width of a pencil box	e. centimetre
4. Thickness of a coin	a. millimetre
5. Length of a fabric	c. metre

E. Answer the following questions :

- Ans. 1. Grasslands are large areas of land covered with grasses or shrubs.
 2. A physical quantity has to be measured with respect to some fixed quantity.
 3. Distance between two stars are called light year.

13**Electricity and Circuits****Oral Questions**

Ans. 1. chemical 2. series 3. two

Oral Questions

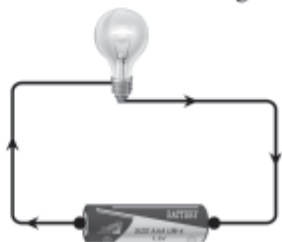
Ans. 1. metals 2. close 3. Graphite
4. conductors 5. silver 6. bad

Summative Assessment**A. Very Short-Answer Questions :**

- Ans. 1. Electric cell is a source of electricity.
 2. An electric cell has two terminals.
 (i) Positive terminal (ii) Negative terminal
 3. A primary cell is an electric cell that produces current by an irreversible chemical reaction.
 4. Switch is a simple device that either breaks the circuit or completes the circuit.
 5. It is used to turn on or switch off the electrical device. It paves way for the flow of electricity through it.

B. Short-Answer Questions :

- Ans. 1. Bulb has two terminals. The current enters the bulb through one terminal flows through the filament and comes out through the other terminal. When the current passes through the filament, bulb glows. But if the filament is broken, we say that the bulb is fused, no current flows and the bulb will not glow.



A dry cell connected to bulb

2. Difference

Conductor : Materials that allow the current to pass through them are called conductors such as metallic wires.

Insulator : Materials that do not allow the current to pass through them are called insulators. *e.g.*, wood, plastic, rubber etc.

3. **Conductor** : Aluminium foil,

Insulator : Wooden block plastic mug, thermocole.

4. Difference

Open Circuit : A circuit with a break in it is called an open circuit.

Closed circuit : A circuit which has an 'unbroken path' through which an electric current can flow is called a closed circuit.

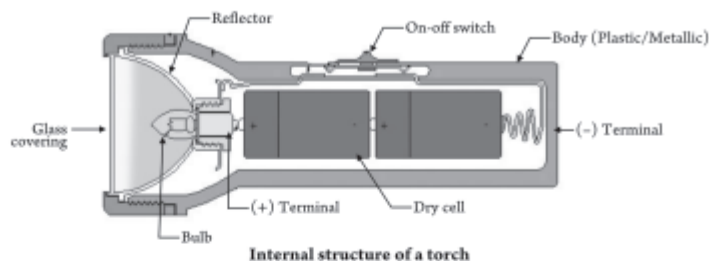
5. Screw-drivers made up of wooden or plastic handles because they do not get shock.

C. Long-answer Questions :

- Ans. 1. Electric circuit is the path of transmitting electric current. An electric circuit consists of:
 1. Device that gives energy or source of current (like cell) or plug point.
 2. Connecting wire made up of metals like copper, silver and aluminium.
 3. Electric switch.
 4. Device that uses current (like bulb and lamp).



2. An electric torch has one or more dry cells inside it, which act as the 'source'. These cells are connected through a switch to a small bulb. When the switch is pushed to the 'on' position the circuit is complete and the bulb glows, when the switch is pushed to the 'off' position, the circuit is incomplete. Now the current can not flow through the circuit, and the light goes out.



Internal structure of a torch

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself.

14

Magnets

Oral Questions

- Ans. 1. The door of a refrigerator, left slightly open. Shut automatically because the door of a refrigerator contains a magnet.
2. The mineral magnetite is mainly composed of oxides of iron. So, loadstone or magnetite are natural magnets as they are found in nature.
3. iron, cobalt, nickel.

Oral Questions

- Ans. 1. The power of the magnet is the strongest at the two ends.
2. On cutting a magnet into two each half becomes a complete magnet.
3. North-North and South-South repel each other while unlike poles.

Summative Assessment

A. Very Short-Answer Questions :

- Ans. 1. Magnet is a piece of iron, nickel or cobalt that can attract iron containing objects.
2. a. Magnet can attract iron-containing objects. This property of magnets is called magnetism.
b. An interesting property of a magnet is that when suspended it comes to rest in a particular direction only.
3. The two ends of a magnet where the power of the magnet is the strongest are called poles of a magnet.
4. The materials that are easily attracted by a magnet are known as magnetic materials.
Example : Cobalt, Nickel.
5. The materials that are not attracted by a magnet are known as non-magnetic materials.

B. Short-Answer Questions :

- Ans. 1. when the north pole of a magnet is brought close to the north pole of a freely suspended magnet it repels and move away from it. On the other hand when the north pole of a magnet is brought close to the south pole of a freely suspended magnet it moves towards it because of the attraction.
2. This is because the earth itself behaves like a huge bar magnet with its magnetic poles near the geographical

Formative Assessment

A. Multiple Choice Questions (MCQs) : Choose the correct option :

- Ans. 1. c. 2. d. 3. a. 4. c. 5. a. 6. d.
7. b. 8. d. 9. d.

B. Fill in the blanks :

- Ans. 1. An electric cell has **two** terminals.
2. A device used to make or break the circuit is called **switch**.
3. A group of two or more cells is called **battery**.
4. Electric circuit is **open** when no current flows through it.
5. A **conductor** allows current to flow through it.
6. Electric current flows from **positive** terminal to **negative** terminal of cell in the circuit.

C. Write True or False :

- Ans. 1. False 2. True 3. False 4. False
5. True 6. True 7. False

north and south poles. In a freely suspended magnet, therefore, the north pole points towards the geographical north pole since it is attracted by the earth's magnetic south pole. Similarly, the south pole of the suspended magnet is attracted by the earth's magnetic north pole and therefore, points towards the geographical south pole.

3. The following cautions must be taken to keep magnets safe :

They should not be heated, hammered or dropped from a height.

A bar magnet should be kept in pair with opposite poles on the same side. They must be separated by a piece of wood and two pieces of soft iron should be placed across their ends as shown in the figure.

For a horseshoe-shaped magnet, a piece of iron should be kept across its poles.

Magnets should be kept away from all the electronic devices.

4. **Magnetic** : Iron almirah, or iron lamp shade, iron clips, needle, car iron gate and iron nail.

Non-magnetic : A wooden table, plastic geometry box, Paper, rubber, wool, cloth, curtains, book.

C. Long-answer Questions :

- Ans. 1. There are many legends about the discovery of magnets. Most commonly known is that of an elderly shepherd named Magnes, who lived in a place called Magnesia in Northern Greece about 4,000 years ago. Once, Magnes was herding his sheep and goats in the nearby mountains. The nails in his shoes and the metal tip of his stick got stuck to the large black rock on which he was standing. He had to pull hard to free his stick from the rock.

The rock was a natural magnet and stick was attracted to it. Such types of magnetic rocks were named magnetite, perhaps after either Magnesia or Magnes himself.

2. To observe that the power of a magnet is the strongest at its ends.

Take iron clips or iron filings and spread on a sheet of paper.

Roll a bar magnet over them and lift it up.

What do you observe?

You will observe that the iron clips or iron filings stick mostly near the two ends of the magnet.

Remove the iron clips or iron filings and repeat the above steps.

Did you observe the same pattern of iron clips or iron filings getting stuck to the magnet?

You will find that the iron clips or iron filings always stick near the two ends of the magnet.

3. **Magnetic Compass :** The magnetic compass is a device that is used by travellers, sailors and navigators to find the direction.

A magnetic compass consists of a flat circular case (or box) of aluminium or brass with a glass top.

A small, light magnetic needle is pivoted at its centre. The north pole of this needle is coloured. The base of the case (or box) is marked with directions.

The north of the compass needle always points towards north. Therefore by looking the direction of the needle, one can find out the desired direction.

4. After learning to magnetize any iron object, you can also make your own magnetic compass.

For this, you first need to magnetize an iron awl pin or iron needle using a bar magnet as described above. Take a small piece of wooden cork or foam and insert the magnetized iron awl pin through it (in its upper part). Take a cup or a bowl full of water and place the cork into it. The cork will float in water. Ensure that the awl pin does not touch the water. Your magnetic compass is now ready to work.

5. In the absence of any marking on the magnet we can find out its north and south pole by the following method.

- First we should tie a thread with the magnet and suspend it freely.
- After coming to the rest, the magnet will coincide with the geographical poles i.e. north pole and south pole.
- The North pole of the magnet will point towards a the geographical south pole and vice-versa.

6. On cutting a magnet into two, each half becomes a complete magnet. This means on cutting the magnet from the middle you get a new pair of north and south pole at the broken ends such that each broken piece is a complete magnet. Now, if you further break these pairs into two, even then each piece will be a complete magnet. If you continue this process, you will get smaller and smaller magnets each with a north pole and a south pole.

Thus, you can conclude that the magnetic poles always exist in pairs and a separate or an isolated pole, either north pole or south pole, cannot exist.

7. We can magnetize an iron needle with the help of a bar magnet. By rubbing it continuously with a magnet, the needle will develop magnetic qualities in it. Here we should remember that the needle will develop the magnetic qualities only for a short time. After some time the needle will lose its magnetic properties.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself.

Formative Assessment

- A. Multiple Choice Questions (MCQs) : Choose the correct option :**

Ans. 1. c. 2. d. 3. c. 4. d.

- B. Match the two columns :**

Ans.	Column A	Column B
1.	N-N	c. Repulsion
2.	Compass	e. Finding direction
3.	Poles	d. Exist in pairs
4.	S-N	a. Attraction
5.	Paper	b. Non-magnetic material

- C. Write True or False :**

Ans. 1. True 2. False 3. True 4. False 5. True

- D. Fill in the blanks :**

- Ans.** 1. Two north poles **repel** each other.
2. **Like** poles repel and unlike poles **attract** each other.
3. A **magnet** will attract iron clips, iron pins and iron needles.
4. **Compass** is very useful in navigation.
5. Wood is a **non-magnetic** material.

Oral Questions

- Ans.** 1. All such substances present in the nature which are used by man for sustenance of life and his welfare are called natural resources.
2. Solid, liquid and gaseous state.
3. The process by which the ice gets converted into water are called melting.
4. The process by which water vapour in the air turns into liquids are called condensation.

Oral Questions

- Ans.** 1. The process by which water vapour in the air turns into liquid are called condensation.
2. Fog is a thick cloud of tiny water droplets suspended in the atmosphere at or near the earth's surface which obscures or restricts visibility.
3. Hail are the pellets of frozen rain falling in showers from cumulonimbus clouds.
4. The hail-storm damages standing crops and also destroys buildings and may kill animals. It is called natural calamity.

Oral Questions

- Ans.** 1. Yes
2. We need about 8-10 glass of water for drinking and 2-3 buckets of water for other purposes.

Summative Assessment

- A. Very Short-Answer Questions :**

- Ans.** 1. Petroleum, Coal, Sun, Iron.
2. When the temperature is high then liquid evaporates quickly.
3. The water drops that appear on the outer surface of cold drink bottle or glass tumbler containing ice are due to a process called condensation. Condensation is a process in which water vapour when cooled, is converted to water in liquid state.
4. It is only because of the water cycle that we get rains which are the main source of water on Earth.
5. The process by which some water in plants evaporates into the atmosphere is called transpiration.

- B. Short-Answer Questions :**

- Ans.** 1. **Condensation**
1. It is a process of conversion of water vapours into water drops.

2. Condensation takes place at very low temperature.

Evaporation

1. It is a process of conversion of water into water vapours.
2. Evaporation takes place even at room temperature.
2. The water vapours which are collected in the air, being lighter than air rise up in the atmosphere and become cool. Their temperature goes on decreasing. So, condensation of water vapours starts taking place and droplets of water are formed. These droplets of condensed vapour are very small. They remain suspended in the air and when they come closer, a cloud is formed.
3. Dew is condensation of water vapour during winter near the Earth's surface.
4. When water falls on the sky in the form of powdered ice instead of liquid water it is called snow.

C. Long-answer Questions :

- Ans.** 1. The plants absorb water from soil through their roots and send it to the leaves and other parts. Some water is used by plants but a large quantity of unused water is released into atmosphere in the form of vapours. They (plants and trees) lose these water vapours through their leaves by the process of transpiration.
2. (i) **Evaporation** : The process by which a liquid turns into vapour is called evaporation.
(ii) **Freezing** : The process by which the liquid (water) gets converted into solid (ice).
(iii) **Condensation** : The process by which water vapour in the air turns into liquid (water) is called condensation.
 3. When clouds huddle together, they get bigger and heavier. The small droplets in them come together to form big drops. The clouds, now no more remain suspended up in the air. They begin to drift down faster. When they come closer to Earth, the big drops start dropping down as rain water. This is rainfall.
 4. **Factors Affecting Evaporation**
 1. **Area of open surface of water** : Bigger the area of exposure, faster shall be evaporation.
 2. **Fast moving air** : If wind blows faster, evaporation is faster.
 3. **Moisture content of air** : If the humidity is less, evaporation becomes faster.
 4. **Temperature** : More the temperature of liquid, faster is evaporation.Evaporation takes place very slowly under normal conditions. Vast surface of ocean and other water bodies receive sun-rays, which heat the water. This evaporates water throughout the day time in the presence of sunlight. Even at night, evaporation takes place, though at a slower rate.
 5. Water keeps on circulating in nature. This circulation of water is possible because of its unique properties. You will learn more about water cycle in the following pages. This circulation of water from the surface of Earth to the atmosphere and back to the Earth called water cycle, is a boon to the living organisms.

Through the water cycle, nature maintains the balance of water on the Earth and constantly purifies it.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself.

Formative Assessment

A. Multiple Choice Questions (MCQs)— Choose the correct option :

Ans. 1. d. 2. a. 3. b. 4. c.

B. Fill in the blanks :

- Ans.** 1. Water is essential for survival of **living organism** on Earth.
2. Ice when heated gets converted into **liquid**.
3. Constant circulation of water between the Earth's surface and the atmosphere is called the **water cycle**.
4. **Condensation** of water droplets in the upper atmosphere causes rains.
5. **At low temperature** water vapour condenses into water droplets.

C. Write True or False :

Ans. 1. False 2. False 3. True 4. True 5. True

D. Match the following columns :

Ans. Column A	Column B
1. Ice	b. solid
2. Vapour	a. gaseous state
3. Loss of water by leaves	e. transpiration
4. Precipitation	c. rain
5. Envelope of air around the Earth	d. atmosphere

E. Project/Activities :

Ans. Do it yourself.

Formative Assessment-IV

A. Multiple Choice Questions (MCQs)— Choose the correct option :

Ans. 1. c. 2. d. 3. c.

B. Fill in the blanks :

- Ans.** 1. An electric cell has **two** terminals.
2. Two north poles **repel** each other.
3. Ice when heated gets converted into **liquid**.
4. A group of two or more cells is called **battery**.
5. Water evaporates **quickly** in hot conditions.

C. Write True or false :

Ans. 1. False 2. True 3. True 4. False 5. False

D. Match the columns :

Ans. Column A	Column B
1. N-N	c. Repulsion
2. Compass	e. Finding direction
3. Poles	d. Exist in pairs
4. S-N	a. Attraction
5. Paper	b. Non-magnetic material

E. Answer the following questions :

- Ans.** 1. Electric cell is a source of electricity.
2. Switch is a simple device that either breaks the circuit or complete the circuit.
3. The materials that are easily attracted by a magnet are known as magnetic substances.
4. Petroleum, Coal, Sun, Iron.

Oral Questions

Ans. 1. No. Nitrogen does not support burning.

2. Light
3. Asthma and allergies

- It prevents the harmful ultraviolet rays of the sun from reaching the earth.

Oral Questions

- Ans.**
- The main causes of air pollution are— burning of fuels like coal and petroleum and release of harmful gases and smoke from industries.
 - The process by which living things inhale and exhale air is known as breathing.
 - Lenticels used for respiration.
 - The small pores which are present on the insects through which they breathe are called spiracles.
 - Balance of oxygen and carbon dioxide is maintained by the interdependence of plants and animals on each other.

Summative Assessment

A. Very Short-Answer Questions :

- Ans.**
- Air is a mixture of various gases surrounding the surface of the Earth.
 - The major constituents of air are nitrogen (78%) and oxygen (21%).
 - Oxygen is a life supporting gas.
 - When undesirable such as smoke, harmful gases, etc. are added to air, it becomes polluted.
 - The surface of leaves of plants have tiny openings called stomata.

B. Short-Answer Questions :

- Ans.**
- A sound can not travel in a vacuum it needs a medium to travel from one source to another. Air contains molecules which serve as medium for the above purposes in this way air help in the process of hearing.
 - Difference
Breathing : The process by which living things inhale and exhale air is known as breathing.
Respiration : The process by which food is oxidised in the presence of oxygen to produce water vapour, carbon dioxide and heat energy, is known as respiration.
 - Nitrogen, Oxygen carbon-di-oxide, dust smoke, water vapour gases, argon, helium, neon.
 - Air is required for burning. Oxygen, an important constituent of air, aids the process of burning.
 - The air pressure makes it possible for birds and aeroplanes to fly in the air.
 - Boats, gliders, parachutes, etc are propelled by air.
 - Plants take carbon dioxide from the air to manufacture food by the process of photosynthesis.

C. Long-answer Questions :

- Ans.**
- Air acts like a blanket wrapping the Earth and maintains the right temperature for the survival of living things. Since air is a bad conductor of heat, it reflects some of the heat of the Sun. This prevents the Earth from becoming too hot during the day. At night, it checks the heat emitted by the Earth from dispersing in space.
 - Plants also require oxygen to oxidise their food and produce energy. Carbon dioxide released in this process is used up for photosynthesis during the day or diffuses into the air at night. The surface of leaves of plants have tiny openings called stomata. Air containing oxygen and carbon dioxide enters through the stomata and gets used up in the process of photosynthesis and respiration.
 - Carbon dioxide + Water + Energy (from sunlight)
Glucose (food) + Oxygen
(Reaction taking place during photosynthesis)

- Glucose + Oxygen → Carbon dioxide + Energy + Water
(Reaction taking place during respiration)

- The soil of marshy places or swamps does not contain enough air. The trees which grow there have special roots called respiratory roots, which come above the soil for respiration. For example, mangrove tree has this kind of roots.
- Fish and tadpoles have gills as respiratory organs. Gills of these creatures are composed of filaments whose structure resembles the teeth of a comb. These filaments possess a network of blood vessels. Water entering the mouth of a fish flows over the gills. The blood vessels in the gills absorb oxygen dissolved in water and expel carbon dioxide into the water. Consequently, water which enters the mouth of a fish has more oxygen than that which is expelled through the gills.
Insects like cockroach, fly and mosquito have small pores called spiracles on their bodies. A network of tubes called tracheae joins all the body parts to the spiracles. Insects inhale and exhale air through spiracles. Inhaled air reaches all the body-parts by means of tracheae.
All vertebrates except fish have lungs for respiration. Amphibians which live on land as well as in water breathe through lungs as well as through their skin. Their skin is slimy to absorb oxygen dissolved in water. Carbon dioxide comes out through their skin. When they come out of water, they use lungs for respiration.
- Whales and seals, come out of water to breathe through their nostrils every now and then. Whale has a nostril called a blowhole through which air enters or exits.
- Plants use carbon dioxide, water, chlorophyll and sunlight to manufacture food by the process of photosynthesis. Oxygen is produced in this process. Plants consume a fraction of this oxygen while the remainder is inhaled by animals and human beings for respiration. Carbon dioxide required by plants for photosynthesis is produced during respiration. Hence, we observe that plants and animals are dependent on each other. Their interdependence maintains the balance of oxygen and carbon dioxide in the atmosphere.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself.

Formative Assessment

A. Multiple Choice Questions (MCQs)— Choose the correct option :

Ans. 1. c. 2. c. 3. d. 4. b. 5. d.

B. Fill in the blanks :

- Ans.**
- Carbon dioxide** gas present in air prevents the heat of the Earth from going out into the space at night.
 - The upper atmosphere consists of **ozone**.
 - Air** helps in the changing of weather.
 - Wind** is needed for winnowing, pollination and dispersal of seeds and fruits.
 - Sound** travels through air.
 - The process of inhalation and exhalation of air is known as **Respiration**.
 - Plants breathe through **stomata**.
 - Mangrove trees which grown in swamps have **respiratory** roots.
 - An **insect** breathes through its entire body surface.

10. Insects have **spiracles** for the exchange of gases with air.

C. Define each of the following :

- Ans.** a. The process by which green plants make their own food its called photosynthesis.
b. The process by which living things inhale and exhale air is known as breathing.
c. The process by which food is oxidized in the presence of oxygen to produce water vapour carbon dioxide and heat energy is known as 'Respiration :

D. Write True or False :

- Ans.** 1. True 2. True 3. True 4. True 5. False
6. False 7. False 8. False 9. False 10. True

E. Answer the following questions in one word :

- Ans.** 1. Oxygen 2. Nitrogen
3. Oxygen 4. Gill
5. Spiracles 6. Nitrogen 78%, Oxygen 21%

F. Match the following :

- | Ans. Column A | Column B |
|-----------------------------------|-----------------|
| 1. Dolphin, seal, whale, elephant | b. Lungs |
| 2. Shark, tadpole | c. Gills |
| 3. Mango leaf, rose leaf | d. Stomata |
| 4. Housefly, cockroach, butterfly | a. Spiracles |

G. Project Work

- Ans.** Do it yourself.

17

Wastes

Oral Questions

- Ans.** 1. Yes! these waste can be reused by putting them in a soil pit so as to convert than into manure.
2. Yes! this is so because dumping of waste attract flies and wandering animals which spread diseases among us.

Oral Questions

- Ans.** 1. Recycling is done to reduced the waste generated by us and to conserve our valuable natural resources.
2. Glass, plastics.

Summative Assessment

A. Very Short-Answer Questions :

- Ans.** 1. Those materials that are of no use and are thrown out are called wastes.
2. Waste paper.
3. When biodegradable waste are thrown they degraded or broken down into harmless simple substances by microorganisms and other soil organisms.
4. Those substances or wastes that can be degraded or broken down into harmless, simple substances by micro-organisms and other soil organisms can be reused are called biodegradable wastes.
5. Those substances or wastes that can not be degraded or broken down or do not rot to give harmless, simple substances by micro-organisms are called non-biodegradable wastes.
6. I will suggest him/her to use a dustbin for the purpose of throwing waste.

B. Short-Answer Questions :

- Ans.** 1. If the waste are dump in open they make the place look dirty and eyesore it adversely affects the place and encourages the spreading of diseases.
2. Consequences
1. The beauty of the place is spoiled.
2. The environment is polluted.
3. The animals spread diseases.
4. This is an eyesore.
3. To make a biodegradable waste useful it should be put in soil pit for its degradation to make useful material called compost.
4. Vegetable peels, fruit peels, leaves, flowers, pencil shavings, cow dung, urine, etc.
The rotting of wastes is supported and decayed by animal products and micro-organisms. Small animals, worms, insects and micro organisms that live in soil feed on these wastes.
5. If biodegradable wastes are wrapped in a polybag and thrown, then the interaction of wastes, micro-organisms

and climatic factors (air, temperature and water) will not take place. This will delay rotting of wastes and we will not get useful materials from these wastes.

6. Solid Waste Management
Solid waste management is done by :
a. Collection of solid wastes.
b. Disposal of solid wastes.
c. Recycling of solid wastes.

7.



Dustbin

C. Long-answer Questions :

- Ans.** 1. Those materials that are of no use and are thrown out are called wastes.

Types of wastes : The wastes can be grouped into two categories according to their degradability by natural organisms, e.g., bacteria, fungi, worms, insects, etc., in soil.

Wastes

Biodegradable wastes (Rotting wastes)

Non-biodegradable wastes (Non-rotting wastes)

Only biodegradable materials can get rot due to the work of small animals worms, insects, and micro organism on them there live in soil and feed on these waste their by converting than into useful wastes all manure.

2. The method of reducing the burden on natural resources for materials like metal, paper, glass, etc., by reuse of used scrap and waste materials is called recycling.

Solid waste materials like glass, garbage, paper, plastics, cloth, polythene bag, rubber, used mechanical parts, metal, etc.,

Advantages of Recycling

1. It lessens the burden on natural resources.
2. It makes the natural surroundings clean and better.
3. It produces useful and reusable materials.
4. It provides an employment and a source of livelihood.

D. Higher Order Thinking Skills (HOTS) Questions :

- Ans.** Do it yourself.

Formative Assessment

A. Multiple Choice Questions (MCQs)— Choose the correct option :

- Ans.** 1. a. 2. b. 3. d. 4. d. 5. a.

B. Fill in the blanks :

- Ans.** 1. Rotting materials get attacked by **micro-orgaisms**.
2. **Vegetables peels** is biodegradable.
3. Micro-organism support **rotting** of biodegradable wastes.

- Polythene wrapped wastes do not **rot** easily.
- Soil** pollution is caused due to dumping of solid wastes.

C. Write True or False :

Ans. 1. False 2. True 3. True 4. True 5. True 6. False

D. Environment Projects :

Ans. Do it yourself.

E. Action Plan/Awareness Program :

Ans. Do it yourself.

Summative Assessment-II

A. Fill in the blanks :

- Ans.**
- The upper atmosphere consists of **ozone**.
 - Air** helps in the changing of weather.
 - Wind** is needed for winnowing, pollination and dispersal of seeds and fruits.
 - Micro-organisms support **rotting** of biodegradable wastes.
 - Polythene wrapped wastes do not **rot** easily.

B. Write true or false :

Ans. 1. True 2. True 3. True 4. True 5. True

C. Very-short answer questions :

- Ans.**
- Air is a mixture of various gases surrounding the surface of the Earth.
 - The major constituents of air are nitrogen (78%) and oxygen (21%).
 - Oxygen is a life supporting gas.
 - When biodegradable waste are thrown they degraded or broken down into harmless simple substances by micro-organisms and other soil organisms.
 - Those substances or wastes that can be degraded or broken down into harmless simple substances by micro-organisms and other soil organisms can be reused are called biodegradable wastes.

D. Short-answer questions :

- Ans.**
- Difference
Breathing : The process by which living things inhale and exhale air is known as breathing.
Respiration : The process by which food is oxidised in the presence of oxygen to produce water vapour, carbon di-oxide and heat energy, is known as respiration.
 - Nitrogen, Oxygen, Carbon dioxide, dust, smoke, water, Vapour, organ, helium, neon.
 - Air also helps in changing weather. The water vapour in the air causes rainfall and snow fall. Thus, air plays a significant role in the change of weather.
 - Air is required for burning. Oxygen, an important constituent of air, aids the process of burning.
 - The air pressure makes it possible for birds and aeroplanes to fly in the air.
 - Wind (moving air) is used for running windmills which can perform a number of operations like drawing underground water, running flour mills and even generating electricity.
 - To make a biodegradable waste useful it should be put in soil pit for its degradation to make useful material called compost.
 - Vegetable peels, fruit peels, leaves, flowers, pencil shavings, cow dung, urine, etc.
 The rotting of wastes is supported and decayed by animal products and micro-organisms. Small animals, worms, insects and micro organisms that live in soil feed on these wastes.

E. Long-answer questions :

- Ans.** 1. Plants also require oxygen to oxidise their food and

produce energy. Carbon dioxide released in this process is used up for photosynthesis during the day or diffuses into the air at night. The surface of leaves of plants have tiny openings called stomata. Air containing oxygen and carbon dioxide enters through the stomata and gets used up in the process of photosynthesis and respiration.

- Carbon dioxide + Water + Energy (from sunlight) → Glucose (food) + Oxygen
(Reaction taking place during photosynthesis)
- Glucose + Oxygen → Carbon dioxide + Energy + Water
(Reaction taking place during respiration)

- The soil of marshy places or swamps do not contain enough air. The trees which grow there have special roots called respiratory roots, which come above the soil for respiration. For example, mangrove tree has this kind of roots.
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- Those materials that are of no use and are thrown out are called wastes.

Types of wastes : The wastes can be grouped into two categories according to their degradability by natural organisms, e.g., bacteria, fungi, worms, insects, etc., in soil.

Wastes

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Solid waste materials like glass, garbage, paper, plastics, cloth, polythene bag, rubber, used mechanical parts, metal, etc.,

Advantages of Recycling

- It lessens the burden on natural resources.
- It makes the natural surroundings clean and better.
- It produces useful and reusable materials.
- It provides an employment and a source of livelihood.

Oral Questions

- Ans.** 1. Solar energy to chemical energy.
2. Autotrophic nutrition
3. Chlorophyll
4. Heterotrophic nutrition
5. The blue and red region of visible light are most effective for photosynthesis.

Oral Questions

- Ans.** 1. Light 2. Leaves 3. Stomata 4. Proteins
5.
 - Plants meet their requirement of nitrogen to synthesis proteins by following two methods.
 - Plants get nitrogen in the form of soluble saets from the soil through their root system.
 - Certain bacteria present in root nodules of plants convert atmospheric nitrogen into soluble saets of nitrogen as nitrates.

Oral Questions

- Ans.** 1. Holozoic nutrition
2. Mushroom
3. Alga and Fungus
4. Crop rotation method
5. Pitcher plant derive its nutrition partly from the soil and partly from small insects.

Summative Assessment**A. Very short-answer questions :**

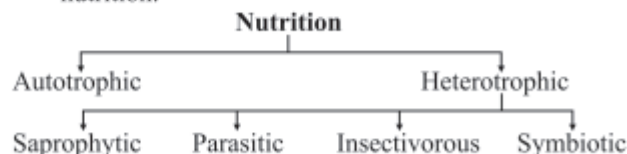
- Ans.** 1. Photosynthesis
2. Carnivore
3. Stomata
4. Saprophytic nutrition

B. Short-answer questions :

- Ans.** 1. Humans and animals do not prepare their own food and depend on plants directly or indirectly. That is why the animals and humans are called heterotrophs.
2. Light intensity, nature of light, carbon-di-oxide, water and temperature.
3. Total parasitic plant : Reflesia; partially parasitic— Plant pitcher plant (Nepenthes).
4. (a) By using manure (b) By using fertilizers (e) By crop rotation method.

C. Long-answer questions :

- Ans.** 1. Food provides us energy for our daily activities and helps us in growth and reproduction.
2. The process of taking food and its utilization by the body is called nutrition. There are mainly two types of nutrition.



3. The process by which green plants make their food is called photosynthesis. Photosynthesis is affected by a number of environmental factors. These are light intensity, nature of light, carbon-di-oxide, water and temperature.

4. Photosynthesis occurs mostly in leaves. The inner structure of the leaf shows two important features :
 - Presence of chlorophyll-containing cells.
 - Presence of small pores, generally on the under-surface of the leaves.
 - These pores are called stomata, (singular : stomta). Carbon dioxide enters a leaf through these pores.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment**I. Multiple Choice Questions (MCQs)— Choose the correct option :**

- Ans.** 1. d. autotrophs 2. a. blue + red
3. c. starch 4. a. oxygen
5. a. parasitic

II. Write one word for the following :

- Ans.** 1. Nutrition 2. Holozoic
3. Photo synthesis 4. Stomata
5. Saprophyte

III. Tick (✓) the odd-one out giving reason :

- Ans.** 1. Carnivores 2. Saprophyte
3. Root hair 4. Saprophytes
5. Rhizobium

IV. Match the columns :

- | Ans. Column A | Column B |
|------------------------|-------------------|
| 1. Animals | E. Heterotrophs |
| 2. Blue and Red lights | A. Photosynthesis |
| 3. Autotrophic | B. Chlorophyll |
| 4. Lactobacillus | C. Saprophytic |
| 5. Sundew | D. Insectivorous |

V. Define the following terms :

- Ans.** 1. The mode of nutrition in which the organism makes its food itself form simple inorganic substances is called autotrophic nutrition (auto means self and trophies means nourishment) or holophytic nutrition.
2. The mode of nutrition in which plants derive their food from the bodies of some other green plants and animals is called parasitic nutrition.
3. The animals which eat both plants and meat are called omnivores.
4. The process by which green plants make their food is called photosynthesis (photo means light, synthesis means building up).
5. The two plants which live together as parts of the same plant and mutually help each other are called Symbionts. And this phenomenon is called symbiosis.

VI. Group Discussion :

Ans. 1. Do yourself

VII. Group Activity

Ans. 1. Do yourself

Oral Questions

- Ans. 1. a. **Holozoic nutrition** : The form of nutrition in which food is eaten in solid form.
 b. **Ingestion** : The process by which food is taken inside the body of an organism.
 c. **Digestion** : The process of converting or breaking down complex food into simple and soluble form.
 d. **Absorption** : The process by which the digested nutrients are taken to different parts of the body by the circulatory system.
 e. **Assimilation** : The process of using absorbed food molecules for producing energy and growth.
 f. **Egestion** : The process of removing undigested food materials from the body.
2. a. False feet b. Feeding tube
 c. Tongue d. Sucking tube
3. False feet of Amoeba.

Oral Questions

- Ans. 1. a. **Alimentary canal** : The alimentary canal is a long and coiled tube. It consists of the following seven organs.
 i. Mouth and mouth cavity (buccal cavity)
 ii. Oesophagus or food pipe iii. Stomach
 iv. Small intestine v. Large intestine
 vi. Rectum vii. Anus
- b. **Digestive system** : The alimentary canal and the associated glands together constitute the digestive system.
- c. **Bile juice** : Bile juice is stored in a sac called the **gall bladder**.
- d. **Villi** : The inner wall of the small intestine has a number of finger-like outgrowths called **villi** (singular villus). The villi increase the surface area for absorption of the digested food.
- e. **Cud** : In the rumen, food is partially digested. The partially digested food is called cud.
- f. **Ruminants** : The process of chewing the cud is called rumination, and the animals are called ruminants.
2. a. The alimentary canal is a long and coiled tube. It consists of the following seven organs.
 i. Mouth and mouth cavity (buccal cavity)
 ii. Oesophagus or food pipe iii. Stomach
 iv. Small intestine v. Large intestine
 vi. Rectum vii. Anus
- b. Based on the structure and function, teeth are of four types : incisors, canines, premolars and molars.
- c. Liver, the largest gland in the body.

Summative Assessment

A. Very short-answer questions :

- Ans. 1. Amoeba is capable of constantly changing its shape and position. It gives out one or more finger-like projections called false feet or pseudopodia (singular pseudopodium)
2. Mastication is the process of breaking bigger food particles into smaller pieces with the help of teeth in buccal cavity.
3. The first teeth appear after six months or so, and fall off

between 6 to 8 years of age. These are called milk teeth and they are temporary.

4. Liver is the largest gland of our body.
 5. The villi have a network of very fine blood vessels called capillaries.

B. Short-answer questions :

- Ans. 1. Bile juice is a bitter greenish brown alkaline fluid. Bile Juice is secreted by liver. Bile juice is stored in a sac called the gall bladder. It helps in the digestion of fats.
2. Ingestion, Digestion, Assorption, Assimilation and Egestion.
3. The teeth are of four types-incisors, canines, premolars and molars. Incisors help in cutting and biting food, canines in piercing and tearing, premolars in chewing and grinding and molars in also chewing and grinding.
4. The Inner wall of the small intestine has a number of finger-like out growths called villi (singular-villus). The villi increase the surface area for absorption of the digested food.
5. Digestion of all types of food is carried out and completed here. Absorption of digested food also takes place in the small intestine.

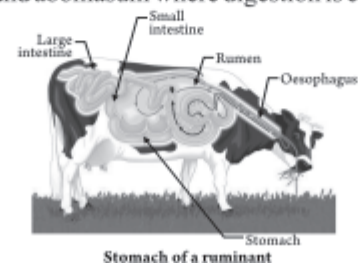
C. Long-answer questions :

Ans. 1.



Human digestive system

2. (a) The juices present in saliva help in chemical digestion of starch into sugars.
 (b) Helps in mixing the chewed food with saliva. Helps in swallowing food.
 (c) The pancreatic juice acts on proteins, starch and fats, and changes them into simpler forms.
 (d) Liver secretes bile juice which helps in the digestion of fats.
 (e) These help movement and capturing food. Amoeba does not have a mouth or a digestive system.
3. Grass eating animals are called ruminants because they have rumen. Firstly the food is partially digested and stored in rumen where cellulose is digested then it enter the second chamber called reticulum. In these two chambers, the food is partially digested and converted into a soft pulp called the cud. Now the cud enters omasum and abomasum where digestion is completed.



Stomach of a ruminant

- Stomach in ruminants is different from the human stomach. In ruminants, stomach has four chambers rumen, reticulum, omasum and abomasum. The ruminants has a separate chamber known as rumen to store the and which contains cellulose. The cellulose is digested here.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. Do yourself.

Formative Assessment

I. Multiple Choice Question (MCQs)—Choose the correct option :

- Ans. 1. b. butterfly
2. c. omnivores
3. c. 32
4. a. mouth
5. b. small intestine

II. Fill in the blanks :

- Ans. 1. holozoic
2. digestion
3. mechanical
4. proteins
5. small

III. State whether the following statements are true (T) or False (F) :

- Ans. 1. False
2. False
3. True
4. False
5. True

IV. Match the Columns :

Ans. Column A	Column B
1. Deer	C. Ruminant
2. Amoeba	A. Food vacuole
3. Humans	B. Omnivores
4. Mouth cavity	F. Saliva
5. Liver	D. Bile juice
6. Stomach	E. Hydrochloric acid
7. Small intestine	H. Villi
8. Large intestine	G. Absorption of water

V. Class presentations

Ans. Do yourself

VI. Field Trip

Ans. Do yourself

3

Cloth Materials Fibre to Fabric

Unit 2 Natural and Man-Made Materials

Oral Questions

Ans. 1. Shearing
2. Australia
3. IWS

Oral Questions

- Ans. 1. It is obtained from cocoon.
2. The fibre is made of a protein, which hardens on exposure to air and forms a cover around the pupa.
3. When a caterpillar is ready to enter the pupal stage, it stops feeding and its salivary gland secretes fibre around the pupa.
4. Mulberry leaves
5. Sericulture

Summative Assessment

A. Very short-answer questions :

- Ans. 1. Fibres can be described as strands of some material. They are the raw material from which fabric or textile for our clothes is prepared.
2. These are rayon, nylon, polyester and acrylic.
3. Angora, Cashmere and Mohair.
4. The process of washing hairs is called scouring.

B. Short-answer questions :

- Ans. 1. The process of shaving a sheep's body to obtain fleece is called shearing.
2. The rearing of silk moths for obtaining silk is called sericulture.
3. The larvae that hatch out of the eggs are called caterpillars.

C. Long-answer questions :

- Ans. 1. Petro-chemicals are used in the manufacture of synthetic fibres.
2. When the people working in the occupation are at risk of getting diseases is known as occupation hazard.
3. The anthrax disease is a fatal blood disease and is called sorter's disease.
4. Australia is the top producer of wool in the world.

D. Higher Order Thinking Skills (Hots) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions (MCQs)—Choose the correct option :

- Ans. 1. c. mulberry leaves
2. a. cotton
3. b. wool and silk

II. Fill in the blanks with suitable words :

- Ans. 1. The **wool** and **silk** are fibres of animal origin.
2. Wool is **natural** fibre whereas nylon is **artificial** fibre.
3. The removal of hair from sheep is called **shearing**.
4. Alpaca and llama are breed in **South America** for obtaining wool.
5. Silk is obtained from **cocoon** of silk moths.
6. **Cocoon** are immersed in hot water which loosens the silk filament.

III. Give one word for the following :

- Ans. 1. Shearing
2. scouring
3. caterpillars
4. Cocoon

IV. State whether the following statements are true or false. If false, write the correct statements :

- Ans. 1. False
2. True
3. True
4. False

V. Give reasons for the following :

- Ans. 1. Wool-yielding animals are found in cold region.
2. Marino wool fibres have 30-40 curls per centimeter. The curls provide holding ability to the fibres.
3. The process of shaving a sheep's body to obtain fleece is called shearing. The sheep do not hurt in this process.
4. The sorted cocoons are immersed in boiled water or exposed to steam. This kills the pupae inside the cocoons.

Formative Assessment-I

1. Multiple Choice Questions (MCQs)— Choose the correct option :

- Ans. (a) i. blue + red
(b) iii. starch
(c) ii. Small intestine
(d) iii. 32
(e) i. cotton

2. Fill in the blanks :

- Ans. (a) Villi are present on the inner wall of **small** intestine.
(b) Chewing of food is a **mechanical** process.
(c) Nutrition in most of the animals is **holozoic**.
(d) Wool is **natural** fibre whereas nylon is **artificial** fibre.
(e) The removal of hair from sheep is called **shearing**.

3. Write true or false :

- Ans. (a) False (b) True
(c) True (d) False

4. Answer the following questions :

- Ans. (a) Stomata

- (b) Saprophytic nutrition.
(c) The first teeth appear after six months or so, and fall off between 6 to 8 years of age. These are called milk teeth and they are temporary.
(d) Liver

4

Heat and Temperature

Oral Questions

- Ans. 1. Heat is a form of energy and is transferred from higher temperature to lower temperature. Temperature is the degree of hotness or coldness of an object.
2. (i) Liquids expand on heating
(ii) Solids expand on heating.
(iii) Heating causes expansion in all the physical states of matter.
3. The intermolecular force of molecules becomes weak and intermolecular distance becomes more so the solids start melting.
4. On cooling the intermolecular space in the gas diminishes and brings the molecules closer to each other; this condenses the gas.
5. Solids.

Oral Questions

- Ans. 1. A thermometer is a scientific device used to measure the temperature.
2. The range of clinical thermometer is from 35°C to 42°C and that of laboratory thermometer is from 10°C to 100°C. The clinical thermometer has a constriction (the figure given below) but not the laboratory thermometer.
3. a. 100°C b. 212°F
4. 98.4°F

Summative Assessment

A. Very short-answer questions :

- Ans. 1. The molecules in a gas are more loosely packed than in a solid and hence, the gases expand more than solids on raising the temperature by 1°C.
2. When you have an ice cube in your hand then the energy flows from your hand to the ice.
3. Due to the latent heat of tea.
4. Copper.
5. The heat is transformed into latent heat.

B. Short-answer questions :

- Ans. 1. Conduction, convection and radiation.
2. °C and °F are the two scales of measuring temperature.
 $0^{\circ}\text{C} = 32^{\circ}\text{F}$ and $100^{\circ}\text{C} = 212^{\circ}\text{F}$
3. Black surface absorbs more heat than silver surface. Silver surface can reflect more heat energy than black surface.
4. The inside container of a thermos flask or the containers for storing petrochemicals are silver polished to reflect the radiation.
5. The two scales of temperature are °C and °F.
 $0^{\circ}\text{C} = 32^{\circ}\text{F}$ and $100^{\circ}\text{C} = 212^{\circ}\text{F}$
Both scales are equal at 40° :
6. Conduction is the process of heat transfer among solids,

convection among fluids and radiation is different from both.

C. Long-answer questions :

- Ans. 1. **Conduction** : Conduction is the process of heat transfer among solids. The tiny particles of solids as atoms or molecules transmit heat to the adjoining particles through their vibratory motion.
Convection : It is the mode of heat transfer among fluids. The principle of convection is involved in formation of the sea breeze and land breeze.
Radiation : The mode of heat transfer we feel warmth when sitting beside the fire.
2. The heat changes the physical state of any matter; ice converts into water and water into vapours on heating. It also causes expansion. Some desirable changes of heat are conversion of water is helpful in water cycle, convectional rains, weather changing etc. Some undesirable changes are melting of glacier, contraction in rails, bridges etc.

D. Higher Order Thinking Skills (HOTS) Questions :

- Ans. 1. Do yourself.

Formative Assessment

I. Multiple Choice Questions (MCQs)— Choose the correct option :

- Ans. 1. d. all of these 2. c. radiation
3. d. both (a) and (b) 4. b. Freezing point
5. c. gases 6. a. white
7. a. 39 to 357°C 8. b. 10° to 100°C

II. State whether the following statements are True (T) or False (F) :

- Ans. 1. False 2. True 3. True
4. True 5. False

III. Fill in the blanks :

- Ans. 1. Heat is a form of energy.
2. **Temperature** is the degree of hotness or coldness of an object.
3. The amount of heat required to melt 1 kg of a substance into its liquid state without a change in its temperature is called **latent heat of fusion**.
4. At the boiling point of a liquid, the vapour pressure equals the **atmospheric pressure**.
5. 1 calorie of heat is equal to **4.186** Joules of energy.

IV. Use Cardboard, white shining paper, a glass bottle and cotton wool. Try to make a vacuum flask.

- Ans. Do yourself.

V. Compare the temperature of water placed in a bottle after one hour with the atmosphere temperature.

- Ans. Do yourself.

Oral Questions

- Ans. 1. Acid are substances which are sour in taste. Citric acid, Acetic acid, lactic acid etc.
2. Litmus and Turmeric.
3. Phenolphthalein and methyl orange.

Summative Assessment

A. Very short-answer questions :

- Ans. 1. Lemon, Tamarind, unripe mangoes.
2. Soap, detergent.
3. Litmus, Turmeric.
4. Acids changes blue litmus into red and Bases red litmus into blue.

B. Short-Answer questions :

- Ans. 1. Turmeric paper Acids yellow colour
Turmeric paper Bases Red colour
China rose—
Pink Bases Green colour
Pink Acids Dark Pink
2. Salts are substances obtained after reaction of acids and bases, for example, common salt.
3. Acids are sour in taste. They change blue litmus into red. Acids formed salts after reacting bases.
4. Table-1 : Natural substance (sources) have acids

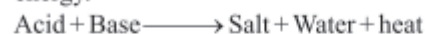
S.No.	Natural Source	Acid
1.	Grapes	Tartaric acid
2.	Tamarind	Tartaric acid
3.	Amla	Ascorbic acid
4.	Tomatoes	Oxalic acid
5.	Sour milk	Lactic acid
6.	Apples	Maleic acid

C. Long-answer questions :

- Ans. 1. Indicators are special chemical substances which show a change in colour when brought in contact with acids and bases.
(a) Litmus

Blue litmus paper Acids Red litmus paper
Red litmus paper Bases Blue litmus paper
Turmeric paste/stain solution Base Red colour.
China rose extract.
Pink Base Green colour
Pink Acid Dark pink

2. A chemical reaction between an acid and a base is called a neutralisation reaction. Salt and water are formed in this process with the evolution of heat energy.



3. When sulphur-di-oxide and various oxides of nitrogen are released into the atmosphere, it forms acid rain. Acid rain can damage buildings, historic monuments, plants and animals. The pollutant gases should not be released into atmosphere.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions (MCQs)— Choose the correct option :

- Ans. 1. c. base reacts with acid 2. a. baking power
3. a. digene 4. b. alkali
5. d. copper carbonate.

II. Fill in the blanks :

- Ans. 1. The acid found in tamarind is **tartaric acid**.
2. Bases soluble in water are called **Alkali**.
3. Bases turn red litmus solution into **blue**.
4. **NaCl** is called table salt.
5. Bases are **soapy** to touch.

III. State whether the following statements are true (T) or False (F) :

- Ans. 1. True 2. True 3. False
4. True 5. False

IV. Projects

Ans. Do yourself.

Oral Questions

- Ans. 1. Shape, size, colour, state and texture.
2. Melting of wax.
3. Some reactions take place with evolution of heat energy. Such reactions are known as exothermic reactions. **Example** : Burning of coal.
4. Some reactions take place with absorption of heat energy. Such reactions are known as endothermic reactions. **Example** : Photosynthesis in Plants.
5. Burning of candle.

Oral Questions

- Ans. 1. Reactivity series is a series in which metals are placed in the decreasing order of their reactivity.
2. When an acid and a base react to form salt and water, the reaction is known as neutralisation reaction.
3. Corrosion of iron is known as rusting.
4. The simplest way to prevent rusting is to apply a coat of paint or grease.

5. "The process of obtaining large crystals of pure substance from concentrated solution is known as crystallisation".

Summative Assessment

A. Very short-answer questions :

- Ans. 1. To prevent iron from rusting.
2. Iron reacts with air in the presence of moisture and form hydrated iron oxide. It is known as rusting of iron.
3. When we place the metallic part of knife in flame there is a change in the colour of the metal and losing it from flame it comes in the original colour.
4. The air we exhaled has more carbon-di-oxide. CO₂ is an extinguisher gas.

B. Short-answer questions :

- Ans. 1. We can get back copper Sulphate crystals by reversing the conditions so dissolving of copper sulphate crystals in water is a physical change.
2. When zinc oxide is heated its colour changes from

white to yellow and on cooling it comes in white colour.

Zinc oxide $\xrightarrow{\text{Heat}}$ zinc oxide
(White colour) (Yellow colour)
Zinc oxide $\xrightarrow{\text{cool}}$ zinc oxide
(Yellow colour) (white colour)

3. (i) Synthesis reaction
(ii) Synthesis reaction
(iii) Double decomposition reaction
(iv) Decomposition reaction.

C. Long-answer question :

Ans. 1.

Characteristic	Properties	Inference
Contains Lactose acid	Contains Lactic acid	(Change in composition)
Free flowing	Fibrated texture liquid	(Change in texture)
Almost tasteless	Sour to taste	(Change in properties)

MILK $\xrightarrow{\text{to}}$ CURD (Permanent change)

2. Burning of wood is a chemical change while cutting of wood is a physical change. When we burn the wood it is changed into ash and CO_2 which are the new substances. This is an irreversible change. Cutting of wood, no new substance is formed and the chemical composition of wood is not altered.
3. The crystal of copper sulphate are prepared by the crystallisation process. In this process we add copper sulphate powder to water and prepare a concentrated solution of copper sulphate. By this process we get large crystals of pure copper sulphate.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions (MCQs)—Choose the correct option :

- Ans. 1. b. physical properties 2. b. chemical change
3. a. physical change 4. c. glowing of bulb
5. d. carbon 6. b. galvanization
7. d. neutralisation 8. b. rusting

9. b. amorphous substances

II. Fill in the blanks :

- Ans. 1. Zinc oxide is **yellow** when hot and **white** when cold.
2. Stretched rubber band involves a **physical** change.
3. Properties such as shape, size, colour and state of a substance are called its **physical properties**.
4. Magnesium ribbon burn with a dazzling **white** light.
5. Magnesium oxide when dissolved in water will give **red** colour with litmus solution.

III. Alternate Response Types Questions (ARTQ) True/False :

- Ans. 1. False 2. True 3. True
4. True 5. True

IV. Select the odd one out giving reasons :

- Ans. 1. Formation of iron sulphide \rightarrow chemical change.
2. Reversible change \rightarrow Property of physical change
3. Crystallization \rightarrow Not a method to prevent rusting.
4. burning of Hydrogen \rightarrow It is a gas.

V. Project :

Ans. Do yourself.

Formative Assessment-II

1. Multiple Choice Question (MCQs)— Choose the correct option :

- Ans. (a) iii. gases (b) i. white
(c) i. citric acid (d) iii. Soap
(e) i. physical change

2. Fill in the blanks :

- Ans. (a) Heat is a form of **energy**.
(b) **Temperature** is the degree of hotness or coldness of an object.
(c) The acid found in tamarind is **tartaric acid**.
(d) Bases soluble in water are called **Alkali**.
(e) Stretched rubber band involves a **physical** change.

3. Select the odd one out given reasons :

- Ans. (a) Formation of iron sulphide \rightarrow chemical change.
(b) Reversible change \rightarrow Property of physical change
(c) Crystallization \rightarrow Not a method to prevent rusting.
(d) burning of \rightarrow Hydrogen It is a gas.

4. Answer the following questions :

- Ans. (a) Due to the latent heat of tea.
(b) Soap, detergent, NaOH, milk of magnesia etc.
(c) litmus paper, turmeric.
(d) The air we exhaled has more carbon-di-oxide which is an extinguisher gas.
(e) To prevent iron from rusting.

Oral Questions

- Ans. 1. We respire to produce energy needed by the body for its various activities.
2. glucose 3. lactic acid
4. Aerobic and Anaerobic respiration

Oral Questions

- Ans. 1. Expand and contract 2. After running fast
3. the area of the chest cavity increases.
4. Air rich in CO_2 5. Breathing

Oral Questions

- Ans. 1. Lungs 2. Epiblema
3. Respiration in plants takes place through different parts such as roots, stems, and leaves.

4. root and stem
5. During the day, both respiration and photosynthesis occur simultaneously in the plants.

Summative Assessment

A. Very short—answer questions :

- Ans. 1. Respiration
2. The number of times a person breathes in a minute is called the breathing rates.
3. The area of chest cavity increases and pressure inside decreases.
4. Frog respire through lungs and skin both.

B. Short-answer questions :

- Ans. 1. There are two types of Respiration :
(i) Aerobic Respiration. (ii) Anaerobic Respiration.

Difference

Aerobic Respiration

1. It occurs in the presence of oxygen/air
2. It occurs in most plants and animals.

Anaerobic Respiration

1. It occurs in the absence of oxygen/air.
 2. It occurs in yeast, bacteria and parasitic worms.
2. During in halation : • The ribs move up and outwards.
• The diaphragm moves down.
- During Exhalation : • The ribs move down and inwards.
• The diaphragm moves up.
3. A stomata opening surrounded with two guard cells and several subsidiary cells is called stomatal apparatus.
 4. Respiration that takes place in the absence of air is called anaerobic respiration or fermentation.

C. Long-answer questions :

- Ans.** 1. During inhalation the ribs move up and outwards and the diaphragm moves down which help air to enter easily. During exhalation the ribs move down and in words and the diaphragm moves up which help air to go outside.
2. **Breathing**
1. Breathing is a physical process involving exchange of oxygen and carbon dioxide.
 2. It occurs outside the cell.
 3. No enzyme is involved in the process.
 4. No energy is evolved or absorbed.

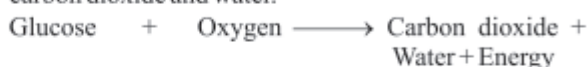
Respiration

1. Respiration is a biochemical process involving the complete breakdown of the food we eat to produce carbon dioxide, water and energy.
2. It occurs inside the cell.
3. Enzymes are involved at certain stages of respiration.
4. Energy is released in a controlled and stepwise manner.

Ans. 3. Aerobic Respiration

Respiration in the presence of oxygen is termed as aerobic respiration.

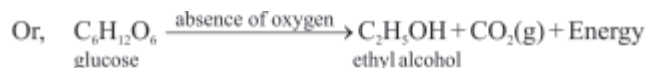
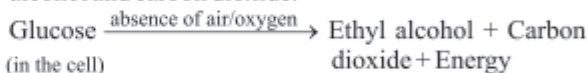
During aerobic respiration, glucose is oxidised to carbon dioxide and water.



(in the cell) (in the inhaled air)

Anaerobic Respiration

Respiration that takes place in the absence of air is called anaerobic respiration or fermentation. During anaerobic respiration, glucose is converted into ethyl alcohol and carbon dioxide.



D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions (MCQs)— Choose the correct option :

- Ans.** 1. c. anaerobic respiration
2. c. both carbon dioxide and water
3. c. bladder 4. d. All of these 5. b. yeast

II. Write one word for the following :

1. Breathing Respiration 2. Aerobic respiration.
3. Breathing rate 4. Alveoli
5. Respiration

III. Match the columns :

- Ans.**
- | Column A | Column B |
|----------------|-------------|
| 1. Respiration | E. Oxygen |
| 2. Bronchioles | D. Alveoli |
| 3. Earthworm | B. Skin |
| 4. Roots | C. Epiblema |
| 5. Lactic acid | A. Cramps |

IV. Select the odd-one out giving reason :

- Ans.**
- | | |
|-------------------------|--|
| 1. External respiration | Breathing. |
| 2. Glucose | used in Aerobic respiration |
| 3. Exhalation | It is a process of breathing |
| 4. Expansion of chest | It is related to inhalation. |
| 5. Night time | Photosynthesis do not occur in Night time. |

V. Define the following terms :

- Ans.**
1. The process of taking oxygen into the cells, using it for producing energy and removing the gaseous waste products (carbon dioxide and water vapour) is termed as respiration.
 2. Respiration that takes place in the absence of air is called anaerobic respiration.
 3. Mechanism of breathing : Breathing is physical process that involves the taking in and giving out of air. It is completed in two phases : Inhaling and Exhaling.
 4. A stomatal opening surrounded with two guard cells and several subsidiary cells is called stomatal apparatus.
 5. 1. During photosynthesis, green plants prepare glucose from carbon dioxide and water in the presence of sunlight and chlorophyll.
2. In photosynthesis, light energy is converted into chemical energy.

VI. Do yourself.

VII. Do yourself.

8

Transportation in Animals and Plants

Oral Questions

- Ans.** 1. a. dissolved food to the cells,
b. oxygen to the cells.
2. RBCs live for 90 to 120 days (as 3 to 4 months) only.
 3. The white blood corpuscles count goes up when there is any infection in the body.
 4. Circulatory system is a system of vessels which

connects all the cells, tissues and organs of the body together.

Oral Questions

- Ans.** 1. Arteries 2. Tricuspid 3. William Harvey
4. Aorta 5. Stethoscope

Oral Questions

- Ans.** 1. Kidney 2. Urine 3. nitrogenous waste

Oral Questions

- Ans. 1. Translocation
2. Transpiration
3. Xylem vessels
4. Root hairs

Summative Assessment

A. Very short-answer questions :

- Ans. 1. The blood has two components. Plasma and blood corpuscles.
2. The red pigment in the blood that binds with oxygen is called hemoglobin.
3. RBCs, WBCs and blood platelets.
4. Ventricles are the distributing chambers of the heart.

B. Short-answer questions :

- Ans. 1. William Harvey discovered the mechanism of circulation of blood in human body.
2. The rhythmic contraction and relaxation of auricles and ventricles is known as heart beat.
3. Circulatory system in a system of vessels which connects all the cells, tissues and organs of the body together.
4. Plants loss excess of water through the process of transpiration.

C. Long-answer questions :

- Ans. 1. Red blood corpuscles (RBCs) are cells without nucleus. Their cytoplasm of RBCs has oxygen caring pigment called hemoglobin. It combines with oxygen to form oxyhaemoglobin, which transports oxygen to all the body cells.
2. Contraction of atrial chambers and then ventricular chambers are the two phases of a heart beat. These two phases of heart beat can be heard as lub and dub sounds. The heart beat sound is caused by the contraction of muscles and shutting down of valves.
3. Numerous biochemical reactions occur round the clock in all living cells. They produce a variety of waste products like carbon dioxide, ammonia and other nitrogen compounds. If they accumulate in the body, they may prove to be toxic.
4. The blood has RBCs. The cytoplasm has oxygen carrying pigment called haemoglobin. It combines with oxygen to form oxygenoglobin, which transports oxygen to all the body cells through Artries.

D. Higher Order Thinking Skills (HOTS) Questions :

- Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions (MCQs)— Choose the correct option :

- Ans. 1. c. RBCs
2. c. four-chambered
3. d. in the midrib and its branches
4. a. bean-shaped

II. Fill in the blanks with suitable words :

- Ans. 1. The red blood cells have red colour due to the presence of **haemoglobin**.
2. **WBCs** are called soldiers of the body.
3. **Pulmonary** veins carry oxygenated blood.
4. **Ventricle's** have thick walls and narrow lumen.
5. Urine contains nitrogenous wastes in the form of **Urea**.

III. Give one word for the following :

- Ans. 1. Cuspid valve
2. Cardiac muscles
3. Left auricle
4. pulmonary artery
5. urinary bladder.

IV. Match the columns :

Ans. Column A

- Cells that fight against germs
- Cells that help in clotting
- Tissue that translocates food
- Tissue that transports water and minerals
- Excretion

Column B

- Leucocytes
- Blood paltelets
- Phloem
- Xylem
- Kidney

V. State whether the following statements are true or false. If false, write the correct statements :

- Ans. 1. **True**
2. **False** Impure blood from different parts of body returns to right auricle.
3. **True**
4. **False** Plants lose water by the process called transpiration.
5. **False** In a healthy person, heart beats 70-72 times per minute.

VI. Differentiate between the following :

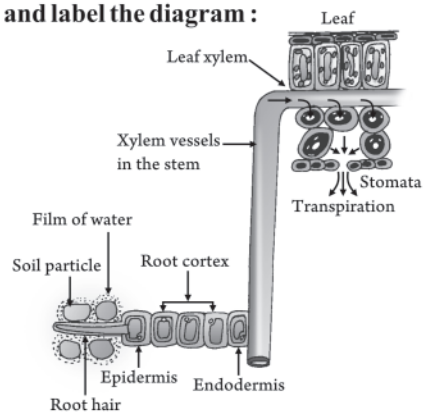
- Ans. 1. Blood is a fluid connective tissue. It is a red coloured viscous fluid that flows in the blood vessels. Plasma is the non-living liquid part of the blood.
2. Circulatory system is a system of vessels which connects all the cells, tissues and organs of the body together. Plants have a well developed transport system called vascular system. They extend from tips of roots of the tips of leaves passing through the stem.
3. Arteries have thick and muscular wall. They carry blood away from the heart. Veins carry blood from body organs to the heart.
4. The xylem vessels transport water and dissolved minerals upwards from roots through stem to the tips of leaves against the force o gravity. Phloem carry food synthesised by the leaves downwards to all the parts of a plants.
5. The process of removing toxic waste from the body is called excretion. Transpiration is the loss f water from leaves and other aerial parts of a plant into the air.

VII. Give reasons for the following :

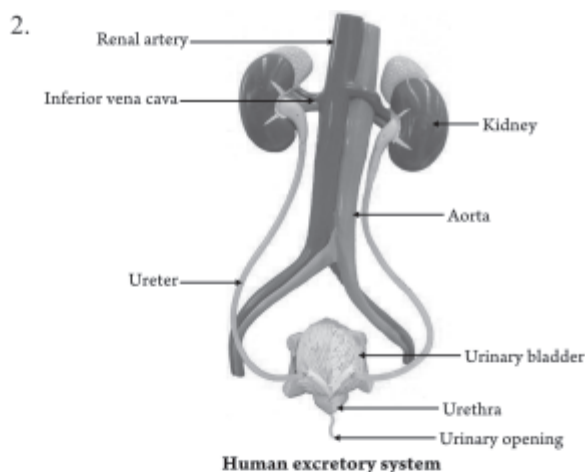
- Ans. 1. The blood is pumped out from ventricles to body parts. The thick wall of ventricles help to bear the pressure.
2. The valves guarded the opening of curricles into ventricles stop the mixing of oxygenated blood into deoxygenated blood.
3. The thick walls of arteries can bear the pressure excreted by the contraction of relaxation of auricles and ventricles.
4. Leucocytes (RBCs) defend the body against infection. They fight against germs and also provide immunity against infection.
5. Transpiration creates a section pull due to which the water and dissolved minerals move upwards.

VIII. Draw and label the diagram :

- Ans. 1.



Path of water and minerals in plants



Summative Assessment-I

1. Fill in the blanks :

- Ans.** (a) The digestive juices in the stomach help to breakdown **proteins** into simple substances.
 (b) The removal of hair from sheep is called **shearing**.
 (c) Heat is a form of **energy**.
 (d) The acid found in tamarind is **tartaric acid**.
 (e) Stretched rubber band involves a **physical change**.

2. Write true or false :

- Ans.** (a) False (b) True (c) True
 (d) False (e) False

3. Match the following :

- | Ans. | Column A | Column B |
|-------------|---------------------|---------------------|
| (a) | Animals | (5.) Heterotrophs |
| (b) | Blue and Red lights | (1.) Photosynthesis |
| (c) | Autotrophic | (2.) Chlorophyll |

- (d) Lactobacillus (3.) Saprophytic
 (e) Sundew (4.) Insectivorous

4. Name these :

- Ans.** (a) Photosynthesis (b) rumination.
 (c) melting point (d) Acid
 (e) Rusting

5. Answer the following questions :

- Ans.** (a) The oxygen is transported through RBCs. The haemoglobin combines with oxygen and form oxyhaemoglobin. It is transported through arteries.
 (b) Stomach in ruminates is different from the human stomach. In ruminants, Stomach has four chambers rumen, reticulum, osmium and abomasums. The Ruminants has a separate chamber know as rumen to store the cud which contains cellulose. The cellulose is digested here.
 (c) The anthrax disease is a fatal blood disease and is called sorter's disease.
 (d) Conduction convection and Radiation are three mode of heat transmission among substances.

Conduction : Conduction is the process of heat transfer among solids. The tiny particles of solids as atoms or molecules transmit heat to the adjoining particles through their vibratory motion.

Convection : It is the mode of heat transfer among fluids. The principle of convection is involved in formation of the sea breeze and land breeze.

Radiation : The mode of heat transfer we feel warmth when sitting beside the fire.

- (e) When an acid reacts with a base, this reaction is called neutralisation reaction.



9

Reproduction in Plants

Oral Questions

- Ans.** 1. The food of some plants are stored in the swollen parts of that plants. The swollen part is taken by animals and human beings as a food.
 2. The process of reproduction in which only one parent is involved and no sex cells are involved is known as asexual mode of reproduction.
 3. The different methods of asexual reproduction are budding, fragmentation, spore formation and vegetative propagation.
 4. The process of reproduction by the formation of a small bud-like projection from the body is called budding.

Oral Questions

- Ans.** 1. Seed dispersal is necessary for the survival of the Plant Species.
 2. The appropriate conditions are required for the germination of seed so all seeds do not germinate immediately.
 3. Stigma is a part of Gynoecium in Flower. The pollen grains are transferred to stigma.
 4. When pollen grains are carried from anther to stigma of the same flower it is known as self pollination.
 5. The emerging out of a seedling from a seed is called germination.

Summative Assessment

A. Very Short-answer questions :

- Ans.** 1. Transfer of pollens grains from anther to stigma of a flower is called pollination.
 2. There are two types of reproduction :
 (i) Sexual reproduction (ii) Asexual Reproduction.
 3. Fertilisation is the process of fusion or union of male nucleus (male gamete present in pollen grain) with female nucleus (female gamete—egg cells present in ovule).
 4. The male gametes are released inside the ovule and they fuse with female gamete and a nucleus. Thus, fertilization has taken place. The fertilized ovule is called zygote.
 5. Germination of seed.

B. Short-answer questions :

- Ans.** 1. The process by which new individuals are produced from their parents is known as reproduction. It is one of the most important characteristics of the living beings. Two basic objectives of reproduction are :
 (a) Continuity of a species and its preservation.
 (b) Increase in the number of population of a species.
 2. (a) **Binary fission :** It is a common method of reproduction which occurs in simple small unicellular organism like Bacteria.

Binary fission also takes place in Amoeba, Paramecium etc.

- (b) **Fragmentation** : Fragmentation is the process when a mature organism like Spirogyra (an filament alga) breaks up on its own into small pieces (fragments).
- (c) **Spore formation** : The lower plants like bacteria, Mucor (fungus), algae and moss produce heat resistant reproductive structures called spores. Their number is variable. Reproduction by spore formation is called speculation.
- (d) **Budding** : The process of reproduction by the formation of a small bud-like projection from the body is called budding.
Example : Yeast cell, Hydra.
3. (a) tubers. (b) buds.
(c) Rhizome. (d) Notches (Adventitious buds)
4. In this process, the stem of a desired plant with good characters (such as flowers, leaves and fruits) is 'fixed' on the stem of other plant with good root system is called grafting.
5. Vegetative propagation from cutting of stem is a process of grafting and cutting the stem with a stock and scion is a step for grafting. In grafting the stem of a desired plant with good characters is fixed on the stem of other plant with good root system.

C. Long-Answer questions :

- Ans.** 1. The reproduction are of two types :
- (i) **Asexual reproduction** : The process of reproduction in which only one parent is involved and no sex cells are involved is known as asexual mode of reproduction.
Example : Budding in yeast, hydra and fragmentation in spirogyra.
- (ii) **Sexual reproduction** : The process of reproduction in which both parents and sex cells are involved is known as sexual reproduction.

Example : Reproduction in flowering plants animals and Human beings.

2. The various stages of fertilization in a flower are :
- (i) Growth of pollen tube
(ii) Entry of pollen tube into ovule.
(iii) Release and fusion of gametes
(iv) Development of zygote.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Question (MCQS)— Choose the correct option :

- Ans.** 1. a. one parent is involved 2. a. budding
3. a. stem 4. c. bulb
5. d. none of there

II. Fill in the blanks :

- Ans.** 1. In **Asexual** reproduction, no sex cells are involved.
2. The fission in which **two** cells are formed is binary fission.
3. Spirogyra reproduces by **fragmentation** method.
4. Vegetative propagation is the process of producing **new plantlets** by use of parts of plant.
5. Potato is a **swollen stem**.

III. State whether the following statements are True (T) or False (F) :

- Ans.** 1. True 2. False 3. True
4. True 5. True

IV. Match the columns :

- | | | |
|-------------|-----------------|---------------------------|
| Ans. | Column A | Column B |
| 1. | Amoeba | B. Binary fission |
| 2. | Plasmodium | E. Multiple fission |
| 3. | Yeast | D. Budding |
| 4. | Mucor | A. Spore formation |
| 5. | Potato | C. Vegetative propagation |

V. Do yourself.

VI. Do yourself.

VII. Do yourself.



10 Light

**Unit 4
Light and Electricity**

Oral Questions

- Ans.** 1. a. polishing b. ray
c. same d. beam
2. (a) **Convergent beam of light** : A beam of light which comes from a broad source of light and converge at a point, is called a convergent beam of light.
- (b) **Divergent beam of light** : A beam of light which comes from a small source and diverge out is called a divergent beam of light.
- (c) **Parallel beam of light** : A beam of light where all the light rays are parallel to each other is called a parallel beam of light.

Oral Questions

- Ans.** 1. a. Concave mirrors b. spherical
c. C d. radius; curvature
2. a. **Pole** : The geometric centre of the spherical mirror is called its pole. It is denoted by capital 'P'.
- b. **Centre of curvature** : The centre of the hollow sphere, from which the mirror has been taken out, is called its centre of curvature. It is denoted by capital 'C'.
- c. **A spherical mirror** : A curved mirror is a slice

taken out from a hollow sphere of glass and polished silver on one of its faces.

Oral Questions

- Ans.** 1. a. seven b. diverging
c. Convex d. diverge
2. a. **Dispersion** : The splitting of white light into its seven colours is called dispersion.
b. **Spectrum** : The band of seven colours obtained as a result of dispersion is known as a spectrum.

Summative Assessment

A. Very short-answer questions :

- Ans.** 1. If the outer surface of the slice from the hollow sphere of glass is polished silver and the inner surface behaves as the reflecting surface, it is called a concave mirror.
2. The centre of the hollow sphere, from which the mirror has been taken out, is called its centre of curvature. It is denoted by capital 'C'.
3. The image formed by reflected rays appearing to meet at a point is called a virtual image.
4. If the inner surface of the slice from the hollow sphere of glass is polished silver and the outer surface behaves as the reflecting surface, the mirror is known as a convex mirror.

5. It prevents from electric shock.

Oral Questions

- Ans.** 1. A current carrying coil of insulated wires wrapped around a piece of iron called electromagnet. When an iron core is wound with insulated wires and the electric current is passed through it then the coil acts as electro magnet.
2. (i) By winding more insulated wires
(ii) By passing more current.
3. (i) Speakers (Electric appliance)
(ii) Electric bell.
4. The metal core with wined insular wires is called coil.

Summative Assessment

A. Very short-answer questions :

- Ans.** 1. The path along which electric current can flow is called electric circuit.
2. The hindrance in the path of moving electrons is termed as resistance offered by that particular substance.
3. Plastics, Rubber, Bakelite.
4. A fuse is a safety device in an electric circuit which prevents short circuits.

B. Short-answer questions :

- Ans.** 1. When there is no flow of current, its is known as open circuit. In an open circuit the switch is in off made. When we switch of the metal strip does not touch the both terminals.
2. Nicrome is a high-resistance material. When the electric current passes through it then the wire is heated and becomes red hot.
3. It has a short length wire with a low melting point. The fuse wire is made of an alloy containing equal amounts of lead and tin. It melts at about 200°C
4. Over loading and short circuit are causes of fire in electric circuits.

C. Long-answer questions :

Ans. 1. To make an electromagnet.

- Take an iron nail of about 6-10 cm in length and wind an insulated copper wire on it as shown in given figure.

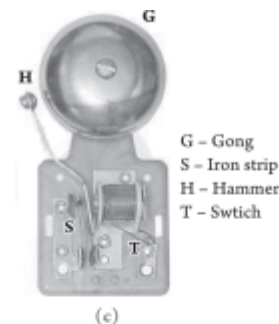
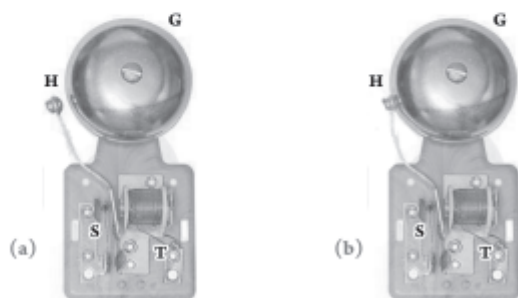


- Now connect the ends of the copper wire to the two terminals of a dry cell via a switch.
- Switch on the current through the circuit and bring a few pins near the wounded nail.

Now switch off the current and see what happens. The iron nail behaves like a magnet as long as current flows through the circuit. The pins cling to the nail when the switch is 'on' while they drop as soon as the switch disconnects the electric circuit.

You can see an enhanced magnetic field (more pins cling to the nail) if you use a battery in place of a cell.

2.



(c) Working of an electric bell

3. The hindrance in the path of moving electrons is termed as resistance offered by that particular substance. The tungsten wire is used in electric bulb. On passing electric current the wire is heated due to high resistance and the bulb glow.
4. Conductors are the materials which allow the electric current to pass through them easily and has a low resistance. Silver has the least resistance. The current can flow easily in an electric circuit by conductors.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions (MCQs)— Choose the correct option :

- Ans.** 1. d. Silver
2. b. lead and tin
3. c. Rubber
4. b. insulators
5. a. electric switch

II. Fill in the blanks :

- Ans.** 1. Tungsten
2. Conductors; low
3. ALNICO
4. positive; negative
5. iron

III. Match the columns :

- | Ans. | Column A | Column B |
|-------------|-----------------|------------------------------------|
| 1. | Fuse | C. Safety device. |
| 2. | Green wire | D. Earth wire. |
| 3. | Nichrome | A. Used in the element of heaters. |
| 4. | Bakelite | E. Used to make electric switches. |
| 5. | Current | B. Flow of electric charge. |

IV. State whether the following statements are True (T) or False (F):

- Ans.** 1. True
2. True
3. True
4. True
5. True
6. False

V. Do yourself.

VI. Do yourself.

Formative Assessment-III

1. Multiple Choice Questions (MCQs)— Choose the correct option :

- Ans.** (a) ii. budding
(b) iv. none of these
(c) iii. converging mirror
(d) ii. lead and tin.

2. Fill in the blanks :

- Ans.** (a) The fission in which two cells are formed is binary fission.
(b) Potato is a stem.
(c) Light travels in a straight line.
(d) An electromagnet can attract iron.

3. Write true or false :

- Ans.** (a) False (b) True (c) False (d) True

4. Answer the following questions :

- Ans.** (a) There are two type of Reproduction— sexual reproduction and Asexual reproduction.
(b) The zygote is formed after the fusion of male gametes

with female gametes. This process is known as fertilization.

- (c) The image formed by reflected rays appearing to meet at a point is called a virtual image.

12

Winds, Storms and Cyclones

Unit-5
Natural Disaster

Oral Questions

- Ans. 1. Moving air is called wind.
2. Air pressure is the force exerted on you by the weight of tiny particles of air.
3. Colder region has high pressure.
4. Rainfall, wind, storm and land and sea breeze.

Oral Questions

- Ans. 1. Cyclones develop over tropical seas. The air, after being heated up by Sun rays, rises creating a region of low pressure. Cold air from surroundings rushes in and rises up as a result of the heat of the Sun.
2. The speed of the wind is measured by an instrument called anemometer.
3. Cyclone.

Summative Assessment

A. Very short-answer questions :

- Ans. 1. When air moves it is called wind or in other words moving air is called wind.
2. Cyclones developing over the western pacific region are called typhoons.
3. The speed of the wind is measured by an instrument called anemometer.
4. Another instrument through which the direction of blowing wind can be detected is called weather vane or wind vane.
5. The upward movement of hot air and downward movement of cold air leads to stormy winds along with rainfall, lightning and thunder. These events together are called thunderstorm.

B. Short-answer questions :

- Ans. 1. Wind currents are generated due to uneven heating on the Earth.
2. The air rises up at high temperature and causes rain fall, thunder storm, lightning and breeze.
3. The air pressure reduces when wind is blowing at high speed. Due to reducing in the atmospheric pressure the trees are uprooted.
4. The upward movement of hot air and downward movement of cold air leads to stormy winds along with rainfall lightning and thunder. These events together are called thunderstorm. Cyclones develop over tropical seas.

C. Long-answer questions :

- Ans. 1. To show that air exerts pressure.
- Take a tin can with a lid and fill it two-thirds with water
 - Heat the water on a burner till the water starts boiling.
 - Now put off the burner, cover the mouth of the can with its lid tightly and pour cold water on the hot can as shown in the given figure.

You will observe that the tin loses its shape.

When the water in the can is heated, it changes into vapour form. When cold water runs over the tin can

- (d) Some elderly people who have both the defects in their eyes use both the types of lenses in their spectacles. Such spectacles are known as bifocal spectacles.
(e) Plastics, Rubber, Bakelite.

containing hot water, some of the steam in the can turns back to its liquid state, reducing the amount of air inside. This reduces the air pressure inside the can compared to the air pressure outside. As result, the can gets compressed or deformed.



Air exerts pressure

2. Thunderstorms develop in hot, humid, tropical areas like India quite frequently. The air near the land gets heated, becomes light and rises. In doing so, the water vapour condenses rapidly to form tiny droplets of water which freeze to form ice particles.
3. A tornado is a form of storm and has a dark funnel shaped cloud that reaches to the ground from the sky. The speed of wind that blows around central low pressure zone is 200-300 km/h. the heavy rainfall, lightning and thunder together are called thunderstorm. Tornadoes are most destructive.
4. Cyclones develop over tropical seas. The air, after being heated up by sun rays, rises creating a region of low pressure. Cold air from surroundings rushes in and rises up as a result of the heat of the sun. The cyclones are very destructive for human life.
5. (i) Warning issued by meteorological department through TV, radio or newspapers should not be ignored.
(ii) People living in cyclone prone areas should make arrangements to shift necessary household goods, domestic animals and vehicles to safer places.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions (MCQs)— Choose the correct option :

- Ans. 1. a. hot, humid, tropical areas. 2. d. all of them
3. b. twisters 4. d. cyclones
5. c. along the coast line.

II. State whether the following statements are True (T) or False (F) :

- Ans. 1. False 2. True 3. True
4. False 5. True

III. Fill in the blanks :

- Ans. 1. Air pressure **decreases** when wind speed increases.
2. Moving air is called **wind**.
3. Air moves from the region of **high** air pressure to the region of **low** air pressure.
4. Warm air is **lighter** than cold air and **rises** up.
5. Wind is generated due to **uneven** heating of land and water.
6. Thunderstorm is accompanied by high speed wind, **lightning** and **thunder**.
7. An anemometer measures **wind speed**.

Oral Questions

- Ans.** 1. Humus 2. Bed rock
3. A-Horizon/Top-soil 4. Earth Worm
5. Weathering

Oral Questions

- Ans.** 1. Clayey soil 2. Loamy soil
3. Sandy soil 4. Loamy soil
5. Sandy soil

Oral Questions

- Ans.** 1. fertile 2. soil erosion
3. vegetation 4. deforestation
5. ploughing

Summative Assessment**A. Very short-answer questions :**

- Ans.** a. The organic matter like dead and decaying remains of plants and animals present in the soil is called humus.
b. Loamy soil is the most fertile soil.
c. Cutting down of trees on a large scale is called deforestation.
d. The topmost layer of the soil is called A-horizon or top soil.
It is rich in humus.
It is rich in minerals needed by plants for their growth.
e. This is also called the parent-rock. This parent rock produces soil over a long period of time. The parent-rock is very hard.

B. Short answer-questions :

- Ans.** a. Soil provides all the nutrients required by plants to grow. Soil is also very important as a habitat-a home for millions of soil organisms. It also provides anchorage to trees and vegetation.
b. Humus is important because it makes the soil fertile as it contains all the nutrients required by the plants for their proper growth.
c. Take some soil in a beaker. Pour water over it. Observe carefully. Do you see some air bubbles in the water coming out of the soil?
Yes, you will see some bubbles coming out of water.
d. Water is also present in the space between soil particles. Plants do not grow without water.
e. The topmost layer of the soil is called A-horizon. It is rich in humus. It is rich in minerals needed by plants for their growth.

C. Long answer-questions :

- Ans.** a. B-horizon lies just below the topsoil. It has a very small population of living organisms and is less fertile as compared to A-horizon.
- It contains comparatively less amount of humus.
 - It is rich in minerals.
 - It is generally harder and more compact than top soil.
 - It is lighter in colour because of the presence of less amount of Humus.
- b. The removal of topsoil by either strong winds, flowing river water or rain is called soil erosion.
c. Overgrazing, Deforestation, Speedy wind and excessive ploughing of fields are some factors of soil erosion.
d. 1. It has the right water holding capacity.

2. It can hold sufficient air for the growth of plants because of the presence of adequate air spaces between the particles.
3. It can be ploughed easily.
4. It can hold necessary nutrients required for the growth of plants.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment**I. Multiple Choice Questions (MCQs)— Choose the correct option :**

- Ans.** 1. clay 2. d. topsoil 3. d. all of these.

II. Fill in the blanks with suitable words :

- Ans.** 1. The top most layer of soil is called **A-horizon**.
2. B-horizon is lighter in colour because of the presence of less amount of **humus**.
3. **Sandy** soil cannot hold much water.
4. **Clayey** soil is not well aerated.
5. Soil has many **pores** which allows water to flow down.

III. State whether the following statement are true or false. If false, write the correct statements :

- Ans.** 1. False Correct statement : A horizon is the layer of soil which is rich in humus.
2. False Correct statement : The dead and rotting remains of plants and animals is called humus.
3. False Correct statement : The top soil (A-horizon) is darker than the top-soil (B-horizon)
4. True
5. True

IV. Define these terms :

- Ans.** 1. Soil is a naturally occurring loose covering of broken rock particles and humus on the Earth's surface, which is capable of supporting life.
2. The organic matter like dead and decaying remains of plants and animals present in the soil is called humus.
3. The breaking down of rocks by wind, flowing water or trees is called weathering.
4. The removal of topsoil by either strong winds, flowing river water or rain is called soil erosion.

V. Differentiate between the following :

- Ans.** 1. Sandy soil contains large-sized sand particles. It is well aerated and can not hold water and nutrients. Clayey soil contains small sized particles and can hold more water. Clayey soil is not well aerated.
2. Clayey soil contains small sized clay particles and hold more water. Loamy soil contains clay, sand and silt particles in right proportions. Loamy soil is considered the best soil for growing plants and crops.
3. Sandy soil contains large-sized sand particles. It is well aerated and can not hold water and nutrients. Loamy soil contains clay, sand and silt particles in right proportions. Loamy soil is considered the best soil for growing plants and crops.

VI. Give reasons for the followings :

- Ans.** 1. Humus contains nutrients so it is important for the soil.
2. Soil is an important natural resource. The life can not exist without soil.
3. It can hold proper amount of water and contains nutrients.

- Sandy soil contains large-sized sand particles.
- The air present in the soil is used for respiration by some living organisms such as Earth worm.

14

Water : A Precious Resource

Oral Questions

- Ans.** 1. Underground water 2. It is decreases day by day.
3. Not, It is not enough.
4. Hydrosphere is the water-covered part.
5. Water containing salt.

Oral Questions

- Ans.** 1. Hydrosphere is the water covered part of Earth.
2. 0.03 % of water available on Earth is freshwater.
3. Not 4. We should not waste water.
5. To use water in proper amount.

Summative Assessment

A. Very short-answer questions :

- Ans.** 1. Water for domestic use is obtained from various sources such as :
(a) Underground water from wells, hand-pump, etc.
(b) Surface water from lakes, rivers, etc.
2. Ice and glacier.
3. The movement of water through the gaps between soil particles is called percolation.

B. Short-answer questions :

- Ans.** 1. The domestic need of water is looked by municipality of the town/city in urban areas like Delhi, Mumbai, etc. Water is collected from lakes, rivers and it is cleaned and purified and then pumped by big motors to overhead storage tanks.
2. Solid : In the form of snow, ice and glacier.
Liquid : Water present underground, in rivers, lakes, ponds, seas and oceans.
Gas : Moisture, fog in the atmosphere.
3. Rivers, Lakes, ponds, seas, oceans are some example of flowing water.

C. Long-answer questions :

- Ans.** 1. (i) Do not waste water in home, school, party or anywhere.
(ii) Close the tap tightly to avoid dripping of water.
(iii) Use less water for all the purposes.
(iv) Instead of using house-pipes to clean scoters, cars, floors, use mopping cloth, wet cloth etc.
(v) Plant trees for getting more rain clouds.
(vi) Rainwater harvesting is to be practised.
(vii) Rainwater must be directed and stored in pools.
(viii) Recycle the used water.
(ix) Make a poster for awareness programme.

VII. Look at the following diagram and answer the question given below :

Ans. Do yourself.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions (MCQs)— Choose the correct option :

- Ans.** 1. b. lithosphere 2. d. 0.03%
3. c. both 4. c. much water for cooking.

II. Fill in the blanks :

- Ans.** 1. The **water** covered part of Earth is called hydrosphere.
2. The freshwater for human use on the Earth is **0.03%**.
3. Plants **suffer** during scarcity of water.
4. Domestic water supplied to homes is from **rivers and lakes** in cities.

III. State whether the following statements are True (T) or False (F) :

- Ans.** 1. False 2. True 3. False 4. False

IV. Projects :

Ans. Do yourself.

Formative Assessment-IV

1. Multiple Choice Questions (MCQs)— Choose the correct option :

- Ans.** a. i. hot, humid, tropical areas.
b. iii. along the coastline.
c. iv. topsoil
d. iii. much water for cooking.

2. Fill in the blanks :

- Ans.** a. Air pressure **decreases** when wind speed increases.
b. Warm air is **lighter** than cold air and **rises** up.
c. **Sandy** soil cannot hold much water.
d. Soil has many **pores** which allows water to flow down.

3. Write true or false :

- Ans.** a. True b. True c. False
d. True e. False

4. Answer the following questions :

- Ans.** a. Cyclones developing over the western pacific region are called typhoons.
b. The organic matter like dead and decaying remains of plants and animals present in the soil is called humus.
c. This is also called the parent-rock. This parent rock produces soil over a long period of time. The parent-rock is very hard.
d. ice, glacier.

15

Forest—The Green Lifeline

Oral Questions

- Ans.** 1. remains; decaying 2. food; photosynthesis
3. perennials 4. components
5. Ayurvedic

Oral Questions

- Ans.** 1. Deforestation 2. desertification
3. 15, 20 4. wastelands
5. deserts

Summative assessment

A. Very short-answer questions :

- Ans.** 1. A forest is a large uncultivated land area densely covered with various types of trees, shrubs and herbs.
2. The plants with a life span of two years are called biennials.
3. Green plants are called autotrophs or Producers.
4. Animals and nongreen plants obtain nutrients from the

green plants. They are called consumers.

B. Short-answer questions :

- Ans.** 1. It is the topmost layer of crown of leaves and branches of very tall trees.
2. Micro-organisms which decompose dead and decaying plants and animals are called decomposers.
3. the plants with a life span of one year are called annuals.
4. The causes of deforestation are :
- Increased demand of fuelwood, paper and timber.
 - Increased demand of land for industries, houses, roads, agriculture and railway tracks.

C. Long-answer questions :

- Ans.** 1. (i) Forests control and prevent flood by holding water and not allowing its free flow.
(ii) Trees make the soil fertile by recycling the nutrients.
2. (i) Animals take in oxygen which is given out by the plants during photosynthesis. The plants take in carbon dioxide which is released by Animals during respiration.
(ii) Animals get food, medicines, timber, natural fibres etc. from plants and plants depend on animals for pollination and seed dispersal.
3. The causes of deforestation are
- Increased demand of fuelwood, paper and timber.
 - Increased demand of land for industries, houses, roads, agriculture and railway tracks.
 - Increased mining activity.
 - Lowering of water table causes plants and trees to wilt and die.
4. Food, timber, natural fibre, medicines, fuel etc.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions (MCQs)— Choose the correct option :

- Ans.** 1. a. crown of leaves and branches of tall trees.
2. d. elephants and bison.
3. c. 20.55 percent.
4. d. both a and b.

II. Fill in the blanks with suitable words :

- Ans.** 1. Forests are a **precious** natural resources.

2. **Humus** is formed by the action of decomposers on dead and decaying plants and animals.
3. **Tree** maintains balance of oxygen and carbon dioxide concentration in the atmosphere.
4. **Deforestation** and **Pollution** are major threats to forests.
5. Animals depend on **plants** for food and oxygen.

III. Give one word for the following :

- Ans.** 1. Utilization 2. Deforestation.
3. Canopy 4. Wild animals
5. Humus 6. Decomposers
7. Tribes

IV. Define these terms :

- Ans.** 1. Canopy is the topmost layer of crown of leaves and branches of tall trees.
2. A habitat is a place where Animals and plants can survive easily.
3. The decomposed organic matter that forms the topsoil, rich in nutrients and blackish or brownish in colour.
4. Micro organisms, which decompose dead and decaying plants and animals.
5. Deforestation is the large-scale cutting of trees for obtaining wood or clearing land.
6. The process of loss of top layer of naked soil either being washed away by rains or blown away by air.
7. Conversion of a green area into dry and sandy one due to low rainfall and removal of trees, bushes and grass by grazers.
8. Varieties of plants and animal in same habitat.

V. Give reasons for the following :

- Ans.** 1. Forests provide us food, medicines, spices, timber etc. as well as forests purify air.
2. Forests are our life line. The life is impossible with trees and plants.
3. Plants take in carbon-di-oxide and give out oxygen to purify air.
4. The nutrients cycle is fast in forest.

VI. Think Zone :

- Ans.** 1. Plants provide all necessary things which are required for surviving the life such as-food, medicines, spices, habitat etc.
2. The vehicles release CO₂ in the atmosphere which are absorbed by trees which are planted along the road.

Oral questions

- Ans.** 1. Bathroom, kitchen sink, veranda.
2. Liquid wastewater laden with impurities is sewage.
3. Dirty water is a waste. Example : A large amount of water is used for flushing the excreta from the toilets.
4. The wastewater will stink and emit foul smell and also be the breeding place for mosquitoes. Thus, it will affect the health of people living there.
5. Sewage.

Summative Assessment

A. Very short-answer questions :

- Ans.** 1. Dirty water goes to → drains → sewers → Big waterbodies.
2. House, dirty water, drains, sewers

B. Short-answer questions :

- Ans.** 1. The drains open into a network of pipes outside the

house called sewers. From here, they are connected to bigger drains that carry it out of the colony or city. This is sewer system or sewerage.

2. The water stands there. It pollutes and emits foul smell. Mosquitoes lay the eggs there and breed. This increases their population. Mosquitoes bite cause diseases like malaria, dengue, chikungunya and filarial in human beings.
3. (i) Water is carried to pits directly.
(ii) Water does not come out or overflow.
(iii) These keep the surroundings clean.
4. Drainage system is needed for carrying away the dirty water from the houses, schools, offices and other buildings.

C. Long-answer questions :

- Ans.** 1. The physical process of cleaning the sewage involves

filtration, settling/sedimentation and skimming. To remove the physical impurities wastewater is passed through bar screens that act as filters (just like your fingers standing on way of flowing water or the screens on the drains openings jali).

- Water borne diseases are the result of water pollution. When human and animals faeces reach water bodies then microbes spread in the water. The people who take this contaminated water get some diseases as cholera, typhoid, dysentery etc. These diseases are known as water borne diseases.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. Do yourself.

Formative Assessment

I. Fill in the blanks :

- Ans. 1. **Dirty** water is drained through drains.
2. Open drains must be **covered**.
3. **Mosquitoes** breed in waterlogged drains or places.
4. **Street** drains carry water to sewer system.
5. **Sewage** system is available in cities and town.

II. True of False statements :

- Ans. 1. False 2. True 3. False
4. True 5. True

III. Research Work :

Ans. Do yourself.

IV. Visit to wastewater treatment plant :

Ans. Do yourself.

V. Field Survey neighbourhood :

Ans. Do yourself.

Summative Assessment-II

1. Fill in the blanks :

- Ans. a. The fission in which **two** cells are formed is binary fission.
b. Light travels in a **straight** line.
c. Wind is generated due to **uneven** heating of land and water.
d. Plants **suffer** during scarcity of water.
e. Moving air is called **wind**.

2. Write true or false :

- Ans. a. False b. True c. True
d. True e. False

3. Very short-answer questions :

- Ans. a. The fusion of male gametes with female gametes is called fertilization.
b. The centre of the hollow sphere, from which the mirror has been taken out, is called its centre of curvature. It is denoted by capital 'C'.

- The Instrument used to measure the speed of wind.
- A forest is a large uncultivated land area densely covered with various types of trees, shrubs and herbs.
- Animals and non-green plants obtain nutrients from the green plants. They are called consumers.

4. Short-answer questions :

- Ans. a. 1. Water is carried to pits directly.
2. Water does not come out or overflow.
3. These keep the surroundings clean.
b. The air pressure decreases during high speed of wind. The trees are uprooted due to low atmospheric pressure.
c. Solid-ice, snow
Liquid : Rivers, lakes, ponds, seas, and gas as fog moisture.
d. Short circuit and overloading are the causes of fire in electric circuits.
e. In grafting, the stem of a desired plant with good characters is fixed on the stem of other plant with good root system. In stem cutting method, a piece of stem is planted in moist soil, and after some times it grows into a plant.

5. Long-answer questions :

- Ans. a. (i) The image is formed at the same distance from the mirror, as the object is kept in front of it.
(ii) The image formed by a plane mirror cannot be obtained on a screen.
b. Water borne diseases are the result of water pollution when human and animals faeces reach water bodies then microbes spread in the water. The people who take this contaminated water get some diseases as cholera, typhoid, dysentery etc these diseases are known as water borne diseases.
c. The upward movement of hot air and down ward movement of cold air leads to stormy winds along with heavy rain full, lightning and thunder. These events together are called thunderstorm. A tornado is a form of storm and has a ark funnel-shaped cloud that reaches to the ground from the sky. The speed of wind is round 200-300 km/h.
A tornado is more divesting them thunders from.
d. The cause of deforestation are
Increased demand of fuelwood, paper and timber.
Increased demand of land for industries, houses, roads, agriculture and railway treks.
e. The various stages of fertilization in a flower are :
(i) Growth of pollen tube.
(ii) Entry of pollen tube into ovule.
(iii) Release and fusion of gametes.
(iv) Development of zygote.

Oral Questions:

- Ans.** 1. Wheat, and rice.
2. Vegetables— Potato, Tomato, Fruits— Orange, Banana.
3. Winter season— Rabi Crops
Summer season— Kharif crops

Oral Questions:

- Ans.** 1. Hoe and seed-drill 2. Ploughing
3. Broad casting

Oral Questions:

- Ans.** 1. Fertilizer. 2. Urea 3. Buffer-stock.

Oral Questions:

- Ans.** 1. Cow and buffalo 2. Pisciculture 3. 21 days.

Summative Assessment

A. Very Short-Answer Questions :

- Ans.** 1. Plough, hoe and seed-drills.
2. No, the seeds which float on water should not be sown.
3. Kharif crops are grown during rainy season.

B. Short-Answer Questions :

- Ans.** 1. (i) Transplantation enables selective cultivation of healthy seedling. This results in better crop production.
(ii) Transplantation permits better root penetration into the soil.
2. Fertilizers are added to the soil by any of the following methods :
(i) Broadcasting : The fertilizer is scattered in the field by hand.
(ii) Through irrigation channel : The fertilizer is kept in the irrigation channel where it get dissolved in the water and reaches the plants.
3. The seeds should be treated with fungicide before sowing because the seed may be damaged by fungi and they do not germinate.
4. On commercial scale, goodgrains such as wheat, rice, gram etc., are stored either in gunny bags, or in grain-silos.

C. Long-answer Questions :

- Ans.** 1. In our country, there are two main crop seasons known as Rabi season and Kharif season.
(i) Rabi crops : These crops are known as winter crops. These are sown in the month of October and November. The harvesting of these crops are done in the month of March and April. Some Rabi crops are potatoes barley, mustard, tomato etc.
(ii) Kharif crops : The crops which are sown during rainy season are called Kharif crops. Kharif crop season last from June-July to September-October. Paddy, maize groundnut, cotton are some Kharif crops.
2. The land is ploughed before sowing the seeds because the loosening of soil permits easy and deeper penetration of the roots and provides good aeration to the roots. After ploughing the land is leveled and pressed lightly because it breaks or crush bigger chunks of dry soil into smaller pieces and protect upper layer of

the soil from erosion by wind or water.

3. Certain crops such as rice (paddy), tomato, onion, chilli etc., the seeds are not directly sown in the main field. In such cases, the seeds are first sown in a small seed-bed called 'nursery'. When the seedlings (new plants) have 4-5 leaves, then the healthy seedlings are transplanted into main field.
4. In the drip system, water is released drop-by-drop just near the roots of plants. This is the most economical method of irrigation. It is highly suitable for water-deficient regions. This method is used for fruit and flower plants.
5. Difference Between a Manure and a Fertilizer

Fertilizer :

1. A fertilizer provides a specific nutrient to the soil.
2. A fertilizer has a high concentration of plant nutrients.

Manure :

1. A manure provides more than one nutrients to the soil.
2. A manure has low concentration of soil nutrients.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself

Formative Assessment

I. Multiple Choice Questions :

- Ans.** 1. c. 2. c 3. a.

II. Write one word for the following :

- Ans.** 1. Rabi Crops 2. Weeding 3. Fertilizer

III. Tick (✓) the odd-one out giving reason :

- Ans.** 1. **Transplantation** — It is not a method of irrigation.
2. **Dhekli** — It not a part of preparation of soil.
3. **Water-logging** — It is not related to harvesting.
4. **Gunny bags** — It is not a store house of food grains.

IV. Define the following terms :

- Ans.** 1. **Horticultural crops** : Large scale cultivation of vegetables, fruits and flower plants are called horticulture and these crops are called horticultural crops.
2. **Transplantation** : In certain crops seeds are not directly sown in the main field. In such cases, the seeds are first sown in a small seed-bed called nursery. When the seedlings (new plants) have 4-5 leaves, then the healthy seedlings This process in called transplantation.
3. **Broadcasting** : Scattering of the seeds in the field by hand is called broadcasting.
4. **Pisciculture** : The production of fish on a large scale by farming fish culture in fish nurseries (called hatcheries) is known as pisciculture.

V. Match the columns :

- | | | |
|-------------|-----------------|--------------------|
| Ans. | Column A | Column B |
| | 1. Ploughing | a. Cultivator |
| | 2. Scare-crow | b. Crop protection |
| | 3. Poultry | c. Chickens |
| | 4. Apiculture | d. Honey bees |

VI. Group Discussion :

Ans. Do yourself.

Microorganisms

Oral Questions:

- Ans. 1. Some organism are too small to be seen with naked eyes and are called micro organism.
 2. Antony van Leeuwin hock discovered micro organism.
 3. There are five major groups of microorganisms. They are :
 (i) Bacteria (ii) Fungi
 (iii) Algae (iv) Protozoa

Oral Questions:

1. Name the following :

- Ans. (a) Lactobacillus (b) yeast

2. Define the following :

- Ans. (a) **Fermentation** : The process of conversion of sugars in the absence of oxygen into alcohol is called fermentation.
 (b) **Antibiotic** : Antibiotic are chemical substances produced by microorganisms such as fungi and bacteria which kill or stop the growth of disease-causing microorganisms.
 (c) **Vaccine** : Vaccines are substances used to produce immunity to prevent disease in the living body. Immunity is the ability of the body to resist a disease by natural or artificial means.

Oral Questions:

1. Define the following :

- Ans. (a) **Pathogen** : Disease-causing microorganisms are called Pathogens.
 (b) **Communicable diseases** : Diseases which spread from one person to another through air, direct contact or food etc are called communicable is called dehydration.
 (c) **Dehydration** : Removal of water from the food materials.

2. Name the microorganisms which cause the following diseases :

- Ans. (a) Bacteria (b) Bacteria
 (c) Virus (d) Virus
 (e) Protozoa

Summative Assessment

A. Very Short-Answer Questions :

- Ans. 1. Study of microorganism is called microbiology.
 2. Milk contains a sugar called lactose.
 3. The micro-organisms which decompose the dead and decaying animals and plants and release the nutrients into the soil are called decomposers.
 4. Vaccines are substances used to produce immunity to prevent diseases in the living body. Immunity is the ability of the body to resist a disease by natural or artificial means.

B. Short-Answer Questions :

- Ans. 1. Micro gramism are found every where in air, water, soil and on the surface of object and living organism.
 2. Curd contains bacteria, the bacterium Lactobacillus which helps in the formation of curd. It converts the lactose present in the milk into lactic acid.
 3. Yeast is added to a mixture of flour with sugar and warm water to make bread. The yeast produces carbon-di-oxide which rises dough in volume.
 4. Yeast is used for the production of alcohol, wine and

beer on a large scale. For this, yeast is grown on plant materials that are rich in natural sugars such as grains like barley, wheat and rice and fruit juices.

Advantages of food Preservation—

5. (i) It reduces food wastage due to spoilage.
- (ii) Increases the shelf life (storage period) of food items.
- (iii) Ensures food availability during off season and in distant places.
- (iv) Maintains the nutritional value and flavour of food.

C. Long-Answer Questions :

- Ans. 1. Virus are smallest of all microorganisms, much smaller than a bacterium. Different use of micro organism are listed below. They are not cells and do not contain cell organelles. They are made up of genetic material surrounded by a protein coat.
 The uses of microorganisms use—
2. (i) In preparation of food items such as curd, bread and cheese.
 - (ii) In Industry to produce alcohol, wine and vinegar (acetic acid).
 - (iii) In agriculture to increase soil fertility by nitrogen fixation.
 - (iv) In preparation of medicines such as antibiotics and vaccines.
 - (v) For cleaning the environment.
 3. (a) Some microorganisms play an important role to clean our environment. Decomposers decompose the remains wastes of living organisms and release the nutrients into the soil. These nutrients increase the fertility of soil and are absorbed by plants.
 - (b) Certain microorganisms are used for the treatment of sewage. The sewage is made harmless by treating it and the biogas is produced in this process.
 4. (a) Antibiotics (anti =against; bios = life) are chemical substances produced by microorganisms such as fungi and bacteria which kill or stop the growth of disease-causing microorganisms.
 - (b) Vaccines are substances used to produce immunity to prevent diseases in the living body. Immunity is the ability of the body to resist a disease by natural or artificial means.
 5. A number of mushrooms (fungus) are edible. They are rich in proteins and vitamins. Yeast is an important source of food, being rich in proteins and vitamin of the B group.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do it yourself

Formative Assessment

I. Multiple Choice Questions :

- Ans. 1. b. 2. a. 3. c.

II. State whether the following statements are true (T) or false (F) :

- Ans. 1. True 2. True 3. False 4. True

III. Fill in the blanks :

- Ans. 1. Blue-green algae fix **Nitrogen** and increase soil fertility.
 2. Bacteria are **bigger** in size than viruses.
 3. Disease-causing microbes are called **pathogens**.

4. Alcohol is produced using yeast.

IV. Match the columns :

Ans.	Column A	Column B
1.	Aedes	c. Carrier of dengue virus
2.	Yeast	e. Bread making
3.	Biogas	d. Methane
4.	Luis Pasteur	a. Fermentation

- | | |
|----------------------|-----------------------------------|
| 5. Bacteria | g. Soil fertility-fixing nitrogen |
| 6. Female Anopheles | b. Malaria |
| 7. Alexander Fleming | f. Penicillium |

V. Seminars and Debate :

Ans. Do yourself.

VI. Research and Project :

Ans. Do it yourself.

3

Synthetic Fibres and Plastics

Oral Questions:

Ans. 1. Monomers 2. Rayon 3. Acrylic

Oral Questions:

- Ans. 1. Plastics are polymers. These may also consist of a linear polymer or a cross-linked polymer.
2. Those, plastics which can soften and get deformed when heated are called thermoplastics.
3. Thermoplastics can be bend and remoulded easily, while thermosetting plastics do not deformed on heating and are harden.
4. The first fully synthetic plastic was Bakelite. It was invented by Leo Baekeland, a US chemist in 1907 CE.

Summative Assessment

A. Very Short-Answer Questions :

- Ans. 1. Some fibres are made by chemical processes by man. These man-made fibres are called synthetic fibres Rayon, nylon, polyester and acrylic are examples of synthetic fibres.
2. Synthetic fibres are made of small units called monomers.
3. Rayon is known as artificial silk.
4. **Use of Rayon—**
(i) In textile industries for making cloth.
(ii) In making carpets, bedsheets and bandages.

B. Short-Answer Questions :

- Ans. 1. The plastics which can soften and get deformed when heated are called thermoplastics. Such plastics can be bend easily.
2. Plastic is probably a very common material around us. Comb, toothbrush, bucket, mug, pencil-box, lunch-box, bottle, container, chair, table, etc. are all made of plastics.
3. Acrylic is used for making sweaters, shawls, socks, sports-wear, etc. it is also used for making blankets, Jackets and rugs.
4. Acrylic is warm does not shrink stretch or wrinkle. It is soft and lightweight and long lasting. It is easy to wash and resistant to chemical and moth.

C. Long-Answer Questions :

- Ans. 1. Thousands of monomers (which are chemical substances) join together to form a large unit, called polymer. The word 'olymer' means many units (poly = many, meros = units). Polymers can be synthetic or natural. Natural fibres like wool, cotton and silk, are also polymers. Synthetic Polymers are made from chemicals in factories or laboratories.
2. Rayon is a synthetic fibre. It is obtained from naturally occurring polymer called cellulose. The properties of rayon are.
(i) Rayon is a good absorbent and cool to wear.
(ii) It does not shrink and has silk like appearance.

(iii) It can be easily dyed in various colours.

3. The uses of Rayon are :

- (i) In textile industries for making cloth.
(ii) In making carpets, bedsheets and bandages.
4. Nylon fibre is very strong and has high tensile strength. Rock-climbing ropes are made of nylon fibre, due to its high tensile strength and strongness.
5. There are mainly two types of plastics :
- (i) Thermoplastics : Plastics which can be soften and get deformed when heated are called thermoplastics PVC is an example of thermoplastics.
- (ii) Thermosetting plastics : Plastics which are hard and do not get deformed on heating, are called thermosetting plastics. Bakelite is an example of thermosetting plastic.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. 1. Do it yourself.

Formative Assessment

I. Multiple Choice Questions :

Ans. 1. c. 2. a. 3. a.

II. Fill in the blanks :

- Ans. 1. **Rayon** and **nylon** are synthetic fibres, whereas **cotton** and **silk** are nature fibres.
2. The small units that join to make a polymer are called **monomers**.
3. **Rayon** is a synthetic fibre obtained from a naturally occurring polymer called cellulose.
4. One of the most common forms of polyester is **PET** which is used for making **bottles**.
5. **Acrylic** is a synthetic fibre having wool-like feel.

III. State whether the following statements are true (T) or false (F) :

Ans. 1. False 2. False 3. True

IV. Differentiate between the following :

- Ans. 1. Thermoplastics are soft and get deformed when heated. Such plastics can be bend and remoulded easily while thermosettings are hard and can not be remoulded.
2. Rayon is a synthetic fibre obtained from a natural polymer called cellulose while Acrylic is a synthetic fibre which is used as a substitute of wool.
3. Natural fibres are obtained from plants and animals. Cotton, silk and wool are natural fibres some fibres are made by chemical processes by man. These man-made fibres are called synthetic fibres. Rayon, nylon, polyester and acrylic are examples of synthetic fibres.

V. Give reasons for the following :

- Ans. 1. Bakelite is very hard and do not get deformed on heating there fore Bakelite is used for making electrical plug and switches.
2. Nylon is used in making swimming suit because it acts as a water resistant.

3. Plastics are non-biodegradable so we should not throw it away on roads.

VI. Think zone.

Ans. Do it yourself.

Formative Assessment-I

1. Tick (✓) the correct option :

Ans. (a) iii. (b) iii. (c) ii. (d) iii.

2. Fill in the blanks :

Ans. (a) Bacteria are **bigger** in size than that of viruses.
 (b) Disease-causing microbes are called **pathogens**.
 (c) Synthetic fibres are made of small units called **monomers**.
 (d) **Rayon** is a synthetic fibre obtained from a naturally occurring polymer called cellulose.

3. State whether the following are true (T) or False (F) :

Ans. (a) False (b) True (c) True (d) True

4. Match the columns :

Ans.	Column A	Column B
(a)	Rabi crop	v. Winter
(b)	Ploughing	i. Cultivator
(c)	Scare-crow	ii. Crop protection
(d)	Poultry	iii. Chickens
(e)	Apiculture	v. Honey bees

5. Answer the following questions :

Ans. (a) Kharif crops is produced in rainy season.
 (b) Milk contains a sugar called lactose (milk sugar).
 (c) Decomposers are microorganisms which decompose the remainings of plants and animals and release them into soil.
 (d) Vaccines are substances used to produce immunity to prevent diseases in the living body. Immunity is the ability of the body to resist a disease by natural or artificial means.

4

Materials–Metals and Non-Metals

Oral Questions:

Ans. 1. The property of metals by which they can be beaten into thin sheets is called malleability.
 2. Gold and tungsten are two ductile metals.
 3. Iron and silver are two metals which are sonorous in nature.

Summative Assessment

A. Very Short–Answer Questions :

Ans. 1. (a) Aluminium is a good conductor of heat. So aluminium foils are used to wrap the food items.
 (b) Metals produce sound on striking each other therefore, metals are said to be sonorus.
 2. No, Aluminium can react with acids present in food stuffs.
 3. Most of the non metals do not react with acids because non-metals are not more reactive.
 4. Aqua regia is a highly corrosive, fuming liquid. It is one of the few reagents that is able to dissolve gold and platinum.

B. Short–Answer Questions :

Ans. 1. The property of metals by which they can be beaten into thin sheets is called malleability. Gold is the most malleable metal.
 2. The property by which the metals can be drawn into wires is called ductility. Gold and tungsten are highly ductile metals.
 3. Metals with high reactivity can combine with other atoms or molecules easily. So reactive metals are mostly found in compound forms.
 4. Potassium is the most reactive and gold is the least reactive metal.
 5. The materials which are soft and dull in appearance, break down into powdery mass, on tapping with hammer, are not sonorous and are poor conductors of heat and electricity, are called Non-metals. Example—Carbon, Sulphur

C. Long–Answer Questions :

Ans. 1. Metals are hard, lustrous, malleable, ductile, sonorous, and good conductors of heat and electricity. Non-metals are soft and dull in appearance, non-malleable, non-ductile, brittle and poor conductors of heat and electricity.

Iron, copper, aluminium, calcium and magnesium are metals while sulphur, carbon, oxygen are non-metals.

2. Metals are used widely around us due to their properties. Iron is used for making bridges, houses and other articles due to its high tensile strength. Copper and silver are used for making wire and utensils.
 3. Do it yourself.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions :

Ans. 1. c. 2. a. 3. b.

II. Match the column :

Ans.	Column A	Column B
1.	Gold	(d) Jewellery
2.	Iron	(e) Machinery
3.	Aluminum	(c) Wrapping food
4.	Phosphorus	(f) Non-metal
5.	Copper	(b) Electric wire
6.	Mercury	(a) Thermometers

III. Fill in the blanks :

Ans. 1. Phosphorus is very **reactive** non-metal.
 2. Metals are **good** conductor of heat and **electricity**.
 3. Iron is **more** reactive than copper.
 4. Metals react with acids to produce **hydrogen** gas.
 5. Majority of **non-metals** do not react with acids **Sulphur**, however, reacts with hot concentrated HNO₃ to produce SO₂.
 6. Aluminium is a good **Conductor** of electricity.

IV. State whether the following statements are true (T) or false (F) :

Ans. 1. False 2. True 3. True
 4. False 5. True 6. True

V. Tick (✓) The odd one out giving reason :

Ans. 1. **Sodium** is a non-metal.
 2. **Calcium** It is a metal.
 3. **Brittle** is the property of non-metals.
 4. **Co₂** It is a gas.
 5. **Mercury** is liquid metal at room temperature.

VI. Project :

Ans. Do it yourself.

Oral Questions:

- Ans.** 1. Coal, Petroleum, LPG and CNG are exhaustible resources.
 2. Fossil fuels are formed over thousands of years due to decomposition of buried plant and animal matter.
 3. Peat, Lignite, Bituminous and Anthracite are varieties of coal.

Summative Assessment**A. Very Short-Answer Questions :**

- Ans.** 1. Fossil-fuels can not be used again once exhausted so they are called as non-renewable source of energy.
 2. Smoke Combines with winter fog to form a highly toxic mixture called smog.
 3. The process of obtaining various fractions or components of petroleum is known as 'Refining'.

B. Short Answer questions :

- Ans.** 1. Peat, Lignite, Bituminous and Anthracite are four varieties of coal. Anthracite has the highest carbon content 80% with very little moisture.
 2. The solid residue left behind during the destructive distillation of coal is coke. It contain about 95-98% of carbon. Coke is used in steel and iron industry and to manufacture artificial graphite.
 3. The Natural gas occurs at a depth of 500-200m between layers of impervious rocks over petroleum deposits. CNG (Compressed natural gas) is being used widely in vehicles as substitute of petrol.
 4. Coal, petroleum, natural gas are the non-renewable resources. If we continue to use these resources

C. Long-Answer Questions :**Ans. DESTRUCTIVE DISTILLATION OF COAL**

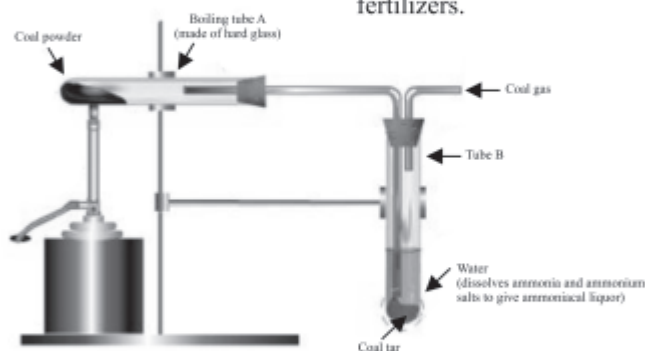
The Process of breaking of coal into simpler substances upon heating in the absence of air is known as destructive distillation of coal. We get many products like coke, coal-tar, coal gas etc. during this process.

Various products obtained are—

- Coke — It is used to manufacture artificial graphite and in iron and steel industries as fuel.
- Coal-gas — Coltar yield Benzene used in Dye, Toluene used in manufacture of

explosive like T.N.T Naphthalene is used at home to protect woolen garments.

- Coal-gas — It is used in as an illuminant as are fuel for industries.
- Ammoniacal Liquor — It is used in manufacture of fertilizers.



Destructive distillation of coal in a laboratory

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment**I. Multiple Choice Questions :**

- Ans.** 1. a. 2. c. 3. c.

II. Fill in the blanks :

- Ans.** 1. Coal, petroleum and **Natural gas** are fossil fuels.
 2. In India petroleum wells are located at **Assam** and **Mumbai**.
 3. Coal is obtained from **Coal mines**.
 4. The residue left after the destructive distillation of coal is **Coke**.
 5. Natural gas consists of 95% **Methane** and 5% **ethane** and **propane**.

III. Match the columns :

- | Ans. Column A | Column B |
|----------------------|----------------------|
| 1. Coke | c. Reducing agent |
| 2. Lignite | d. A form of coal |
| 3. Renewable | e. wind energy |
| 4. Fuel oil | a. Industrial oil |
| 5. Smog | b. Formed in winters |

Oral Questions:

- Ans.** 1. Oxygen gas 2. Ignition temperature.
 3. LPG has lower Ignition temperature

Oral Questions:

- Ans.** 1. Outermost part.
 2. Carbon monoxide (CO) is a poisonous gas.
 3. Digestion in human beings is a slow combustion.

Oral Questions:

- Ans.** 1. LPG and Kerosene are used for cooking.
 2. Liquid fuel—Petrol, Gaseous fuel—LPG.
 3. Biogas is obtained from cattle dung.
 4. Ideal Fuel.
 5. Joule per kilogram is the unit of calorie value of fuel.

Oral Questions:

- Ans.** 1. Carbon-di-oxide (CO₂) leads global warming.
 2. Oxides of sulphur and Nitrogen causes acidic rain.
 3. Carbon di-oxide is a heat trapping gas. When the quantity of CO₂ increases the temperature of the earth also increases. This is called Green House Effect.

Summative Assessment**A. Very Short-Answer Questions :**

- Ans.** 1. Combustible substances.
 2. Ignition temperature.
 3. Carbon monoxide
 4. Outermost zone.

B. Short-Answer Questions :

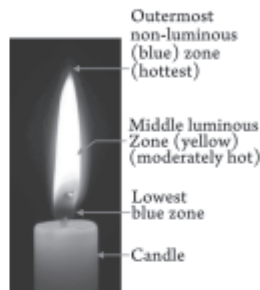
- Ans.** 1. The Presence of combustible substance and a supporter of

combustion are two necessary conditions for combustion.

- A blue-coloured flame which produces very little is called non-luminous flame. A non-luminous flame is obtained when the fuel is completely burnt. A luminous flame is obtained when a fuel undergoes partial combustion.
- Burning of coal and petroleum produces carbon dioxide (CO₂) and carbon monoxide (CO). CO₂ is a green house gas and CO is a poisonous gas.

C. Long-Answer Questions :

- Ans.** 1. The substances which burn in air or oxygen are called combustible substances.
For example, petrol, LPG (cooking gas), wax, kerosene, paper, cloth, wood, coal, etc., are combustible substances.



The Candle flame

2. The Candle flame :

- A combustible substance which on burning produces a large amount of heat and light is called a fuel. Fuels are classified as solid, liquid and gaseous fuels.
 - Solid fuels : Coal, coke, wood, charcoal
 - Liquid fuels : Petrol, Diesel, Kerosene
 - Gaseous fuels : Natural gas, LPG, Biogas etc.

D. Higher Order Thinking skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions :

- Ans.** 1. d. 2. b. 3. b. 4. c.

II. Write one word for the following :

- Ans.** 1. Combustion 2. Supporter of Combustion.
3. Incomplete combustion.

III. Match the columns :

Ans.	Column A	Column B
1.	Combustible substance	(ii) Fuels
2.	Carbon dioxide	(i) Fire fighting
3.	Hydrocarbons	(v) Paper
4.	Hottest part of the candle flame	(iii) Complete combustion
5.	Calorific value	(iv) Kilo-joule per gram

IV. Tick (✓) The odd-one out giving reason :

- Ans.** 1. Water; It is a non-combustible substance.
2. Alcohol; It is not used as a fuel.
3. Carbon mono oxide; It is a poisonous gas.

V. Define the following terms :

- Ans.** 1. **Ignition temperature :** The lowest temperature up to which a substance must be heated before it catches fire is called its ignition temperature.
2. **Complete combustion :** Combustion in the presence of excess (or sufficient) oxygen or air is called complete combustion.
3. **Luminous flame :** A yellow flame which produces heat and appreciable amount of light is called a luminous flame.
4. **Flame :** A flame is the shining zone in which a combustible gaseous material undergoes combustion producing heat and light.

VI. Group Discussion :

Ans. Do yourself.

Formative Assessment-II

1. Tick (✓) the correct option :

- Ans.** (a) i. (b) ii. (c) iii.

2. Fill in the blanks :

- Ans.** (a) Phosphorus is very **reactive** non-metal.
(b) Metals are **good** conductor of heat and **electricity**.
(c) Coal, petroleum and **Natural gas** are fossil fuels.
(d) Carbon monoxide is the most dangerous air pollutant.

3. State weather the following statements are true (T) or false (F) :

- Ans.** (a) False (b) True (c) True (d) False

4. Match the following :

Ans.	Column A	Column B
1.	Gold	d. Jewellery
2.	Iron	e. Machinery
3.	Aluminum	c. Wrapping food
4.	Carbon	f. Fuel
5.	Copper	b. Electric wire
6.	Mercury	a. Thermometers

5. Answer the following questions :

- Ans.** (a) The property by which the metals can be drawn into wires is called ductility.
(b) Most reactive metal-Potassium (K) Least reactive metal-Gold (Au)
(c) Petrochemicals are the fuels formed over thousands of years due to decomposition of buried plant and animal matter and are used to produce heat, energy and light.
(d) Depletion of non-renewable sources of energy is known as energy crisis.
(e) Outermost zone is the hottest zone in candle flame.

Oral Questions

- Ans.** 1. A Sanctuary is an area where killing or capturing of any species of wild animals is prohibited.
2. The species of plants and animals which are found exclusively in a place or biota are called the endemic species.
3. A biosphere reserve includes one or more protected areas and surrounding lands that are managed to combine both conservation and sustainable use of

natural resources.

Summative Assessment

A. Very Short-Answer Questions :

- Ans.** 1. A National Park is an area dedicated by statute for all time to conserve the wild life.
2. Project Tiger was launched on 1st April, 1973 by our government to protect the tiger of the country. The objective of this project is to ensure the maintenance of a visible population of tigers in our country.

- Such animals whose numbers are diminishing and are facing extinction are known as endangered animals.
- Red Data Book is the source book which keeps the record of all endangered animals and plants.

B. Short-Answer Questions :

- Ans.**
- All the plants, animals and microorganisms are linked to each other and form ecosystem and food chain. We should conserve the biodiversity to maintain ecosystem and food chain.
 - Reforestation is restocking of the destroyed forests by planting new trees.
 - The species of plants and animals which are found exclusively in a place or biota are called the endemic species.
 - The causes and consequences of deforestation are—**
 - Procuring land for agriculture.
 - Making of furniture.
 - Building houses and factories.
 - To be used as fuel.
 - The Recycling is a process in which the substances which are wasted, are changed into a new usable substances.
 - The annual movement of animals from one habitat to other during particular time because of climatic change is known as Migration.

C. Long-Answer Questions :

- Ans.**
- A wild life sanctuary is an area where wild animals are protected and preserved to provide them habitat. A biosphere reserve is a unique concept which includes one or more protected areas and surrounding land that are managed to combine both conservation and sustainable use of natural resources.
 - A zoo is a place where animals are kept in cage and for people entertainment. A sanctuary is an area where wild animals are protected and preserved to provide them habitat.
 - Endangered refers to diminishing the species while extinct refers to a species that no longer exists.
 - Fauna is the community of animals in a specific region or habitat while flora refers to the plant life of a specific area or habitat.
 - Wild animals will not get herbivores to eat.
 - Environment will be polluted.
 - The life in Rural are as depend on Agriculture and forest. The people will not get food and life supporting

environment.

(d) Urban areas will suffer from drought and flood.

(e) The life will not exist on Earth.

(f) There will be no next generation without trees.

- The Environment Will be polluted. We will not be able to grow crops due to soil erosion. The people has to face the problems of drought, flood, thunder storm, cyclone etc.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions :

Ans. 1. a. 2. d. 3. d.

II. Match the columns :

Ans.	Column A	Column B
1.	Migration	(f) Surkhab bird
2.	Reforestation	(d) Planting new trees
3.	Desertification	(e) Cleaning of forests
4.	Biosphere reserve	(a) Areas meant for conservation of biodiversity
5.	Flora	(b) The plant found in a particular area
6.	Fauna	(c) The animals found in a particular area

III. Fill in the blanks :

- Ans.**
- A place where animals are protected in their natural habitat is called **Wild-life Sanctuary**.
 - Species found only in a particular area is known as **Endemic species**.
 - Migratory birds fly to far away places because of **Climate** changes.
 - Satpura** National Park is the first reserve forest of India.

IV. State weather the following statements are true (T) or false (F) :

- Ans.** 1. False 2. False 3. True
4. True 5. True

V. Tick (✓) the odd-one out giving reason :

- Ans.**
- Red Data Book**; It is a book related to endangered species.
 - Cheetal**; Fauna of pachmarhi.
 - Jamun**; Flora of Pachmarhi Bioreserve
 - Endemic species**; It is a species found in a particular area.

VI. Project :

Ans. Do yourself.

8

The Cell

Oral Questions:

1. Define the following :

- Ans.**
- Cell is the basic unit of structure and function of an organism.
 - Unicellular Organism consisting of single cell.
 - Organisms consisting of more than one cell : are called multicellular (multi = many; cellular = cell) organism.
 - Tissue is a group of cells of the same size, shape and function.
 - Organ is a structure that contains more than one type of tissue.

(f) A group of organs working together is called an organ system.

2. Name the following :

- Ans.**
- In our body, Nerve cells are the largest cells.
 - The gaurd cells.

Oral Questions:

1. Define the following :

- Ans.**
- The cell membrane is a thin outer covering of a cell.
 - Cytoplasm is the jelly-like fluid which occupies the space between the cell membrane and the nucleus.
 - A spherical structure present in the centre of the cell which is surrounded by the cytoplasm is called Nucleus.

- (d) Cell wall is the additional covering layer around the cell membrane in a plant cell.
 - (e) Plastids are the plant cell organelles. Chloroplast is a plastid which contains a green pigment called chlorophyll.
 - (f) Cytoplasm contains a number of small structures called organelles.
2. Bacteria and blue-green algae are the examples of prokaryotic organisms.

Summative Assessment

A. Very Short–Answer Questions :

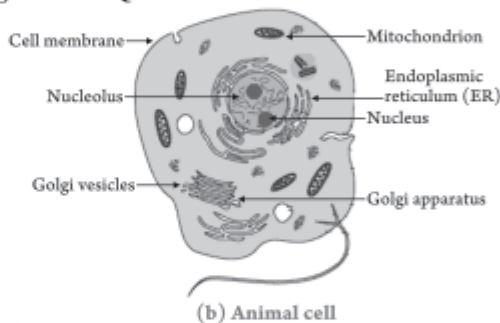
- Ans.** 1. Cell is the basic unit of structure and function of an organism.
2. Tissue is a group of cells of the same size, shape and function.
3. A group of organs working together is called an organ system.
4. The living substance of a cell is called protoplasm.

B. Short–Answer Questions :


- Ans.** 1. Robert Hooke discovered cell in 1665 CE.
2. Cells are usually grouped together to make tissues, organs, organ systems and finally organisms.
3. (i) Cell membrane (ii) Cytoplasm (iii) Nucleus.
4. Such cells which lack a nuclear membrane are called prokaryotic cells (pro = before; karyon = nucleus).

C. Long–Answer Questions :

Ans. 1.

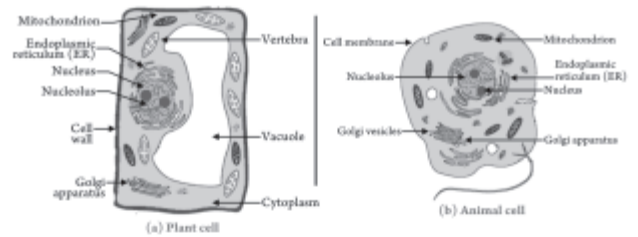


(b) Animal cell

2.  Nerve cells are long because they originate from the brain and reach the central nervous system.
3. The cell is the structural unit of living organisms

because cells are grouped together to make tissues, organs, organ systems and finally organisms.

4.



D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions :

- Ans.** 1. c. 2. c. 3. a.

II. Name the following :

- Ans.** 1. Cell membrane/Plasma membrane
2. Cork of wood.
3. Nuclear Membrane.
4. Cell organelles.

III. Fill in the blanks :

- Ans.** 1. Cells are organized to form **tissue**.
2. Genes are found in **Nucleus**.
3. The largest cell is of a/an **ostrich's egg**.
4. Yeast is a/an **unicellular** organism.
5. White blood cells are **irregular**.

IV. Match the columns :

Ans.

- Column A**
1. Mitochondrion
 2. Chloroplasts
 3. Organ
 4. Amoeba
 5. Protoplasm
 6. Nucleus
 7. Chromosomes
 8. Bacteria

Column B

- d. Powerhouse of the cell
- e. Green plastids
- f. Contains more than one type of tissues
- c. Prokaryotic centre of the cell
- h. Living substance of the cell
- b. Control centre of the cell
- a. Carry genes
- g. Unicellular organism

V. Sample Study :

Ans. Do yourself.

Reproduction in Animals

Oral Questions:

- Ans.** 1. Reproduction ensures the continuation of similar kinds of the individuals generation on after generation.
2. Asexual reproduction and sexual reproduction.
3. In asexual reproduction only single parent produces new individual whereas sexual reproduction requires two parents with different sexes— male and female.

Oral Questions:

- Ans.** 1. The nuclei of the sperm and egg fuse to form a single nucleus which is called a fertilized egg known as zygote which is the beginning of a new individual.
2. Reproduction in humans and Animals are two examples of sexual reproduction.
3. Male gametes : Testes
Female gametes : Ovary
4. (i) **Binary fission** : The process of reproduction in

which single parent cell (with nucleus) is divided into two cells.

- (ii) **Budding** : The parent cell produces a bud, this bud is detached and form the new cell.

Summative Assessment.

A. Very Short–Answer Questions :

- Ans.** 1. Asexual reproduction requires one parent while sexual reproduction is carried by two different parents-male and female.
2. Sperms are the male gametes.
3. The nuclei of the sperm and egg fuse to form a single nucleus which is called a fertilized egg known as zygote which is the beginning of a new individual.

B. Short–Answer Questions :

- Ans.** 1. Sexual reproduction involves two individuals belonging to two different sexes—male and female. Both male and female produce specialized sex cells

called gametes. Males produce male gametes (sperms) in testes and females produce female gametes (eggs) in ovaries.

2. Metamorphosis is a process of changing in the cell due to nature. Frogs and fishes are the examples of animals which undergo metamorphosis.
3. **Internal fertilization** : When the fertilization occurs inside the body of female. It is called internal fertilization. Fertilization in human beings is internal.
External fertilization : When the eggs are fertilized outside the body of the female, it is called external fertilization. Fertilization in animals like frog and fish is external.
4. Fertilization in humans is internal. The reproductive system in human female has a pair of ovaries and fallopian tubes. Each ovary produces ova. Fertilization occurs in the fallopian tubes.

C. Long-Answer Questions :

- Ans.** 1. The animals that give birth to young ones are termed as viviparous animals and those which lay eggs are called oviparous animals.
2. Male Reproductive system
Organs of the male reproductive system are :
- (i) Testes : A pair of testes lies in a small sac like structure called the scrotal sac. The function of testes is to produce sperms (male gametes).
 - (ii) Epididymis : It stores sperms. Sperms become active and develop motility.
 - (iii) Vas deferens : It is a duct which carries sperms from the testes to the penis for ejaculation.
 - (iv) Penis : It is used for ejecting and depositing sperms in the female genital tract.

D. Higher Order Thinking Skills (HOTS) Question :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions :

Ans. 1. b. 2. c. 3. c.

II. Fill in the blanks :

- Ans.** 1. Fertilization is the process by which male and female gametes fuse to form a **zygote**.
2. The function of testes is to produce **sperms**.
3. Ovaries produce **ova**.

III. State weather following statements are true (T) of false (F) :

- Ans.** 1. True 2. True 3. False
4. False 5. True

IV. During swimming in it.

Ans. Do yourself.

V. Ask of plants.

Ans. Do yourself.

Summative Assessment-I

I. Fill in the blanks :

- Ans.** (a) Alcohol is produced using **yeasts**.
(b) PVC is used for making **hose pipes**.

(c) Phosphorus is very **reactive** non-metal.

(d) Coal, petroleum and **Natural gas** are fossil fuels.

(e) Species found only in particular area is known as **Fauna**.

2. State weather the following statements are true (T) of false (F) :

- Ans.** (a) False (b) False (c) False
(d) True (e) False

3. Very Short-Answer Questions :

- Ans.** (a) Cheese and Butter.
(b) The sugar present in the milk is called lactose.
(c) The fibres which are obtained from petroleum and synthesised by man are called synthetic fibre.
(d) Petrochemicals are the fuels which are used to produce heat and energy.
(e) Outermost zone is the hottest zone of candle flame.

4. Short-Answer Questions :

(a) Difference between a Manure and a Fertilizer

- Fertilizer**
1. A Fertilizer provides a specific nutrient to the soil.
 2. A Fertilizer has a high concentration of plant nutrients.

Manure

1. A Manure provides more than one nutrients to the soil.
 2. A Manure has low concentration of soil nutrients.
- (b) Plastics are durable. It does not corrode and do not become dull. It can be shaped and coloured easily.
- (c) Most of the non-metals do not react with acids because they can not lose electrons and are not more reactive.
- (d) Coal, petroleum, natural gas are the non-renewable resources. If we continue to use these resources
- (e) The annual movement of animals from one habitat to other during a particular time because of climatic change is known as Migration.

5. Long-Answer Questions :

- Ans.** (a) Mulching is the process of adding manure and compost to agricultural field. These are rich in nutrients and improves the physical and chemical properties of the soil.
- (b) Viruses are the smallest of all microorganisms, much smaller than a bacterium. They are not cells and do not contain cell organelles. They are made up of genetic material surrounded by a protein coat.
- (c) Polymers have properties which make them very useful. Some of them are as follows :
- Polymers do not corrode or rust.
 - They can be produced in various colours.
 - They can be given different shapes.
- (d) Cells are the basic structural units of a organisms because cells are grouped together to make tissues, organs, organ systems and finally organisms.
- (e) Binary fission is the process of reproduction in which a single parent is divided into two new individuals with nucleus. Each daughter cell receive one nucleus and develop into new organism.

Oral Questions

- Ans.** 1. The Nervous system control all other systems and functions of the body.

2. Hormones are produced by endocrine glands and are directly released in blood stream. Though, hormones reach every nook and the corner of the body through

blood stream, but they show their effect at a particular part only. This part or site is called target site.

- Male hormones : Testosterones, Female hormones : Estrogen.

Summative Assessment

A. Very Short-Answer Questions :

- Ans.** 1. There are many endocrine glands in our body which control different functions of body and its parts.
 2. Insulin controls the sugar level in blood.
 3. Pituitary gland is called the master endocrine gland.
 4. Estrogen : Egg Production. Testosterone : Sperm Production.

B. Short-Answer Questions :

- Ans.** 1. Adolescence is the period of life, when the body undergoes changes leading to reproductive maturity. Puberty is the period when changes occur in the body to make sex organs mature and capable of reproduction.
 2. Some changes take place both in boys and girls which are visible externally as well. These changes are termed as secondary sexual characters.
 3. The secondary sexual characteristic of a female during adolescence are—
 (i) Development of breasts takes place, menstruation starts.
 (ii) Lower region below the waist starts broadening.

C. Long-Answer question :

- Ans.** 1. The following precautions should be taken during the age of adolescence by the girls and boys.
 (i) The boys and girls should not fear and ashamed on growing reproductive organs. They should have proper understanding of the reproductive organs and their importance in the life.
 (ii) They should avoid bad habits.
 (iii) They should ask questions if they have some doubts.

D. Higher order Thinking Skills (HOTS) Question :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions :

- Ans.** 1. b. 2. a. 3. a. 4. d.

II. Fill in the blanks :

- Ans.** 1. Hormones are secreted by **endocrine** glands.
 2. Estrogen is secreted by the **ovary**.
 3. **Mammary** glands produce milk.
 4. FSH is called **Follicle stimulating Hormone**.

III. Unscramble the following (Name of the hormones) :

- Ans.** 1. THYROID 2. INSULIN

IV. Research/Project :

Ans. Do yourself.

Oral Questions:

Fill in the blanks :

- Ans.** 1. The words as kick, hit, throw, etc. indicate the action of a **Force**.
 2. A **push** or a **pull** is defined as a force.
 3. An **interaction** between at least two object is must to generate a force.

Oral Questions:

- Ans.** 1. The study of charged objects and their behaviour is known as electrostatics.
 2. Force which acts by directly touching the object is known as contact force.
 3. Friction is a natural force which opposes motion.

Oral Questions:

Fill in the blanks :

- Ans.** 1. Force applied per unit area is called **Pressure**.
 2. Pillars of bridges have **large** bases.
 3. Liquids exert pressure in all **directions**.

Summative Assessment

A. Very Short-Answer Questions :

- Ans.** 1. A push or pull is called force.
 2. A Natural force which opposes motion is called friction.
 3. Gravitational force is a Natural force of attraction between any two bodies of any mass in this universe.

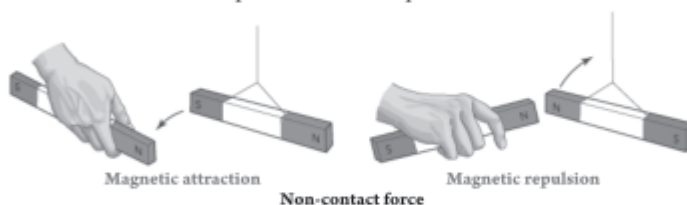
B. Short-answer Questions :

- Ans.** 1. The Atom contains positively charged particles called protons (p^+) and negatively charged particles known as electrons (e^-). Due to having these particles, a body gets charged on rubbing.
 2. There are two types of forces— contact force and Non-contact force.
 (i) **Contact force** : Muscular force, frictional force

are contact force.

(ii) **Non-contact force** : Magnetic force, force of gravity, electrostatic force are Non-Contact force.

- A north pole of a magnet repels (pushes) another north pole from a distance. It attracts (pulls) a south pole and even small pieces of iron or pins from a distance.



C. Long-Answer Questions :

- Ans.** 1. The life on earth is receiving the basic necessities due to the gravity of earth. The gravitation force attracts every object towards it. It holds the atmosphere and support to life.
 2. The tips and edges of cutting and piercing tools are made sharp because the pressure and area are inversely related. The sharp tips and edges exert more pressure and cut the things easily.
 3. Take a throwaway soft drink glass, made up of paper or plastic. Make three small holes on the sides of the glass, about 3 cm above the base of the glass with the help of a pin. Let all the holes be at the same height from the base of the glass. Fill up the glass with water. Observe the water coming out from the holes. Water comes out from the three holes with a force and falls at a distance from its base. Note that there had been no pressure due to the



liquid (water) in the glass, the water would have leaked out from the holes and flown along the sides of the glass.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions :

Ans. 1. a. 2. a.

II. Fill in the blanks :

- Ans.** 1. A force can cause a change in **direction** and **shape** of an object.
 2. An **interaction** between two objects causes a force.
 3. Liquids exert **pressure** in all directions.
 4. A force applied by direct touching an object is called a **contact-force**.
 5. Gravitational force is an example of **Non-contact**.

III. Give one word for the following :

Ans. 1. Force of gravity. 2. Force.

IV. State Whether the following statements are true or false. If false, write the correct statements :

- Ans.** 1. True
 2. False ; A player kicking a football is an example of a contact force.
 3. False ; Liquids and gases apply pressure.

V. Match the columns :

Ans. **Column A** **Column B**
 1. Earth revolving around the Sun (c) Gravitational force

2. A force applied by touching (a) Contact force
 3. Force between two charged objects (f) Electrostatic force
 4. Bloating of the tube of a cycle-tyre (b) Air pressure
 5. Force applied per unit area (d) Pressure
 6. Pressure that balances blood and fluid pressure in our body (c) Atmospheric pressure

VI. Tick (✓) the odd-one out giving reason :

Ans. 1. **Electrostatic force** Non-contact force.
 2. **Throw** Contact force.

VII. Define the following :

Ans. 1. A push or pull is called force.
 2. The force acting per unit area is called pressure.

VIII. Differentiate between the following :

Ans. 1. Force which acts by directly touching the object is called contact force. Force which acts from a distance, without directly touching the object is called non-contact force.
 2. The force due to the presence of electric charges is called electrostatic force whereas the mutual force of attraction between any two objects having mass is called gravitational force.

IX. Give reasons for the following :

Ans. 1. Force of friction.
 2. Force of gravity.

X. Think zone :

Ans. Do yourself.

12

Friction

Oral Questions:

- Ans.** 1. Force of friction.
 2. The symmetrical shape of boat, aeroplane etc. is called Streamlined shape.
 3. The lubricant oil is poured on the moving part of a machine to reduce the force of friction.

Summative Assessment

A. Very Short-answer questions :

- Ans.** 1. Yes, The force of friction always opposes the motion.
 2. On polishing two rough surfaces, the friction between the two decreases.
 3. Friction is a contact force.
 4. It will become less hot.
 5. The wrestlers rub soil on their hands for better and firm grip.

B. Short-answer Questions :

- Ans.** 1. We generally sprinkle a little talcum powder on a caromboard to reduce the force of friction.
 2. It is more difficult to pull a boat on the beach than on the sea because force of friction is less in water than land.
 3. The automobiles tyres are made corrugated and rough to increase friction between the lining and rim/drum of the wheel.

C. Long-Answer Questions :

- Ans.** 1. (i) Nails and screws hold the wooden boards/wall together due to friction.
 (ii) We are able to walk on the road due to the friction between the ground/road and the soles of our shoes.
 2. Friction is wasteful. It causes loss of energy and also causes wear and tear of machines.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions :

Ans. 1. c. 2. c. 3. a.

II. Write one word for the following :

Ans. 1. Frictional force. 2. Rolling friction.

III. Match the columns :

Ans. **Column A** **Column B**
 1. Friction (c) Self-adjusting force
 2. Ball-bearing (d) Decrease friction
 3. Streamlined shape (a) Fish
 4. Brake-lining (e) Increase friction
 5. Hills and valleys on the rough surface (b) Interlocking

IV. Tick (✓) the odd-one out giving reason :

Ans. 1. **Highly polished surfaces** Force of friction is low between highly polished surfaces.
 2. **Sand** It is used to reduce the friction.

V. Define the following :

Ans. 1. (i) The force of friction is caused by the interlocking of surfaces.
 (ii) Due to the force of adhesion between two surfaces.
 2. (i) By Polishing the surfaces.
 (ii) By applying oil or grease on the surfaces.

VI. Group Discussion :

Ans. Do yourself.

VII. Group Activity :

Ans. Do yourself.

Formative Assessment-III

1. Tick (✓) the correct option :

Ans. (a) i. (b) iv. (c) i. (d) i.

2. Fill in the blanks :

Ans. (a) Estrogen is secreted by the **ovary**.
 (b) **Mammary** glands produce milk.
 (c) Gravitational force is an example of **Non-contact** force.
 (d) Liquids exert **pressure** in all directions.

3. State whether the following statements are true (T) or false (F) :

Ans. (a) False (b) False (c) False (d) True

4. Match the following :

Ans. **Column A** **Column B**
 1. Earth revolving around the Sun (c) Gravitational

- force
 2. A force applied by touching (a) Contact force
 3. Force between two charged objects (d) Electrostatic force
 4. Bloating of the tube of a cycle tyre (b) Air pressure

5. Answer the following questions :

Ans. (a) There are many endocrine glands in the body which control different functions of body and its parts.
 (b) The force which opposes the motion of a body over another is called force of friction.
 (c) The force applied per unit area is known as the pressure.
 (d) The force which opposes the motion of a body over another is called force of friction.

13

Sound

Oral Questions:

Ans. 1. The sound is a form of energy.
 2. The vibrating body produces sound.
 3. No, all vibrating bodies do not produce sound. for example. vibration of fingers do not produce any sound.
 4. The number of oscillations per second is called frequency.

Oral Questions

Ans. 1. 20 Hz to 20,000 Hz
 2. The sounds having frequency greater than 20,000 Hz are called. Ultrasonic sound.
 3. The sounds having frequency less than 20 Hertz are called Infrasonic sound.

Summative Assessment

A. Very Short-Answer Questions :

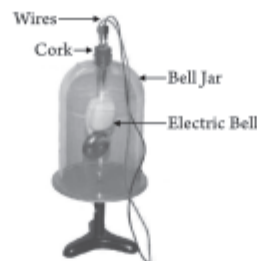
Ans. 1. In Human beings, the sound is produced due to the vibration of larynx in vocal cord.
 2. Pitch is a sensation which determines the shrillness of the sound. High pitch sound is more shrill than low pitch sound.
 3. Loudness depends upon the amplitude of vibration of the vibrating body whereas pitch is frequency perceived by a listener.

B. Short-Answer Questions :

Ans. 1. (i) 30 dB — whisper
 (ii) 50 dB — Normal conversation.
 (iii) 80 dB — Busy traffic
 (iv) 120 dB — Siren
 (v) Above 150 dB — Jet airplane.
 2. No. of oscillations = 30
 Time = 1 minute = 60 seconds
 Time period (T) = Total time/No. of oscillations.
 = 60/30 = 2 seconds
 Frequency = 0.5 Hz
 3. Music is that sound which is produced by a series of similar pulses, following each other regularly and rapidly at equal intervals of time whereas noise is a sound which is produced by a series of dissimilar pulses, following each other irregularly and slowly at unequal intervals of time.
 4. Noise can damage the ears, cause tiredness and loss of concentration and, if it is very loud, result in sickness and temporary deafness.

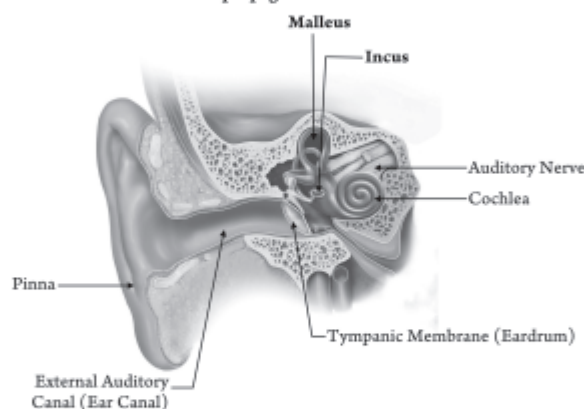
C. Long-Answer Questions :

Ans. 1. Sound in humans is produced by the voice box or the larynx. Two vocal cords are stretched across the larynx in such a way that it leaves a narrow slit between them for the passage of air. When the lungs force air through the slit, the vocal cord vibrates.
 2. Like all mechanical waves, sound too requires a medium to propagate. Sound can not travel through vacuum. This can be easily demonstrated by the famous bell jar experiment.



Experiment to demonstrate that sound requires a medium to propagate.

3.



Anatomy of the ear. The ear converts pressure waves into electrical pulses that are interpreted by the brain as sound.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions :

Ans. 1. b. 2. b. 3. c.
 4. a. 5. c.

II. Fill in the blanks :

- Ans. 1. Any vibrating body produces **sound**.
2. The number of vibrations per second is called **frequency**.
3. Time taken by an object to complete one oscillation is called **time period**.
4. Loudness is determined by the **amplitude** of vibration.
5. the unit of frequency is **Hertz (Hz)**.
6. Ultrasonic's are frequencies greater than **20 kHz**.
7. Galton whistle produces sound of frequency greater than **30 kHz**.
8. Unwanted sound is called **noise**.

III. State whether the following statements are true (T) or false (F) :

- Ans. 1. False 2. False 3. True

4. False 5. False 6. False
7. True 8. False 9. True
10. True

IV. Tick (✓) the odd-one out giving reason :

- Ans. 1. **larynx** It produces sound.
2. **windpipe** It is an organ related to respiratory system.

V. Match the following :

- | Ans. Column A | Column B |
|--------------------|-------------------|
| 1. Eardrum | d. Detects sound |
| 2. Larynx | a. Produces sound |
| 3. Harmonium | b. Music |
| 4. Lumberjack | c. Noise |

VI. Project for You :

- Ans. Do yourself.

14

Chemical Effects of Electric Current

Oral Questions:

I. Define the following terms :

- Ans. (a) The liquid which conducts electricity and undergoes decomposition is called Electrolyte.
(b) Materials which do not allow electric current to flow through them are called insulator.
(c) the flow of electric charge is called electric current.
2. The liquids which can be decomposed into positive and negative ions are called good electrolytes.

Oral Questions:

I. Give one word for the following :

- Ans. (a) Potassium (K) (b) Chromium

Summative Assessment

A. Very Short-Answer Questions :

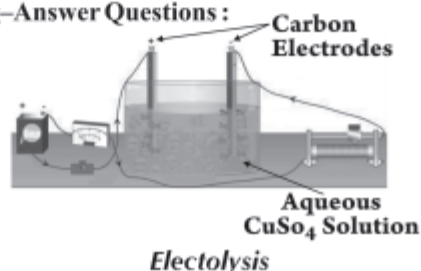
- Ans. 1. An ion is an atom or a molecule with an electric charge created by losing or gaining one or more electrons.
2. The process of decomposition of electrolyte solution into ions on passing current through it, is called electrolysis.
3. All metals, alloys of metals, electrolytes, rainwater etc. are good conductors.

B. Short-Answer Questions :

- Ans. 1. Electricity is the movement of charges through a body and the flow of electric charge is called current.
2. **Conductors** : Conductors are the materials which allow electric current to flow through them. All metals, alloys of metals, electrolytes, rainwater etc. are good conductors.
Insulators : Insulators are the materials which do not allow electric current to flow through them. For example, distilled water, plastic, wood, rubber are insulators.
3. The liquid which conduct electricity and undergoes decomposition is called an electrolyte. Mostly liquids that conduct electricity are solution of acid, base and salts.

C. Long-Answer Questions :

- Ans. 1.



2. (a) 1. Electroplating is widely used to prevent corrosion. For example, chromium has a shiny appearance and it does not corrode.
2. Jewellers electroplate silver and gold on less expensive metals.
(b) Electroplating is a process of depositing a thin layer of one metal over another metal by the method of electrolysis.
(c) Electricity is the movement of charges through a body and the flow of electric charge is called current.

D. Higher Order Thinking Skills (HOTS) Questions :

- Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions :

- Ans. 1. c. 2. a. 3. a.

II. State whether the following statements are true (T) or false (F) :

- Ans. 1. False 2. True 3. True 4. True

III. Fill in the blanks :

- Ans. 1. The article to be electroplated is made the **anode** and the metal to be deposited is made the **cathode**.
2. Iron is coated with **zinc** to protect it from corrosion.
3. Electrolysis is carried out in an apparatus called **Voltammeter**.
4. Metals and metal alloys are example of **Conductors**.

IV. Match the columns :

- | Ans. Column A | Column B |
|----------------------|---|
| 1. Cathode | c. Negative electrode |
| 2. Electrolyte | d. The liquid that conducts electricity and undergoes decomposition |
| 3. Electroplating | a. The process used for coating metal objects with a thin layer of a precious metal |
| 4. Electrolytic cell | e. Used to carry out electrolysis |
| 5. Ion | b. An atom or a molecule with electric charge |

V. Lab Activity :

- Ans. Do yourself.

Oral Questions :

- Ans. 1. The branch of science that deals with the study of earthquake is called seismology.
2. Every earthquake has a point of origin called epicenter in the earth's crust from where it reaches to the earth's surface.
3. The earth's crust is not a single layer of shell that surrounds the mantle but is in the form of plates that floats over the molten magma in the mantle. These plates are called tectonic plates.
4. The instrument used to measure the magnitude of earthquake on the Richter scale is called seismograph.
5. A fault is the fracture that develops in a rock, and the movement of the fragmented rock, along the line of fracture results in the earthquake.

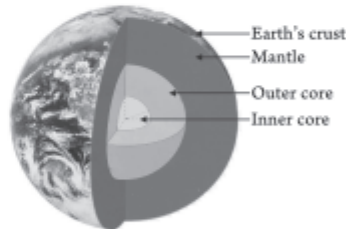
Summative Assessment

A. Very Short-Answer Questions :

- Ans. 1. The crust in the layer of earth that forms lithosphere.
2. Seismograph is used to measure the earthquake.
3. The magnitude of the earthquake that occur in Bhuj in 2001 was 8.1
4. The earth's crust is not a single layer of shell that surrounds the mantle but is in the form of plates that floats over the molten magma in the mantle. These plates are called tectonic plates.
5. Tsunami, a Japanese term that refers to the seismic waves that develop in the ocean because of the volcanic activity, resulting in the earthquake that takes place on the surface of ocean.
6. The deformation of the Indus river delta after 1819 earthquake is the permanent after-effect of an earthquake.

B. Short-Answer Questions Write 'T' for true and 'F' for false statements :

- Ans. 1. Structurally the earth consists of three distinct layers called earth's crust, inner solid and outer liquid core consisting of molten iron and nickel, called NiFe.
2. The movement of the floating tectonic plates over the magma results not only in the volcanic eruption but also becomes the epicenter for the origin of the earthquake all over the world.
3. Plate Tectonics, volcanic Eruption and folding and faulting are three main causes of earthquake.
4. Some of human activities such as deep underground mining, blasting of rocks for mining and construction of dams etc. contribute to the origin of earthquake such as Koyna earthquake in Maharashtra has been linked with the construction of Koyna reservoir in 1962.
5. **We can do the following steps—**
1. The moment we feel a tremor, run out in an open round.
 2. When running out, keep shouting to warn the other people.
 3. Adopt the first aid practices to help the victims until medical help arrives.



Structure of the earth

C. Long-Answer Questions :

- Ans. 1. An earthquake is a natural disaster which causes a huge damage of life and property. It is estimated that about 15,000 people die every year because of the earthquake. The Earthquake in 1819 resulted in the deformation of the Indus river delta and earthquake in 2001 resulted in the subsistence of land around the city of Bhuj in Gujrat.
2. We can do the following steps to protect ourself during an earthquake—
1. The moment we fell a tremor, run out in an open ground.
 2. When running out, keep shouting to warn the other people.
 3. Adopt the first did practices to help the victims until medical help arrives.

D. Higher Order Thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment

I. Multiple Choice Questions :

- Ans. 1. d. 2. b. 3. a. 4. c.

II. Fill in the blanks :

- Ans. 1. The shocking waves generated during an earthquake are called **seismic waves**.
2. **Epicenter** is the point on the earth's surface just above the point of origin of an earthquake.
3. The outer core of earth consists of molten **nickel and iron**.
4. The magnitude of an earthquakes is measured on **Richter scale**.
5. Human beings can sense the earthquakes of the value 2 or above.
6. A **Fault** is fracture that develops in a rock under the earth's crust.
7. Tsunami is a **Japanese** term.

III. State whether the following statements are true (T) or false (F) :

- Ans. 1. True 2. True 3. False 4. False

Formative Assessment-IV

1. Tick (✓) the correct option :

- Ans. (a) iii. (b) i. (c) ii.

2. Fill in the blanks :

- Ans. (a) The number of vibrations per second is called **Oscillation**.
- (b) Time taken by an object to complete one oscillation is called **Time period**.
- (c) Iron is coated with **zinc** to protect it from corrosion.
- (d) Electrolysis is carried out in a apparatus called **voltammeter**.

3. State whether the following statement are true (T) or false (F) :

- Ans. (a) True (b) False (c) False (d) True

4. Match the following :

- | | |
|----------------------|---|
| Ans. Column A | Column B |
| 1. Cathode | c. Negative electrode |
| 2. Electrolyte | d. The liquid that conducts electricity and undergoes decomposition |

3. Electroplating a. The process used for coating metal objects with a thin layer of a precious metal
4. Electrolytic cell e. Used to carry out electrolysis
5. Ion b. An atom or a molecule with electric charge

5. Answer the following questions :

Ans. (a) The presence of excessive or unwanted sound in the Atmosphere is called noise pollution.

- (b) An ion is an atom or a molecule with an electric charge created by losing or gaining one or more electrons.
- (c) Materials which do not allow electric current to flow through them are called insulators.
- (d) The earth's crust is not a single layer of shell that surrounds the mantle but is in the form of plates that floats over the molten magma in the mantle. These plates are called tectonic plates.

16

Light

Oral Questions:

- Ans.** 1. **Reflection :** The bouncing back of light rays from the surface of an opaque object.
Refraction : The bending of a light ray as it passes from one medium into another.
2. The straight pencil immersed in water, when viewed from sides, appear bent and thicker than its normal thickness. The difference has been caused by the reflection of light.
 3. A ray of light under goes deviation when passing from optically rays medium into the denser medium because. The light rays are refracted.

Oral Questions:

- Ans.** 1. A concave lens being thinner at the middle and thicker at the edges, acts as the diverging lens whereas the convex lens, being thicker at the centre and thinner at the edges, acts as the converging lens.
2. Convex lens converges the light rays at a point and the image formed is large.
 3. The image formed by a convex lens is based upon the distance between the focus and the centre of curvature. The image formed is always real, inverted and small.

Summative Assessment

A. Very Short–Answer Questions :

- Ans.** 1. (i) The ability of a transparent medium to bend the light entering into it, is called its refractive index (R.I.).
(ii) The splitting of light into its different colours when passing across a denser medium is called the dispersion of light.
2. VIBGYOR, (Violet, Indigo, Blue, Green, Yellow, Orange and Red) are the seven different colours of spectrum.
 3. Angle of Incident ($\angle i$) = Angle of Reflection ($\angle r$)
 4. The concave lens is a diverging lens. It always forms virtual, erect and diminished image of the object.

B. Short–Answer Questions :

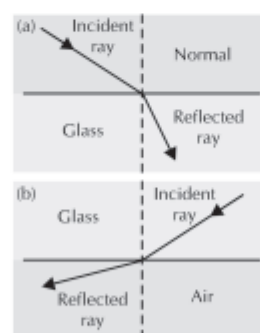
- Ans.** 1. **The two examples of refraction of light are—**
- (i) The twinkling of stars at night.
 - (ii) the ponds, lakes or rivers appear shallower than their real depth.
2. The convex lens are converging lens. The image formed by the convex lens is virtual, erect and magnified. A concave is a diverging lens and forms virtual, erect and diminished image of an object.
 3. **Table :** Refractive index of materials with respect to vacuum—

Material medium	R.I. value
Air	1.003
Alcohol	1.33
Water	1.36
Kerosene	1.44
Turpentine	1.47
Crown glass	1.52
Flint glass	1.65
Diamond	2.42

4. The swimming pool appears shallow when viewed from the top due to the refraction of light.
5. Image formation of an object from a convex lens :
 - (i) Infinity—Real, small and inverted image.
 - (ii) Focus—Real, inverted and magnified.
 - (iii) At curvature—Real, inverted and same size.

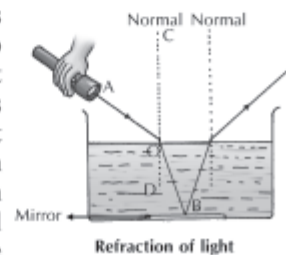
C. Long–Answer Questions :

Ans. 1. We can prove that glass is denser than air with the help of the following experiment. Take a pencil and put it in a glass. Now put water in the glass. Now see the go pencil through the glass. You will find that the pencil is looking more deviate that it actually is. This shows that the glass is denser than air. This can be shown with the help of the deagram given below :



Refraction of light passing through medium of different optical densities.

2. When the light rays pass from one medium to another having different optical density, it undergoes change in its path. The light rays, when passing from less denser optical medium into a more denser optical medium, undergo a decrease in their velocity and occurs a change in the direction of propagation of light ray. It is known as refraction of light.



D. Higher Order thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment**I. Multiple Choice Questions :**

Ans. 1. b. 2. d. 3. b.

II. Fill in the blanks :

Ans. 1. A convex lens acts as **Converging** lens and a concave

lens as a **diverging** lens.

- The solar spectrum consists of **seven** colours of light.
- A ray of light parallel to the principal of axis passes through **focus** after the refraction of light.

III. State whether the following statement are true (T) or false (F).

Ans. 1. True 2. True

17**Pollution of Air and Water****Oral Questions:**

- Ans. 1. CO₂ and SO₂ 2. Pesticides.
- The gases which raise temperature of the earth due to green house effect are called green house gases. Carbon dioxide, Methane, water vapour are some green house gases.

Oral Questions:

- Ans. 1. Oxide of Nitrogen and Sulphur like NO₂ and SO₂ etc.
- Water pollution is the condition of water that makes it unfit for human consumption.
 - Detergent, Human excreta, domestic wastes etc.

Oral Questions

- Ans. 1. The setting of suspended particles in a liquid is called Sedimentation.
- The sea water is not fit for drinking because it contain & high concentration of salt.
 - Sedimentation and decantation → Filtration → Aeration → Chlorination

Summative Assessment**A. Very Short-Answer Questions :**

- Ans. 1. CO₂, CO, SO₂ and dust particles.
- Chlorine tablet
 - Eutrophication is the phenomenon of loss of dissolved oxygen from water in water bodies.

B. Short-Answer Questions :

- Ans. 1. A part of chlorofluorocarbons escapes into the atmosphere, and damages the ozone layer present in the upper atmosphere if we continue to use chlorofluorocarbons more and more ozone layer will get damaged. As a result, animals and vegetation on the earth, will get badly affected.
- (a) Particles of mercury cause the disease minamata.
(b) Asbestos fibre causes a disease called silicosis.
 - some of the ways to control air pollution are :
(i) By Plantation.
(ii) By using LPG in place of wood, kerosene or coal.
(ii) By using CNG in vehicles instead petrol and diesel.

C. Long-Answer Questions :

- Ans. 1. Any substance that causes pollution is called a pollutant. Pollutants may belong to gaseous pollutants, particulate pollutants, Non-biodegradable pollutants and Biodegradable pollutants.
- Gaseous pollutants : Carbon Mono-oxide, oxide of sulphur and Nitrogen.
 - Particulate pollutants : Particles of smoke, dust, fumes, fly ash etc.
 - Non-biodegradable pollutants : DDT, insecticides.
 - Bio degradable pollutants : Organic pollutants.

- Carbon-di-oxide is a green house gas. The increased concentration of carbon dioxide in the air has resulted in an increase in the earth's temperature. This is called green house effect that leads to global warming.

D. Higher Order thinking Skills (HOTS) Questions :

Ans. Do yourself.

Formative Assessment**I. Multiple Choice Questions :**

Ans. 1. a. 2. c. 3. b.

II. Write one word for the following :

Ans. 1. Particulates. 2. Lead and Mercury.

III. Match the column :

Ans.	Column A	Column B
1.	Particulate pollutant	e. Flyash
2.	Chlorofluorocarbon	a. Ozone layer
3.	Green-house gas	b. Methane
4.	Polluted water	c. Jaundice
5.	Drip irrigation	d. Conservation of water

IV. Tick (✓) the odd-one out giving reason :

- Ans. 1. **Oxides of sulphur** Air pollutants.
2. **Water cycle** It is not related to acid rain.
3. **Urea** It causes water pollution.
4. **Potable water** It is safe for drinking.

V. Define the following :

- Ans. 1. The contamination of environment with harmful (toxic and poisonous) substances due to certain Natural phenomena and human activities is called environmental pollution or simply as pollution.
- The substances which are not broken down to simpler and harmless substances by the action of water, soil and enzymes are called non-biodegradable substances.
 - The rain water containing dissolved oxides of sulphur and nitrogen is called Acid rain.
 - To conserve the water from wastage is called conservation of water.

VI. Group Discussion :

Ans. Do yourself.

Summative Assessment-II**1. Fill in the blanks :**

- Ans. (a) Estrogen is secreted by **ovary** glands.
(b) Liquids exert **pressure** in all directions.
(c) Unwanted sound is called **Noise**.
(d) Metals and metal alloys are example of **Conductors**.
(e) Tsunami is a **Japanese term**.

2. State whether, the following statements are true (T) or false (F) :

Ans. (a) True (b) True (c) True
(d) True (e) True

3. Very Short-Answer Questions :

Ans. (a) Insulin controls the sugar level in blood.

- (b) The force acting per unit area is called pressure.
- (c) Yes, the force of friction oppose the motion.
- (d) The iron is coated with zinc to prevent rusting.
- (e) Seismograph is used to measure the earthquake.

4. Short-Answer Questions :

- Ans.** (a) Some of the ways to control air pollution are :
1. By Plantation.
 2. By using LPG in place of wood, kerosene or coal.
 3. By using CNG in vehicles instead petrol and diesel.
- (b) The ponds, lakes or rivers appear shallower than their real depth due to refraction of light.
- (c) Plate Tectonics, volcanic Eruption, folding and faulting, human activities like deep underground mining, blasting and construction of dams etc. are some causes of earthquake.
- (d) The liquid which conducts electricity and undergoes decomposition is called electrolyte.
- (e) The light rays travel faster than the sound waves. That is why we see lighting before we can hear thunder.

5. Long-Answer Questions :

- Ans.** (a) The various effects of force are—
1. Move an object lying at rest.

2. Stop a moving object.
3. Change the speed of an object.
4. Change the direction of an object.
5. Change the shape of an object.

- (b) Static friction, sliding friction and Rolling friction are the three kinds of friction.
- (c) The sound is a form of energy.
- (d) Some uses of electroplating are—
1. Electroplating is widely used to prevent corrosion. For example, chromium has a shiny appearance and it does not corrode.
 2. Jewellers electroplate silver and gold on less expensive metals.
- (e) The image formed of an object by a convex lens—
- (i) When object placed at infinity-Real, small and inverted.
 - (ii) Object beyond the 'C'-real, small and inverted.
 - (iii) Object at C-Real, inverted and same size.
 - (iv) object between 'C' and 'F'-Real, inverted and large.
 - (v) Object at 'F'-Real, inverted and magnified.
 - (vi) Object between 'F' and 'O'- Virtual, erect and magnified.

