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A Text Book of Science

Author :
Ashish Bhatnagar
(Msc.)

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Science Key 1-5

1 Types of Plants

A. Darken the correct option in the OMR Sheet :

1. The stem of a tree is called _____.

Ans. (b) trunk

2. Plants that need support to grow straight are called–

Ans. (c) climbers

3. Spinach is a _____.

Ans. (b) herb

B. Fill in the blanks.

1. Big, tall and strong plants are called **trees.**
2. Grapevine is a **climber.**
3. **Cactus** is a thorny plant.

C. Write 'T' for a true statement and 'F' for a false one.

1. Herbs are seasonal. **True**
2. Climbers need support to stand erect. **True**
3. Cucumber is a shrub. **False**
4. A plant has two parts. **True**

D. Match the following :

	Column A	**Column B**
1.	Creeper	**(iii) watermelon**
2.	Tree	**(i) peepal**
3.	Shrub	**(iv) henna**
4.	Climber	**(ii) bean**

E. Answer the following questions :

1. What are herbs?

Ans. Herbs are very small plants with soft and weak stems. They are usually seasonal (live for a short time). **Examples:** spinach, coriander, tomato.

2. Give two examples of creepers.

Ans. Pumpkin and watermelon are creepers.

3. Give one difference between climber and creeper.

Ans. **Climber:** weak stem, grows upright with support (**Examples:** grapevine/bean).
Creeper: very weak stem, spreads on the ground (**Examples:** pumpkin/watermelon).

4. What are shrubs?

Ans. Shrubs are small and bushy plants with thin, woody stems. They grow close to the ground. **Examples:** rose, tulsi, henna.

5. Define the parts of a plant.

Ans. A plant has two main parts:

- **Root:** grows below the ground and holds the plant.
- **Stem:** grows above the ground and has leaves, flowers, and fruits.

2 Plants : Leaves and Flowers

A. Darken the correct option in the OMR Sheet :

1. Plants have _____.

Ans. (c) both (a) and (b)

2. Leaves are usually _____.

Ans. (c) green

3. Rose has _____.

Ans. (a) thorns

4. Flowers grow from _____.

Ans. (a) buds

B. Fill in the blanks.

1. Plants have green **leaves.**
2. Flowers grow from **buds.**
3. A sunflower always faces the **Sun.**
4. Most plants bear beautiful **flowers.**

C. Write 'T' for a true statement and 'F' for a false one.

1.	Plants are important part of nature.	**True**
2.	We eat leaves of spinach.	**True**
3.	All plants have thorns.	**False**
4.	Flowers protect the plant.	**False**

D. Match the following :

	Column A		**Column B**
1.	Rose	**(ii)**	**thorns**
2.	Lotus	**(i)**	**round leaves**
3.	Flowers	**(iv)**	**buds**
4.	Plants	**(iii)**	**green**

E. Answer the following questions.

1. Name one thorny plant.

Ans. A rose plant is a thorny plant. It has sharp thorns on its stem which protect the plant.

2. Give two examples of flowering plants.

Ans. Rose and marigold are flowering plants. They produce beautiful and colourful flowers.

3. Name two plants which have special smell.

Ans. Tulsi and mint plants have a special smell. Their leaves give a pleasant fragrance.

4. What is the most attractive part of a plant?

Ans. The flower is the most attractive part of a plant. It is colourful and helps in making seeds.

3 Growing of Plants

A. Darken the correct option in the OMR Sheet :

1. Fruits have _____.

Ans. (a) seeds

2. We do not eat most of the _____.

Ans. (b) seeds

3. Mango has _____ seed.

Ans. (a) one

B. Fill in the blanks.

1. A seed has a **baby plant** inside it.
2. A **seed** grows into a new plant.
3. **Flowers** change into fruits.
4. **Papaya** has many seed.

C. Write 'T' for a true statement and 'F' for a false one.

1. Fruits have seeds inside them. **True**
2. Orange has one seed. **False**
3. A seed grows into a new plant. **True**
4. Most plants grow from seeds. **True**

D. Match the following.

	Column A		Column B
1.	Baby plant	**(iii)**	
2.	Seeds	**(ii)**	
3.	Big plant	**(iv)**	
4.	Fruits	**(i)**	

E. Write names of the following.

1. Two fruits with one seed (i) **Mango** (ii) **Litchi**
2. Two fruits with many seeds (i) **Papaya** (ii) **Orange**
3. Two seeds you like to eat (i) **Rice** (ii) **Peanut**

4 Plants Give Us Food

A. Darken the correct option in the OMR Sheet :

1. Mango is a _____.

Ans. (b) fruit

2. Carrot is a _____.

Ans. (c) vegetable

3. Wheat is a _____.

Ans. (a) cereal

B. Fill in the blanks.

1. **Plants** give us food.
2. Carrot is a **root.**
3. Potato is a **stem.**
4. Wheat, rice and maize are **cereals.**

C. Write 'T' for a true statement and 'F' for a false one.

1.	We eat stem of potato.	**True**
2.	We eat root of bean.	**False**
3.	We do not get pulses from plants.	**False**
4.	We get sugar from fruits.	**False**

D. Match the following :

	Column A		**Column B**	
1.			**(ii)**	
2.			**(iv)**	
3.			**(i)**	
4.			**(iii)**	

E. Answer the following questions.

1. What do we get from plants?

Ans. We get fruits, vegetables, cereals, pulses, oils and sugar from plants. Plants give us most of the food we eat every day.

2. Give two examples of cereals.

Ans. Wheat and rice are cereals. Cereals give us energy and are our main food.

3. Give two examples of seeds used for making oil.

Ans. Mustard and sunflower seeds are used to make oil. Oil is used for cooking food.

4. Name any plant that we eat as root.

Ans. Carrot is a root that we eat. Roots grow under the ground and are healthy.

5 Different Animals

A. Darken the correct option in the OMR Sheet :

1. Lion is a _____ animal.

Ans. (c) wild

2. Aquatic animals always live in _____.

Ans. (a) water

3. Insects have _____ legs.

Ans. (b) six

4. Birds fly with the help of their _____ .

Ans. (a) wings

B. Fill in the blanks.

1. **Mosquito** is an insect.
2. An **Octopus** has eight arms.
3. **Dog** is a pet animal.
4. **Duck** can swim in the water.

C. Write 'T' for a true statement and 'F' for a false one.

1.	An elephant is a big animal.	**True**
2.	The seahorse is a horse.	**False**
3.	Lion is a wild animal.	**True**
4.	A crocodile is an amphibian.	**False**

D. Match the following.

	Column A		**Column B**
1.	Snake	**(ii)**	**a reptile**
2.	Ostrich	**(i)**	**a bird that cannot fly**
3.	Swan	**(iii)**	**a bird that can swim**
4.	Insects	**(v)**	**have six legs**
5.	Cow	**(iv)**	**a domestic animal**

E. Answer the following questions.

1. What are wild animals?

Ans. Wild animals are animals that live in forests or jungles. They are not kept by humans as pets or for work.

2. Name any two things that we get from domestic animals.

Ans. We get milk and wool from domestic animals. They are useful to us in many ways.

3. How do birds fly?

Ans. Birds fly with the help of their wings. They flap their wings to move in the air.

4. Name two birds that cannot fly.

Ans. Ostrich and Penguin are birds that cannot fly. They use their legs or swim instead.

6 Animals need Shelter

A. Darken the correct option in the OMR Sheet :

1. Wild animals live in _____.

Ans. (a) forest

2. Langur lives on _____.

Ans. (a) trees

3. Snake lives in a _____.

Ans. (b) hole

4. Dogs are kept in a _____.

Ans. (c) kennel

B. Fill in the blanks.

1. Cow is kept in a **shed.**
2. Hens are kept in a **coop.**
3. A fox lives in a **den.**
4. A rabbit lives in a **burrow.**

C. Write 'T' for a true statement and 'F' for a false one.

1.	Horses are kept in a stable.	**True**
2.	Polar bear lives in forest.	**False**
3.	A nest is a home for the birds.	**True**
4.	Lion lives in a den.	**True**

D. Match the following.

	Column A		**Column B**
1.	Lion	**(ii)**	**den**
2.	Owl	**(iii)**	**nest**
3.	Bee	**(iv)**	**hive**
4.	Parrot	**(i)**	**does not build nest**

E. Answer the following questions.

1. Where do wild animals live?

Ans. Wild animals live in forests and natural places. They stay in dens, caves, holes, or on trees.

2. Name two pet animals.

Ans. Dog and cat are pet animals. They live with humans and are cared for at home.

3. Name two birds that do not build nests.

Ans. Cuckoo and parrot do not build nests. They lay their eggs in other birds' nests.

4. Name few shelters that humans make for animals.

Ans. Humans make shelters like shed for cows, kennel for dogs, coop for hens, and stable for horses.

7 Animals, Food

A. Darken the correct option in the OMR Sheet :

1. Plant-eating animals are called _____.

Ans. (a) herbivores

2. Flesh-eating animals are called _____.

Ans. (b) carnivores

3. Animals that eat both plants and animals are called _____.

Ans. (c) omnivores

4. Rabbit, cows and goats are _____.

Ans. (a) herbivores

B. Fill in the blanks.

1. Elephant eats **plants.**
2. A frog **swallows** its food whole.
3. A lizard eats **insects.**
4. Lions, tigers and leopards are **flesh**-eating animals.

C. Write 'T' for a true statement and 'F' for a false one.

1. Different animals eat different kinds of food. **True**
2. Rabbits eat only plants or plant products. **True**
3. Leopards eat leaves of plants. **False**
4. Flesh-eating animals are called carnivores. **True**

D. Match the following.

	Column A		**Column B**
1.	Cow	**(ii)**	**grass, fodder**
2.	Monkey	**(iv)**	**fruits, vegetables**
3.	Lizard	**(I)**	**insects**
4.	Lion	**(iii)**	**flesh**

E. Answer the following questions.

1. Name three animals that eat plants.

Ans. Animals that eat only plants are called herbivores. **Examples:** of plant-eating animals are cow, goat, and rabbit.

2. Name two animals that eat both plants and flesh.

Ans. Animals that eat both plants and flesh are called omnivores. **Examples:** are dog and bear.

3. Name three flesh-eating animals

Ans. Animals that eat the flesh of other animals are called carnivores. **Examples:** are lion, tiger, and leopard.

4. Name two insect-eating animals.

Ans. Some animals feed mainly on insects for food. **Examples:** are frog and lizard.

8 Babies of Animals

A. Darken the correct option in the OMR Sheet :

1. A baby of a horse is called a _____.

Ans. (a) foal

2. Young one of a lion is called a _____.

Ans. (a) cub

3. A baby of a kangaroo is called a _____.

Ans. (a) joey

4. A baby of an elephant is called a _____.

Ans. (a) calf

B. Fill in the blanks.

1. A baby of a cow is called a **calf.**
2. A baby goat is called a **kid.**
3. A baby of a cat is called a **kitten.**
4. Young one of a tiger is called a **cub.**

C. Write 'T' for a true statement and 'F' for a false one.

1.	A baby elephant is called a cub.	**False**
2.	A baby horse is called a foal.	**True**
3.	A baby dog is called a puppy.	**True**
4.	A baby goat is called a kid.	**True**

D. Match the columns.

	Animals		**Young ones**
1.	Cow	**(ii)**	**calf**
2.	Kangaroo	**(iii)**	**joey**
3.	Dog	**(iv)**	**puppy**
4.	Cat	**(I)**	**kitten**

E Answer the following questions.

1. Write the names of their young ones.

(i) Dog **puppy** (ii) Cat **kitten**
(iii) Horse **foal** (iv) Kangaroo **joey**
(v) Elephant **calf** (vi) Cow **calf**

2. Name two animals that lay eggs.

(I) **Lizard** (ii) **Hen (Bird)**

3. Name two animals that give birth to young ones.

(I) **Cow** (ii) **Dog**

9 Human Body

A. Darken the correct option in the OMR Sheet :

1. _____ help(s) us to listen to different sounds.

Ans. (b) Ears

2. We smell with our _____.

Ans. (b) nose

3. _____ help(s) us to see and read.

Ans. (a) Eyes

4. _____ help(s) us to taste food.

Ans. (a) Tongue

B. Fill in the blanks.

1. We put food in our mouth using our **hands.**
2. We smell with our **nose.**
3. **Legs** help us to run, walk and play.
4. The **neck** helps the head to move.

C. Write 'T' for a true statement and 'F' for a false one.

1. Hands help us to think and study. **False**
2. We read with the help of our eyes. **True**
3. We taste food with the help of our nose. **False**
4. Skin helps us to feel and touch things around us. **True**

D. Match the following.

	Column A	Column B
1.		**(iv) see**
2.		**(iii) hear**
3.		**(ii) smell**
4.		**(i) touch**

E. Answer the following questions.

1. Name the five sense organs.

Ans. The five sense organs are eyes, ears, nose, tongue, and skin. They help us to see, hear, smell, taste, and feel.

2. How do our hands help us?

Ans. Our hands help us to hold things, write, eat food, and do work. They also help us to play and touch objects.

3. Which is the largest sense organ of the body?

Ans. Skin is the largest sense organ of our body. It helps us to feel touch, heat, cold, and pain.

4. How does our tongue help us?

Ans. Our tongue helps us to taste food like sweet, sour, salty, and bitter. It also helps us in speaking clearly.

10 Importance of Food

A. Darken the correct option in the OMR Sheet :

1. Fruits and vegetables are obtained from _____.

Ans. (a) plants

2. We need food to _____.

Ans. (a) live

3. _____ is a milk product.

Ans. (a) Butter

4. We get eggs and milk from _____.

Ans. (a) animals

B. Fill in the blanks.

1. Meat is an **animal** product.
2. We get our food mainly from **plants.**
3. We should drink **milk** every day.
4. We must **close our mouth** while eating.

C. Write 'T' for a true statement and 'F' for a false one.

1.	Butter is a milk product.	**True**
2.	Milk is a healthy drink.	**True**
3.	Chocolate is a junk food.	**True**
4.	We must laugh while eating.	**False**

D. Match the column A with column B.

	Column A		**Column B**
1.	Milk	**(iv)**	**healthy drink**
2.	Fruits and vegetables	**(iii)**	**get from plants**
3.	Pizza and chocolates	**(ii)**	**junk food**
4.	Meat	**(i)**	**get from animals**

E. Answer the following questions.

1. Why do we eat food?

Ans. We eat food to get energy. Food helps us to grow, stay healthy, and do our daily work.

2 Name any two milk products.

Ans. Butter and curd are milk products. We also get ghee and cheese from milk.

3. Write three good eating habits.

Ans. We should wash our hands before eating. We should eat slowly and chew food properly. We should not talk or laugh while eating.

4. Where do we get most of our food from?

Ans. We get most of our food from plants. Plants give us fruits, vegetables, grains, and pulses.

11 Cleanliness

A. Darken the correct option in the OMR Sheet :

1. We must keep our body _____.

Ans. (a) clean

2. We should take a bath _____.

Ans. (a) daily

3. We must brush our teeth _____.

Ans. (b) twice a day

4. We must wear _____ clothes.

Ans. (a) clean

B. Fill in the blanks.

1. The habit of staying clean is called **cleanliness.**
2. We should throw the rubbish in a **dustbin.**
3. Good habits keep us healthy and **happy**
4. We should wipe our nose with a **handkerchief.**

C. Match the columns.

(a) 

(b) 

(c) 

(d) 

(iv) 

(iii) 

(i) 

(ii) 

D. **Write 'T' for a true statement and 'F' for a false one.**

1. We should not keep our house clean. **False**
2. We should take a bath every day. **True**
3. We should oil and comb our hair well. **True**
4. We should cut our nails and hair on time. **True**

E. **Answer the following questions.**

1. Write two good habits that help us to stay healthy.

Ans. We should brush our teeth twice a day and wash our hands before and after meals. These good habits keep us clean and healthy.

2. When should you brush your teeth?

Ans. We should brush our teeth in the morning and before going to bed. Brushing twice a day keeps our teeth clean.

3. What should you use to wipe your nose?

Ans. We should use a clean handkerchief to wipe our nose. It helps us stay neat and healthy.

4. Where should you throw the rubbish?

Ans. We should throw the rubbish in a dustbin. This keeps our house and surroundings clean.

12 Keeping fit and Healthy

A. **Darken the correct option in the OMR Sheet :**

1. Our muscles get repaired when we _____.

Ans. (b) sleep

2. We must exercise _____.

Ans. (a) every day

3. We should go to bed _____.

Ans. (a) early

4. Good exercise is _____.

Ans. (d) all of these

B. **Fill in the blanks.**

1. **Exercise** makes us strong and healthy.
2. **Rest** rebuilds our body.
3. **Playing** refreshes our mind and keeps the body fit.
4. We all love to play **games.**

C. **Write 'T' for a true statement and 'F' for a false one.**

1. Cycling is a good exercise. **True**
2. To play is fun. **True**
3. It is good to sleep late at night. **False**
4. Sleep gives rest to our body and mind. **True**

D. Match the following.

	Column A		Column B
1.	Exercise	**(ii)**	**makes us strong and healthy.**
2.	Rest	**(iii)**	**rebuilds our body.**
3.	Playing	**(i)**	**refreshes our mind.**

E. Answer the following questions.

1. What does make a body strong and healthy?

Ans. Exercise, good food, and proper rest make our body strong and healthy. These habits help us stay fit and active.

2. Name any two good exercises.

Ans. Walking and cycling are two good exercises. They keep our body fit and healthy.

3. Why should we take rest?

Ans. Rest rebuilds our body and gives relaxation to our muscles. Sleep gives rest to our body and mind.

4. Name two games that you like to play.

Ans. I like to play cricket and football. These games keep me active and happy.

13 Housing and Clothing

A. Darken the correct option in the OMR Sheet :

1. House protects us from _____.

Ans. (c) both (a) & (b)

2. We use kitchen for _____.

Ans. (a) cooking

3. We use bathroom for _____.

Ans. (a) bathing

4. We wear cotton clothes in _____.

Ans. (a) summer

B. Fill in the blanks.

1. A house protects us from **heat and cold.**
2. We wear **clothes** to cover ourselves.
3. We wear **gum boots** in the rainy season to prevent our feet from becoming wet.
4. We wear woollen clothes in **winter.**

C. Write 'T' for a true statement and 'F' for a false one.

1.	A house protects us from flood.	**False**
2.	We do not store our things in our house.	**False**
3.	We sleep in drawing room.	**False**
4.	We eat our meals in our dining room.	**True**

D. Match the following.

	Column A		Column B
1.	Bathroom	**(iii)**	**to take a bath**
2.	Study-room	**(i)**	**to study**
3.	Bedroom	**(iv)**	**to take rest and sleep**
4.	Dining-room	**(ii)**	**to take food**

E. Answer the following questions.

1. Why do we need a house?

Ans. We need a house to live safely. It protects us from heat, cold, rain, wind and wild animals.

2 Which part of the house do we use to cook food?

Ans. We use the kitchen to cook food. All meals are prepared in the kitchen.

3. What do we wear in winter season?

Ans. We wear woollen clothes in winter. They keep our body warm.

4. Where do we get cotton from and what is its use?

Ans. Cotton is obtained from the cotton plant. It is used to make clothes like shirts, frocks and pants.

14 Air Around Us

A. Darken the correct option in the OMR Sheet :

1. Air helps us in _____.

Ans. (c) Both (a) & (a)

2. Moving air is called _____.

Ans. (a) wind

3. Moving air can help _____ and _____ to move.

Ans. (c) Both (a) & (b)

4. Air can be filled into _____.

Ans. (c) Both (a) & (b)

B. Fill in the blanks.

1. **Air** is all around us.
2. Air takes up **space.**
3. We can only **feel** air.
4. **Moving air** can make things move.

C. Write 'T' for a true statement and 'F' for a false one.

1.	We cannot live without air.	**True**
2.	Air is needed for burning.	**True**
3.	Moving air is called wind.	**True**
4.	Air has weight.	**True**

D. Match the following.

	Column A		Column B
1.	Air has	**(iii)**	**weight**
2.	Moving air is called	**(iv)**	**wind**
3.	Air is present inside an	**(ii)**	**inflated balloon**
4.	We feel air when it	**(i)**	**moves around us**

E. Answer the following questions :

1. Why do we need air?

Ans. We need air to breathe. Air helps us to live. Without air, we cannot survive.

2. What is wind?

Ans. Wind is moving air. When air moves from one place to another, it is called wind.

3. Name any two uses of air.

Ans. Air is used for breathing. Air is needed for burning.

4. Why is a burning candle put out when you cover it with glass?

Ans. A candle needs air to burn. When covered with glass, air cannot reach it, so the candle goes out.

15 Water for Life

A. Darken the correct option in the OMR Sheet :

1. We bathe with _____.

Ans. (b) water

2. We need water for _____.

Ans. (a) cooking

3. Rainwater collects on the surface of the _____.

Ans. (c) Earth

4. Rain is the main source of _____.

Ans. (b) air

B. Fill in the blanks.

1. Rainwater fills up rivers, lakes and **ponds.**
2. **Water** is very precious.
3. We get water in our homes from the **taps.**
4. Boats and ships run on **water.**

C. Write 'T' for a true statement and 'F' for a false one.

1.	We should drink clean water.	**True**
2.	Water is used to clean utensils.	**True**
3.	We do not need water for cooking food.	**False**
4.	We need water for bathing only.	**False**

D. Match the following.

Column A	Column B

1.	Water	**(iv) is very precious.**
2.	People	**(i) swim in water.**
3.	Rain	**(iii) is the main source of water on the Earth.**
4.	Boats	**(ii) run on water**

E. Answer the following questions.

1. Why do living things need water?

Ans. Living things need water to stay alive. We drink water to keep our body healthy and it helps in digestion and other body functions.

2. Write the different uses of water.

Ans. We use water for drinking, bathing and cooking. We also use it for washing clothes/utensils, cleaning the house and putting out fire.

3. Which is the main source of water?

Ans. Rain is the main source of water on the Earth. Rainwater fills rivers, lakes, ponds, seas and also goes underground.

4. Why do we need water at home?

Ans. We need water at home for drinking and cooking. We also use it for bathing, washing and cleaning the house.

16 Weather and Seasons

A. **Darken the correct option in the OMR Sheet :**

1. The weather changes _____.

Ans. (a) every day

2. It is very hot in _____ season.

Ans. (a) summer

3. During _____ season, leaves fall from trees.

Ans. (b) autumn

4. We use a _____ on rainy days.

Ans. (a) raincoat

B. Fill in the blanks.

1. We like to have hot drinks on **cold days.**
2. The condition of the air is called **weather.**
3. The sky is covered with dark clouds on **rainy** days.
4. The Sun shines brightly on **sunny** days.

C. Write 'T' for a true statement and 'F' for a false one.

1.	The days on which the Sun shines brightly are called sunny days.	**True**
2.	On a windy day, everything is wet and damp.	**False**
3.	We wear woollen clothes in winter.	**True**
4.	We see flowers in spring season.	**True**

D. Match the following.

	Column A		Column B
1.	Rainy days	**(iv)**	**raincoats**
2.	Hot days	**(iii)**	**cotton clothes**
3.	Cold days	**(ii)**	**woollen clothes**
4.	Windy days	**(i)**	**flying kite**

E. Answer the following questions.

1. How is the weather on cloudy days?

Ans. On cloudy days, the sky is covered with dark clouds. The Sun is not clearly visible and the weather may become cool.

2. What do you like to do and wear on a cold, winter day?

Ans. On a cold winter day, I like to stay indoors and drink hot beverages. I wear woollen clothes to keep myself warm.

3. What happens during the spring season?

Ans. During the spring season, flowers bloom and new leaves grow on trees. The weather is pleasant and nice.

4. What do you use on rainy days?

Ans. On rainy days, we use an umbrella and a raincoat. These protect us from getting wet.

17 Be Safe

A. Darken the correct option in the OMR Sheet :

1. We should walk on the _____ .

Ans. (c) footpath (d) both (a) & (b)

2. We should always cross the road at_____ .

Ans. (c) zebra crossing

3. Safety rules save us from _____.

Ans. (a) accidents

B. Fill in the blanks.

1. Play in the **open** place.
2. Cross the road when it is **clear.**
3. Do not play with **sharp** articles.
4. Do not run down the **stairs.**

C. Write 'T' for a true statement and 'F' for a false one.

1.	First-aid is the second medical help.	**False**
2.	Safety on the road is more important.	**True**
3.	Always walk in the middle of the road.	**False**
4.	Never play on the road.	**True**

D. Match the following.

	Column A	Column B
1.	First-aid	**(iv) first medical help**
2.	Do not	**(iii) play with fire**
3.	Do not get in or off	**(i) a moving bus**
4.	Wait for your	**(ii) turn**

E. Answer the following questions.

1. What should you do before crossing the road?

Ans. Before crossing the road, look right, then left, and again right. Cross the road at the zebra crossing when it is clear.

2. Where should we play?

Ans. We should play in a playground or open place. Playing on the road is not safe.

3. Why should we not play on road?

Ans. Vehicles move on the road all the time. Playing on the road may cause accidents.

1 Plants and their Parts

A. Darken the correct option in the OMR Sheet :

1. _____ absorbs water and nutrients from the soil.

Ans. (a) Root

2. Leaves are usually _____ in colour.

Ans. (c) green

3. Mango contains _____ seed.

Ans. (a) one

4. Some flowers have a _____ smell.

Ans. (b) sweet

B. Fill in the blanks by using the clue box.

1. Leaves are **green** in colour.
2. A tomato has **many** seeds.
3. A seed grows into a new **plant.**
4. A mango fruit has **one** seed.

C Match the following.

1.	The root grows	**(d) underground**
2.	Most plants have	**(a) flowers**
3.	The stem grows upward from the	**(b) root**
4.	The fruits contain	**(c) seeds**

D. Write 'True' or 'False' for the following statements.

1.	Plants do not need sunlight.	**False**
2.	Flowers are of different shapes, colours and sizes.	**True**
3.	All the plants need water.	**True**
4.	A seed grows into a seedling.	**True**

E. Answer the following questions.

1. Which part of a plant does grow into a new plant?

Ans. The seed grows into a new plant. When a seed gets air, water, and sunlight, it germinates and grows into a plant.

2. Which part of a plant does contain seeds?

Ans. The fruit contains seeds. Seeds are found inside the fruit and help in growing new plants.

3. Which part of a plant does grow underground?

Ans. The root grows underground. It absorbs water and nutrients from the soil and supports the plant.

4. Which part of a plant does attract butterflies?

Ans. The flower attracts butterflies. Flowers have bright colours and sweet smell which attract insects.

2 Types of Plants

A. Darken the correct option in the OMR Sheet :

1. Which of the following is a herb?

Ans. (a) Tulsi

2. Which of the following plants lives for one season only?

Ans. (c) Coriander

3. Rose is an example of :

Ans. (a) shrub

4. Which of the following is a creeper?

Ans. (c) Watermelon

B. Fill in the blanks by using the clue box.

1. Tall and strong plants are called **trees.**
2. Medium-sized plants are called **shrubs.**
3. Herbs live for **one** seasons only.
4. **Climbers** climb up with the help of some support.

C. Write 'True' or 'False' for the following statements.

1. Watermelon is an example of creepers. **Ture**
2. Rose plant is a tree **Flase**
3. Money plant is a climber. **Ture**
4. Plum plant is an example of herbs. **Flase**

D. Match the following.

1.	Mango	**(d) Tree**
2.	Watermelon	**(c) Creeper**
3.	Rose	**(b) Shrub**
4.	Bitter-gourd	**(a) Climber**

E. Answer the following questions.

1. What kind of plants are called creepers?

Ans. Creepers are plants with weak stems. They grow along the ground and cannot stand on their own.

2. What kind of plant is money plant?

Ans. Money plant is a climber. It has a weak stem and needs support to grow.

3. What kind of plants are called trees? Write their qualities also.

Ans. Trees are big, tall and strong plants. They have thick, hard and woody stems and live for a long time.

4. How long do the shrubs live? Write their qualities also.

Ans. Shrubs live for many years. They are medium-sized plants with thin, woody stems.

3 Useful Plants

A. Darken the correct option in the OMR Sheet :

1. We make paper from _____ plant.

Ans. (c) bamboo

2. We get gum from the _____.

Ans. (d) acacia tree

3. We eat roots of the _____ plant.

Ans. (a) turnip

4. The plant which is used for making perfume, is _____.

Ans. (c) jasmine

5. The plant which is used for making medicines is _____.

Ans. (c) poppy

B. Fill in the blanks by using the clue box.

1. The **wood** of the teak tree is used for making furniture.
2. Rice, maize and wheat plants are called **cereals.**
3. We get oil from **mustard.**
4. Thorny plants are grown as **hedges.**
5. The **roots** of turnip are used as food.
6. The **flowers** of some plants are eaten by us.

C. Match the columns A and column B.

	Column A	Column B
1.	Cotton	**(c) Cloth**
2.	Teak	**(d) Timber**
3.	Acacia	**(e) Gum**
4.	Turmeric	**(b) Spice**
5.	Tulsi	**(a) Medicine**

D. Write 'True' or 'False' for the following statements.

1. We get cooking oil from onion. **Flase**
2. Tulsi give us shade. **Flase**
3. We get fibres from cotton and jute plants. **True**
4. Wheat is a pulse. **Flase**
5. We eat the roots of turnip and radish plants. **True**

E. Answer the following questions.

1. Name any three roots of plants which are used for eating.

Ans. Carrot, radish and turnip are roots that we eat as food. They are healthy and grow under the soil.

2. How do we get tea and coffee from plants?

Ans. Tea is made from the dried leaves of the tea plant. Coffee is made from the seeds (beans) of the coffee plant.

3. Which plants are used for making furniture?

Ans. Teak, sal and shisham plants are used for making furniture. Their wood is strong and long-lasting.

4. Which plants are used to make paper?

Ans. Paper is made from bamboo and pine plants. The pulp of these plants is used to make paper.

5. Name any two flowers used for making perfumes.

Ans. Rose and jasmine flowers are used for making perfumes. They have a sweet fragrance.

4 Animals in Wild

A. Darken the correct option in the OMR Sheet :

1. Wild animals live in _____.

Ans. (a) jungle

2. _____ is a very big animal.

Ans. (b) Elephant

3. Monkeys and squirrels live on _____.

Ans. (a) trees

B. Fill in the blanks using the clue box.

1. Elephant is a **big** animal.
2. Rabbit lives in a **burrow.**
3. Jackal and hyena are **dead-animals eating** animals.
4. Bears live in **caves.**
5. Lions live in a **den.**

C. Write 'True' or 'False' for the following statements.

1.	A jackal eats the flesh of other animals.	**True**
2.	A rat is a small animal.	**True**
3.	A squirrel lives in burrow.	**False**
4.	A zebra eats both plants and flesh.	**False**

D. Match the following.

1.	A fox eats	**(a) plant-eating animal**
2.	A giraffe is a	**(b) dead animal**
3.	An elephants lives	**(c) flesh of other animals**
4.	A leopard eats	**(d) under the shade of a tree**

E. Answer the following questions.

1. Name two animals which live both on land and in water.

Ans. Frog and crocodile live both on land and in water. They can move easily in water and also survive on land.

2. Name four wild animals that eat both flesh and plants.

Ans. Bear, monkey, crow and fox eat both plants and flesh. Such animals are called omnivores.

3. What are wild animals? Give two examples.

Ans. Wild animals are animals that live in forests and jungles. **Examples:** lion and tiger.

5 Animals Living with Us

A. Darken the correct option in the OMR Sheet :

1. Animals kept at home are called _____ animals.

Ans. (a) pet

2. Milk is used to make _____.

Ans. (c) both (a) & (b)

3. _____ is called milk giving animal.

Ans. (a) Cow

B. Fill in the blanks by using the clue box.

1. Drinking **milk** is useful for good health.
2. Silkworms are kept on **mulberry** plant.
3. A **cat** chases rats.
4. The dung is used as **manure** to make the soil fertile.
5. We get honey and wax from **honey-bees.**

C. Write 'True' or 'False' for the following statements.

1. We get wool from sheep. **True**
2. Goat gives us eggs. **False**
3. The dung of cow is used as manure. **True**
4. Dog, cow and goat help us to carry our loads. **False**
5. Dog is a pet animal. **True**

D. Tick (✓) the right answer.

1. Milk-giving animal — **Cow**
2. Wool-giving animal — **Sheep**
3. The ship of the desert — **Camel**

E. Answer the following questions.

1. Which animals are called pet animals?

Ans. Animals that we keep at home for fun and companionship are called pet animals. They live with us like our friends.

2. Which items are made from the skin of dead animals?

Ans. The skin of dead animals is used to make leather. Leather items include shoes, belts,

bags and chappals.

3. Name any two farm animals.

Ans. Cow and buffalo are farm animals. They are kept on farms and are useful to us.

4. Name three animals which carry loads.

Ans. Camel, donkey and horse carry heavy loads. They help people in transport and farming.

5. What are domestic animals?

Ans. Domestic animals are animals that are kept at home or on farms. They are useful to us and need proper care and food.

6 Birds and Insects

A. Darken the correct option in the OMR Sheet :

1. Birds have _____ legs.

Ans. (b) two

2. Birds have _____ wings.

Ans. (a) two

3. _____ cannot fly.

Ans. (a) Ostrich

4. Insects have _____ legs.

Ans. (a) six

B. Fill in the blanks by using the clue box.

1. Birds are of different shapes and **sizes.**
2. Some birds cannot **fly.**
3. We get honey and wax from **honeybees.**
4. Birds are flying **animals.**
5. We get silk from the cocoons of **silkworms.**

C. Match the following.

1.	Birds have	**(b) two legs**
2.	Flightless bird	**(c) ostrich**
3.	Honey and wax	**(d) from honeybees**
4.	Insects have	**(a) six legs**

D. Write 'True' or 'False' for the following statements.

1.	Insects have four legs.	**False**
2.	Humming bird is a small bird.	**True**
3.	A kingfisher eats fish.	**True**
4.	Insects have a pair of feelers.	**True**
5.	Penguin is a flightless bird.	**True**

E. Answer the following questions.

1. Name two useful birds.

Ans. Hen and duck are useful birds. They give us eggs and meat.

2. Name two useful insects.

Ans. Honeybee and silkworm are useful insects. Honeybee gives us honey and wax, while silkworm gives silk.

3. What do you mean by birds of prey?

Ans. Birds of prey are birds that hunt and eat small animals. **Examples:** are eagle and hawk.

4. What do we get from beehives?

Ans. We get honey and wax from beehives. Honey is used as food and medicine.

5. Name three uses of lac.

Ans. Lac is used to make bangles, toys, and jewellery. It is also used for making polish.

7 The Sun

A. Darken the correct option in the OMR Sheet :

1. The Sun is _____ from our Earth.

Ans. (b) very far

2. The Sun rises in the _____.

Ans. (a) East

3. The Sun sets in the _____.

Ans. (a) West

4. Green plants make their food in _____.

Ans. (a) sunlight

B. Fill in the blanks using the words from the clue box.

1. The Sun is the **source** of light and heat.
2. Green plants make their food in the **sunlight.**
3. There is no shadow at **night.**
4. A shadow is formed in the **opposite** direction.

C. Write 'True' or 'False' for the following statements.

1. The length and direction of a shadow are not always the same. **True**
2. The Sun is hot and bright. **False**
3. Light is not needed for the formation of a shadow. **True**
4. The Sun looks so small because it is very far away from the Earth. **True**

D. Match the following.

1.	Sun sets	**(c) in the West**
2.	Sun rises	**(d) in the East**
3.	Sun is very bright	**(a) in afternoon**
4.	The night begins	**(b) after sunset**

E. Answer the following questions.

1. What is the Sun?

Ans. The Sun is a very big and hot ball of gases. It gives us light and heat.

2. What is the natural source of light on the Earth?

Ans. The Sun is the natural source of light on the Earth. It lights up the whole Earth during the day.

3. What does the Sun do for us?

Ans. The Sun gives us light and heat. It helps plants make food and makes life possible on Earth.

8 The Moon and The Stars

A. Darken the correct option in the OMR Sheet :

1. The moon is the nearest neighbour of _____.

Ans. (a) Earth

2. The moon takes _____ to complete one full round around the Earth.

Ans. (a) 1 month

3. Stars are very _____.

Ans. (a) hot

B. Fill in the blanks using the clue box.

1. The moon revolves around the **Earth.**
2. The moon is **smaller** than the Sun.
3. The stars are **bigger** than the Sun.
4. The stars are hot **glowing** bodies.

C. Write 'True' or 'False' for the following statements.

1. A new moon is seen on the next day after the no moon. **True**
2. The moon is smaller than the Earth. **True**
3. We do not see the stars during the day. **True**
4. The moon does not have its own light. **True**

D. Match the following.

1.	No moon comes after	**(d) fourteen days**
2.	New moon is like a	**(a) bow**
3.	The stars are very	**(b) hot**
4.	Moon is smaller than our	**(c) Earth**

E. Answer the following questions.

1. Why do stars appear so small?

Ans. Stars are very big and very bright. They appear small because they are very far away from the Earth.

2. When do we see the moon?

Ans. We see the moon at night. It becomes visible after the Sun sets.

3. What are stars?

Ans. Stars are very big and hot glowing bodies. They give out their own light.

4. Does the moon revolve around the Earth?

Ans. Yes, the moon revolves around the Earth.It takes about one month to complete one round.

9 Components of Air

A. Darken the correct option in the OMR Sheet :

1. We cannot live without _____.

Ans. (a) air

2. Air is a mixture of several _____.

Ans. (a) gases

3. Air contains _____.

Ans. (a) smoke

B. Fill in the blanks using the clue box.

1. **Air** is all around us.
2. Changing of water into water vapour is called **evaporation.**
3. Ponds and lakes dry up in **summer.**
4. In summer the Sun is **hot.**
5. Rain occurs due to the **condensation** process.

C. Write 'True' or 'False' for the following statements.

1.	We do not breathe air all the time.	**False**
2.	Dust cannot harm our health.	**False**
3.	Air near factories is good for health.	**False**
4.	Air is mixture of several gases.	**True**

D. Match the following.

1.	Water vapour	**(d) gas**
2.	Conversion of water vapour into water	**(a) condensation**
3.	The disease carrying living beings	**(c) germs**
4.	Water changes into water vapour	**(b) evaporation**

E. Answer the following questions.

1. Why should we not breathe impure air?

Ans. Impure air contains dust, smoke and germs. Breathing such air can make us sick and cause breathing problems.

2. What happens when water boils in a pan for a long time?

Ans. The water changes into water vapour. Slowly the water level goes down and may finish.

3. Name any three things that air contains.

Ans. Air contains dust, smoke and water vapour. It also has germs.

4. Why do ponds and lakes dry up in summer?

Ans. In summer the Sun is very hot. Due to heat, water evaporates into water vapour, so ponds and lakes dry up.

10 Dirty and Clean Air

A. Darken the correct option in the OMR Sheet :

1. _____ has many tiny particles in it.

Ans. (a) Air

2. All living beings use air for _____.

Ans. (b) breathing

3. The air we breathe out is _____ air.

Ans. (a) not fresh

B. Fill in the blanks using the clue box.

1. The **wind** blows dust into the air.
2. Breathing in polluted air is harmful for **health.**
3. Air without dust and smoke is called **fresh** air.
4. One should not cover his **face** while sleeping.
5. We should grow **green** plants.

C. Write 'True' or 'False' for the following statements.

1.	Green plants keep the air pure.	**True**
2.	We should cover our faces while sleeping.	**False**
3.	Dust and smoke make the air pure.	**False**
4.	Breathing in polluted air is harmful for our health.	**True**

D. Match the following.

1.	Smoke	**(d) car, bus etc.**
2.	Chimney	**(a) factory**
3.	Particles of dust and smoke	**(c) suffocation and cough**
4.	Fresh air in a house	**(b) windows and ventilators**

E. Answer the following questions.

1. What kind of air is called clean and fresh air?

Ans. Air which has no dust, smoke or bad smell is called clean and fresh air. Such air is good for our health and breathing.

2. How does dust get into the air?

Ans. Wind blows dust into the air from the ground. Sweeping and vehicles also make dust mix with air.

3. What should we do to get fresh air?

Ans. We should keep windows and ventilators open. We should grow more green plants and avoid smoke.

4. What are the harms of breathing in the polluted air?

Ans. Polluted air causes cough, sneezing and breathing problems. It is harmful to our lungs and overall health.

11 The Wind

A. Darken the correct option in the OMR Sheet :

1. Moving air is called _____.
   (a) wind
2. Slow moving air is called _____.
   (b) breeze
3. Wind blows in a definite _____.
   (a) direction

B. Fill in the blanks using the clue box.

1. Moving air is called **wind.**
2. Wind blows in a definite **direction.**
3. Slow moving air is called **breeze.**
4. Storms are very **harmful** for us.
5. Very strong winds are called **storms.**

C. Write 'True' or 'False' for the following statements.

1. Moving air is called wind. **True**
2. Soft blowing wind is called air. **Flase**
3. Wind has a speed. **True**
4. Wind helps in drying process. **True**

D. Match the follwoing.

1.	Windmill	**(c) used to produce electricity**
2.	Storms	**(d) damage buildings and towers**
3.	Wind	**(a) definite direction**
4.	Slowly moving air	**(b) breeze**

E. Answer the following questions.

1. Name any three things which work because of force of wind.

Ans. Windmill, sailing boat/ship and kite work because of the force of wind. Wind also helps gliders to fly.

2. Without using a wind vane, how would you find the direction of the wind?

Ans. Drop a handful of sand or light paper pieces from your hand. The direction in which they move shows the direction of the wind.

3. How can you prove that the wind has a lot of force?

Ans. Strong wind makes it difficult to walk or run. It can blow away papers and even uproot trees, which shows it has a lot of force.

4. How are storms harmful for us?

Ans. Storms uproot trees and poles and damage houses, bridges and crops. At sea, storms can sink boats and ships.

12 Natural Things– Rocks, Soils and Minerals

A. Darken the correct option in the OMR Sheet :

1. Which is a soft rock?
   (a) Graphite
2. Which is a hardest rock?
   (a) Diamond
3. _____ is used for whitewashing our houses.
   (a) Lime
4. _____ is used in making floors and roofs.
   (a) Granite

B. Fill in the blanks using the clue box.

1. **Surface** of the Earth is made up of rocks.
2. **Pumice** floats on the water.
3. Shale is a **layered** rock.
4. Sandstone is found in **Rajasthan.**
5. Slate is **black-grey** in colour.

C. Write 'True' or 'False' for the following statements.

1.	Rocks differ in size, weight and colour.	**True**
2.	We can scratch limestone with our nails.	**True**
3.	Slate and shale are smooth rocks.	**False**
4.	Sandstone breaks up into sand-like particles.	**True**
5.	Lime is used in whitewashing our houses.	**True**

D. Match the following.

1.	Hard rock	**(c) diamond**
2.	Soft rock	**(d) sandstone**
3.	Pumice	**(a) floats on water**
4.	Taj Mahal	**(b) white marble**

13 The Earth : Our Home

A. Darken the correct option in the OMR Sheet :

1. The Earth is the third planet from the _____.

Ans. (a) Sun

2. One rotation of the Earth takes _____.

Ans. (a) 24 hours

3. _____ is the only planet that supports life.

Ans. (a) Earth

4. The Earth spins round on its axis from _____.

Ans. (a) West to East

B. Fill in the blanks using the clue box.

1. The **Earth** is the only planet that supports life.
2. The surface of the Earth is made up of **land** and **water.**
3. The **blue** colour shows water on Earth's surface.
4. **Rotation** of the Earth causes day and night.
5. **Revolution** of the Earth brings about change in seasons.

C. Write 'T' for a true statement and 'F' for a false one.

1. It is day all over the world at the same time. **False**
2. The Earth spins round on its axis from East to West. **False**
3. Rotation is a movement of the Sun. **False**
4. The spinning of the Earth on its axis is called rotation. **True**

D. Answer the following questions.

1. What is the surface of the Earth made up of?

Ans. The surface of the Earth is made up of land and water. Land includes mountains, plains and deserts, while water includes oceans, seas, rivers and lakes.

2. What is the source of light and energy on the Earth?

Ans. The Sun is the main source of light and energy on the Earth. It gives us heat and light and helps all living things to survive.

3. How does the Earth get day and night?

Ans. The Earth rotates on its axis. The part facing the Sun has day, while the part away from the Sun has night.

4. What is revolution? How long does the Earth take for one complete revolution?

Ans. Revolution is the movement of the Earth around the Sun. The Earth takes about 365 days and 6 hours to complete one revolution.

5. Describe the surface of the Earth.

Ans. The Earth's surface has land, water and air around it. About three-fourths of the Earth is covered with water and one-fourth is land.

14 Water and its Forms

A. Darken the correct option in the OMR Sheet :

1. Water has _____ forms.

Ans. (a) three

2. When water is heated, it changes into _____.

Ans. (b) water vapour

3. The changing of water vapour into water is called _____.

Ans. (a) condensation

4. The change of water into ice is called _____.

Ans. (b) freezing

B. Fill in the blanks using the clue box.

1. Water is found in **three** forms.
2. Water-vapour rises high up and forms **clouds.**
3. **Ice** is the solid form of water.
4. When water is heated it turns into **steam.**

C. Match the following.

1.	Evaporation	**(c) change from liquid into gas**
2.	Condensation	**(d) change from gas into liquid**
3.	Freezing	**(a) change from water into ice**
4.	Boiling	**(b) change from water into steam**

D. Answer the following questions.

1. Name the three forms of water.

Ans. Water exists in three forms—solid, liquid and gas. Ice is the solid form, water is the liquid form and steam is the gas form.

2. Give another name of steam.

Ans. Steam is also called water vapour. It is the gaseous form of water.

3 Water changes into which form when heated?

Ans. When water is heated, it changes into steam. Steam is the gaseous form of water.

4. If you are given a glass of water, how will you convert it into steam?

Ans. Pour the water into a pan or kettle and heat it. On boiling, the water changes into steam.

15 Bones and Muscles

A. Darken the correct option in the OMR Sheet :

1. Bones and muscles are covered with _____.

Ans. (b) skin

2. Muscles become strong if we _____.

Ans. (a) exercise

3. Correct posture gives proper shape to our _____.

Ans. (c) body

B. Fill in the blanks using the words from the clue box.

1. **Exercises** keep our muscles fit.

2. There are more than **600** muscles in our body.
3. **Bones** support the body.
4. **Correct posture** keeps muscles and bones in good shape.

C. Write 'True' or 'False' for the following statements.

1. There are about 206 muscles in a human body. **False**
2. Exercise and games make the body weak. **False**
3. Playing outdoor games is a good exercise. **True**
4. Bones are softer than the muscles. **False**

D. Match the following.

1.	Muscles	**(c)**	**more than 600**
2.	Bones	**(a)**	**206**
3.	Exercise	**(d)**	**keeps body healthy**
4.	Posture	**(b)**	**position of a person's body**

E. Answer the following questions.

1. How many muscles and bones are there in our body?

Ans. There are 206 bones and more than 600 muscles in our body. They help us to move and support the body.

2. Why is exercise important?

Ans. Exercise makes our body strong and healthy. It keeps our muscles and bones fit and active.

3. What is a posture?

Ans. Posture is the position of our body while sitting, standing or walking. A good posture keeps our body in proper shape.

4. Does a bad posture make a person look ugly?

Ans. Yes, bad posture can bend the back and shoulders. It spoils body shape and makes a person look ugly.

16 Keeping Healthy

A. Darken the correct option in the OMR Sheet :

1. _____ build up our muscles and bones.

Ans. (a) Proteins

2. _____ give us energy to work and play.

Ans. (a) Fats

3. _____ protect us from illness and diseases.

Ans. (a) Vitamins

4. _____ is necessary to grow healthy.

Ans. (a) Balanced diet

B. Fill in the blanks using the clue box.

1. We need **food** to stay alive.
2. **Fats** give us energy to work and play.
3. **Vitamins** protect us from diseases.
4. Drink always **clean** water.

C. Write 'True' or 'False' for the following statements.

1. We should eat our food quickly. **False**
2. We should drink dirty water daily. **False**
3. Undereating is good for health. **False**
4. Proteins build up our muscles and bones. **True**

D. Match the following.

1.	We should eat at	**(c)**	**proper times**
2.	Good food keeps us	**(d)**	**healthy**
3.	Food gives us energy to	**(b)**	**work and play**
4.	Vitamins	**(a)**	**diseases**

E. Answer the following questions.

1. When should we take our meal?

Ans. We should take our meals regularly at proper times. Keep a gap of about four hours between meals and do not eat in between meals.

2. Why do we eat different kinds of foods?

Ans. Different foods give us energy, help our body grow, and keep us healthy. Some foods give proteins, some give fats, and some give vitamins.

3. What should we eat?

Ans. We should eat fresh, clean, and healthy food. We should avoid stale and junk food.

4. Why should we eat different fruits and vegetables?

Ans. Fruits and vegetables give us vitamins and minerals. They protect us from diseases and keep us healthy and strong.

1 Living and Non-living Things

A. Darken the correct option in the OMR Sheet :

1. A _____ is a man-made thing.

Ans. (a) computer

2. A _____ is a non-living thing.

Ans. (a) table

3. The _____ is a natural thing.

Ans. (a) Sun

4. A/An _____ is a non-living thing.

Ans. (b) car

B. Fill in the blanks using the clue box.

1. Car, table and chair are **non-living** things.
2. Living things need food to **live.**
3. Plants grow from **stem.**
4. Fish breathe through their **gills.**
5. Living things can **produce** young ones of their own kind.

C. Write 'T' for a true statement and 'F' for a false one.

1.	A seed grows into a small plant.	**True**
2.	Humans breathe with nose.	**False**
3.	All living things grow old and die.	**True**
4.	Plants make their own food.	**True**
5.	The Sun is a natural thing.	**True**

D. Match the following.

1.	Fish	**(d)**	**gills to breathe**
2.	Plants	**(a)**	**living thing**
3.	Touch-me-not	**(e)**	**leaves close when touched**
4.	Birds	**(c)**	**wings to fly**
5.	Television	**(b)**	**man-made thing**

E. Answer the following questions.

1. What are man-made things?

Ans. Man-made things are the things made by human beings. **Examples:** are table, chair, car, computer, etc.

2. What are natural things?

Ans. Natural things are the things found in nature and not made by humans. **Examples:** are sun, moon, rivers, mountains, plants, etc.

3. What are living things?

Ans. Living things are those which have life. They can grow, breathe, eat food, move and reproduce.

4. Why do living things need food?

Ans. Living things need food to live and get energy. Food helps them grow and stay healthy.

5. Why do animals move around?

Ans. Animals move around to search for food, water and shelter. They also move to protect themselves from danger.

2 Locomotion in Different Animals

A. Darken the correct option in the OMR Sheet :

1. Fruits contain _____.

Ans. (a) seeds

2. _____ contains many seeds.

Ans. (b) Papaya

3. One-seeded fruit _____.

Ans. (a) mango

4. _____ stored foods in leaves.

Ans. (a) Cabbage

B. Fill in the blanks using the clue box.

1. The part of the plant found above the ground is called the **shoot** system.
2. **Leaves** make food for the plants.
3. Flowers become **fruit.**
4. Fruit contain **seeds.**

C. Write 'T' for or 'False' for the following statements.

1. The root fixes the plant in the soil. **True**
2. Wheat have fibrous roots. **True**
3. The stem holds the plant erect. **True**
4. The seeds are hidden in stem. **False**

D. Match the following.

1.	Sweet potato	**(c) food stored in root**
2.	Cabbage	**(d) food stored in leaves**
3.	Mango	**(e) one-seeded fruit**
4.	Chlorophyll	**(a) green-colouring material of leaves**
5.	Potato	**(b) food stored in stem**

E. Answer the following questions.

1. Name two parts of the plant.

Ans. The two main parts of a plant are the root and the shoot. Roots grow below the ground and shoots grow above the ground.

2. Name two types of roots.

Ans. The two types of roots are taproot and fibrous root. Taproots have one main root, while fibrous roots have many thin roots.

3. State two main functions of the root.

Ans. Roots fix the plant firmly in the soil. They also absorb water and minerals from the soil.

4. Why are leaves called the 'food-factories' of plants?

Ans. Leaves prepare food for the plant using sunlight, water, and air. This process is called photosynthesis.

5. State two uses of fruits.

Ans. **1.** Fruits provide vitamins and minerals and keep us healthy.
2. Fruits help in digestion and protect us from diseases.

3 Food and Feeding Habits of Animals

A. Darken the correct option in the OMR Sheet :

1. _____ is a herbivorous animal.

Ans. (b) Cow

2. _____ is omnivorous animal.

Ans. (c) Bear

3. _____ is a carnivorous animal.

Ans. (b) Lion

4. _____ suck nectar from flowers.

Ans. (a) Butterflies

B. Fill in the blanks using the clue box.

1. Animals need **food** to live and grow.
2. Food gives **energy** to animals to work.
3. Butterflies suck nectar of flowers through a tube-like structure called **proboscis.**
4. The **human beings** eats plants as well as animals.
5. Birds have no teeth but they have **beak.**

C. Write 'T' for a true statement and 'F' for a false one.

1. Animals make their own food. **False**
2. Omnivorous animals eat the flesh and plants. **True**
3. A Zebra eats meat. **False**
4. Butterflies chew their food. **False**
5. All animals eat the same kind of food. **False**

D. Match the following.

1.	Cow	**(e) cud-chewing**
2.	Elephant	**(a) trunk**
3.	Rabbit	**(d) rodent**

4. Canines **(b) tearing teeth**
5. Molars **(c) grinding teeth**

E. Answer the following questions.

1. Why do animals need food?

Ans. Animals need food to live and grow. Food gives them energy to do work and helps them stay healthy. Without food, animals cannot survive.

2. What do herbivorous eat?

Ans. Herbivorous animals eat plants and plant products only. They feed on grass, leaves, fruits, and vegetables. **Examples** are cow, goat, and deer.

3. What is food chain?

Ans. A food chain shows how living things depend on one another for food. It tells us who eats whom in nature. It starts with plants and ends with animals.

4. What type of teeth are found in plant-eating animals?

Ans. Plant-eating animals have broad and flat teeth. These teeth are called molars. They help in grinding and chewing plant food.

5. What type of teeth are found in flesh-eating animals?

Ans. Flesh-eating animals have sharp and pointed teeth. These teeth are called canines. They help in tearing the flesh of other animals.

4 Birds Around Us

A. Darken the correct option in the OMR Sheet :

1. _____ fly at a great height.

Ans. (a) Eagle

2. _____ fly at lower height.

Ans. (a) Pigeon

3. _____ cannot fly.

Ans. (a) Ostrich

4. Birds like cranes walk through water, they are called _____.

Ans. (d) water birds

B. Fill in the blanks using the clue box.

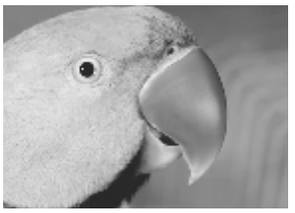
1. By seeing beak of a bird we can guess the type of **food** it **eats.**
2. Flesh-eating birds have **hard**, **sharp** and **curved** beaks.
3. Ducks and swans have flat beaks with **strainers.**
4. **Climbing** birds have two toes in front and two behind.
5. Peacock have **strong horny** claws.

C. Write 'T' for a true statements and 'F' for a false one.

1. Ostrich cannot fly. **True**
2. Eagle fly at a lower height. **False**

3. Kingfishers, cranes, pelicans, gulls, etc., have long beaks. **True**
4. Parrots have hooked beaks. **True**
5. Eagles have hard, sharp and curved beaks. **True**

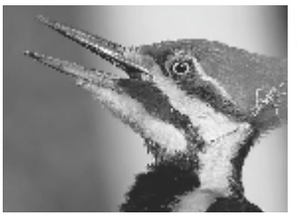
D. Look at the pictures of beaks and claws and name the birds.

1. 

Parrot

2. 

Eagle

3. 

Woodpecker

4. 

Swan

5. 

Toes of an ostrich

6. 

Toes of a duck

7. 

Toes of a parrot

8. 

Toes of an eagle

E. Match the birds with their beaks.

	Bird		**Beak**
1.	Weaver bird	**(e)**	**short, hard and horny beak**
2.	Parrot	**(d)**	**hooked beak**
3.	Kingfisher	**(a)**	**long beak**
4.	Duck	**(c)**	**flat beak**
5.	Hawk	**(b)**	**hard, sharp and curved beak**

F. Answer the following questions.

1. What kinds of feathers does a bird have?

Ans. A bird has three kinds of feathers—flight feathers to help in flying, body feathers to cover the body, and down feathers to keep it warm.

2. How do birds fly?

Ans. Birds fly with the help of their wings and strong flight muscles. Their light, streamlined body and tail help them move and change direction in the air.

3. Describe the body features of a flightless bird.

Ans. Flightless birds have a heavy body and heavy bones, so they cannot fly. Their wings are small and are used mainly for balance or movement on land/water.

4. How do claws help birds?

Ans. Claws help birds to catch and hold their food, protect themselves, and sit firmly on branches. Some birds use claws to climb or scratch the ground.

5. What are strainers?

Ans. Strainers are the tiny tooth-like edges on the flat beaks of ducks and swans. They help to filter food from muddy water.

5 Nesting Habits and Care of the Young Ones

A. Darken the correct option in the OMR Sheet :

1. An owl makes a nest in the hollow of a _____ .

Ans. (a) tree

2. Birds make their nests by different _____.

Ans. (a) materials

3. _____ does not make its nest.

Ans. (a) Cuckoo

4. _____ make their nests in houses.

Ans. (a) Pigeon

B. Fill in the blanks using the clue box.

1. A **penguin** makes its nest in the ground.
2. An **owl** makes a nest in the hollow of a tree.
3. **Vulture** lays only one egg at a time.
4. Woodpecker makes its nest **in the trunk of a tree.**
5. **Cuckoos** do not build nests.

C. Write 'T' for a true statement and 'F' for a false one.

1.	The mother bird protects the nest and keeps enemies away.	**True**
2.	All the birds make their nests with same materials.	**False**
3.	The cuckoo does not make its nest.	**True**
4.	An ostrich lays the largest egg which weighs about 1.4 kg.	**True**

D. Match the following.

1.	The weaver bird	**(d) builds untidy domed nests**
2.	The penguin's nest	**(b) is made of pebbles**
3.	The vulture	**(e) makes a nest at a height of 30 to 40 feet**
4.	The bulbul's nest	**(a) is made of dry grass and twigs**
5.	The cuckoo	**(c) does not build its nest**

E. Answer the following questions.

1. How do baby birds look like when they born?

Ans. Baby birds are very small and weak when they are born. They have little or no feathers and cannot fly.

2. Why do birds build nests?

Ans. Birds build nests to lay and hatch their eggs. Nests also protect the eggs and young ones from enemies and bad weather.

3. How does a vulture build its nest?

Ans. A vulture puts a few sticks together in the shape of a shallow cup. It builds its nest high on a tree, about 30–40 feet above the ground.

4. What materials do birds use for building nests?

Ans. Birds use grass, leaves, twigs, feathers, cotton, wool, thread, hair, stones and wood to build their nests.

5. Describe about the tailor bird.

Ans. The tailor bird makes its nest using two or three large leaves. It stitches the leaves together with cotton, wool or spider's web using its sharp, needle-like beak.

6 Our Universe

A. Darken the correct option in the OMR Sheet :

1. _____ is the natural satellite of the Earth.

Ans. (a) Moon

2. _____ has no light of its own.

Ans. (c) Moon

3. The Sun rises in the _____.

Ans. (a) East

4. The Sun sets in the _____.

Ans. (b) West

B. Fill in the blanks using the clue box.

1. The Earth takes **365¼** days to complete one revolution.
2. There are **88** known constellations.
3. The moon has no **light** of its own.
4. Days and nights are caused by the **rotation** of the Earth on its axis.
5. The **stars** are many times bigger than the Sun.

C. Write 'T' for a true statements and 'F' for a false one.

1.	The Sun is a star.	**True**
2.	The moon is a natural satellite.	**True**
3.	England is called the land of the rising sun.	**False**
4.	Aryabhatta, INSAT-1A etc. are natural satellites.	**False**
5.	Group of stars are called constellations.	**True**

D. Match the following.

1.	Leo	**(d)**	**a constellation**
2.	Moon	**(b)**	**a natural satellite**
3.	Aryabhatta	**(c)**	**an artificial satellite**
4.	Earth	**(a)**	**a planet**
5.	Sun	**(e)**	**a star**

E. Answer the following questions.

1. What is atmosphere?

Ans. The atmosphere is the thick layer of air that surrounds the Earth. It protects living

beings and helps us to breathe.

2. Write the short notes about the Sun, the moon and the stars.

Ans. **1. Sun:** The Sun is the nearest star to Earth. It is a big ball of very hot gases and gives its own light and heat.

2. Moon: The Moon is the natural satellite of the Earth. It has no light of its own; it shines by reflecting sunlight.

3. Stars: Stars are big heavenly bodies that remain fixed in the sky and have their own light. They look small because they are very far away.

3. Define constellations, new moon and full moon.

Ans. **1. Constellations:** Groups of stars that form fixed patterns/shapes in the night sky.

2. New moon: When we cannot see the moon because the lit side is not facing us (moon comes between Earth and Sun)

3. Full moon: When we can see the full sunlit face of the moon.

4. Name two Indian Astronomers. Write two lines on any one of them.

Ans. Aryabhatta and Bhaskara are two Indian astronomers.

- **About Aryabhatta (2 lines):** He was an astronomer and mathematician. He explained that the moon and planets shine by reflected sunlight and also explained the causes of solar and lunar eclipses.

5. Give any one example that shows the Earth is round.

Ans. When a ship sails away from the shore, the lower part disappears first and the top (flag) disappears last. This shows the Earth is round.

7 Weather and Seasons on Earth

A. Darken the correct option in the OMR Sheet :

1. Moving air is called _____.

Ans. (a) wind

2. Fast blowing air is called _____.

Ans. (b) wind

3. _____ is lighter than fog.

Ans. (a) Mist

4. The sun rises in the _____.

Ans. (a) morning

B. Fill in the blanks using the clue box.

1. In **rainy** season, water collects on the roads and in the fields.
2. We wear **cotton** clothes in summer season.
3. It comes **spring** season after winter season.
4. **Sun rays** are straight during the summer season.
5. **Hot** air is lighter while the cool air is **heavy.**

C. Write 'T' for a true statement and 'F' for a false one.

1. We feel comfortable on a cloudy day in summer. **True**
2. Nights are cooler than days. **True**
3. Moving air is called wind. **True**
4. The lightning heats the air around it. **True**
5. Weather remains the same throughout the year. **False**

D. Match the following.

1.	Humidity	**(a)**	**the amount of water in the air**
2.	Frost	**(e)**	**the form of water vapour when the temperature drops below 0°C**
3.	Mist	**(d)**	**lighter than fog**
4.	Fog	**(c)**	**a low-lying bank of clouds**
5.	Dew	**(b)**	**water droplets formed during cold nights**

E. Answer the following questions.

1. What factors cause the different kinds of weather?

Ans. Different kinds of weather are caused by the Sun, air (wind), and water. These together decide heat, wind, clouds, and rain.

2. Why is noon comparatively hotter than morning and evening?

Ans. At noon, the Sun rays fall straight on the Earth and give more heat. In the morning and evening, the rays are slanting and give less heat.

3. What is the difference between breeze and loo?

Ans.	**Breeze**	**Loo**
1.	Breeze is a gentle wind.	Loo is a hot and strong wind.
2.	It usually blows in pleasant weather.	It blows during peak summer.
3.	Breeze makes the weather cool and comfortable.	Loo makes the weather very hot and dry.
4.	It is harmless to people.	It can be harmful and cause illness.
5.	Breeze blows at a slow speed.	Loo blows at a high speed.

4. What is thunder?

Ans. Thunder is the loud sound produced when lightning heats the air suddenly. The hot air expands and creates sound.

5. Why are cloudy nights warmer than the clear nights?

Ans. Clouds trap the heat of the Earth and do not allow it to escape. Therefore, cloudy nights are warmer than clear nights.

8 The Water

A. Darken the correct option in the OMR Sheet :

1. For cooking, washing and bathing, we need _____.

Ans. (c) water

2. We get ground water from _____.

Ans. (d) none of these

3. Water can be made fit for drinking by _____.

Ans. (b) boiling

B. Fill in the blanks using the clue box.

1. Plants **live** well when they get water.
2. We get underground water by bouring **tube wells.**
3. We cannot **wash** clothes without water.
4. We get water from **taps** in our houses.
5. **Boiling** kills germs in water.

C. Write 'True' or 'False' for the following statements.

1. Rain is the main source of water. **True**
2. We dig wells for the underground water. **True**
3. We must drink dirty water for good health. **False**
4. We should always keep the taps closed when not required. **True**

D. Match the following.

1.	Main source of water	**(d) rain**
2.	Ground water	**(a) tube wells**
3.	Cooling water	**(b) ice**
4.	Heating water	**(c) water vapour**

E. Answer the following questions.

1. What is the main source of water?

Ans. Rain is the main source of water. Rivers, ponds, lakes and ground water all depend on rain.

2. Why should we boil drinking water?

Ans. We should boil drinking water because boiling kills germs. It makes the water safe and fit for drinking.

3. Give any two uses of water for human beings.

Ans. Water is used for drinking and cooking. It is also used for washing and bathing.

4. Where do the villagers get water from?

Ans. Villagers get water mainly from wells and hand pumps. In some places, they also use tube wells.

9 The Soil

A. Darken the correct option in the OMR Sheet :

1. Gravel soil is also called _____.

Ans. (a) rocky soil

2. _____ has smaller grains.

Ans. (a) Sandy soil

3. _____ is used for making toys and pots.

Ans. (a) Clayey soil

4. _____ is harder than topsoil.

Ans. (a) Subsoil

B. Fill in the blanks using the clue box.

1. Gravel soil is also called **rocky** soil.
2. **Loamy** soil is rich in organic matter.
3. **Loamy** soil contains both sand and clay.
4. Toys and pots are made with **clayey** soil.

C. Write 'T' for a true statements and 'F' for a false one.

1.	Sandy soil is best for the growth of plants.	**False**
2.	Soil is formed from stones.	**True**
3.	Plants grow mostly in the topsoil.	**True**
4.	Loamy soil cannot hold both air and water.	**False**
5.	Humus is dark brown or black in colour.	**True**

D. Match the following.

1.	Loamy soil	**(d)**	**contains proper proportions of sand, clay and humus**
2.	Clayey soil	**(c)**	**very sticky**
3.	Sandy soil	**(b)**	**has smaller grains**
4.	Humus	**(e)**	**contains the remains of the dead animals and plants**
5.	Topsoil	**(a)**	**supports roots of plants**

E. Answer the following questions.

1. What is the soil made up of ?

Ans. Soil is made up of tiny pieces of rocks, sand and clay. It also contains the remains of dead plants and animals.

2. How is soil formed? What are the main kinds of soils?

Ans. Soil is formed by the breaking of rocks over a long time by heat, wind and water. The main kinds of soils are gravel (rocky), sandy, clayey and loamy.

3. What is humus?

Ans. Humus is the decayed matter formed from dead plants and animals. It is dark brown or black in colour and makes soil fertile.

4. Which soil is best for the growth of plants?

Ans. Loamy soil is best for the growth of plants. It contains humus and holds both air and water.

5. What is soil profile?

Ans. Soil occurs in different layers. The arrangement of these layers is called the soil profile.

10 Our Body : A Wonderful Machine

A. Darken the correct option in the OMR Sheet :

1. The skull has the _____.

Ans. (a) brain

2. _____ grow over the skull.

Ans. (a) Hair

3. The eyes are protected by _____.

Ans. (a) eyelids

4. _____ contains the lungs and heart.

Ans. (a) Chest

5. The _____ system controls our actions.

Ans. (a) nervous

6. The _____ system carries blood to all parts of the body.

Ans. (a) circulatory

B. Fill in the blanks using the clue box.

1. The head is made up of a bony-box called **skull.**
2. The skull has the **brain** which controls all the activities of the body.
3. There are **206** bones and **600** muscles in our body.
4. **Eyes**, **nose**, **ears**, **tongue**, and **skin** are our sense organs.
5. The **excretory** system helps to remove waste materials from the body.

C. Write 'T' for a true statement and 'F' for a false one.

1.	A complete set of bones is called skeleton.	**True**
2.	The chest is also called the abdomen.	**False**
3.	The heart, arteries and veins are the organs of circulatory system.	**True**
4.	The oesophagus sends food down into the stomach.	**True**
5.	Breathing in air is called expiration.	**False**

D. Match the following.

1.	Surface is rough	**(c)**	**skin**
2.	Juice is sweet	**(d)**	**tongue**
3.	Your next door neighbours are quarrelling	**(e)**	**ears**
4.	Your Dad is walking towards you	**(b)**	**eyes**
5.	Paper is burning in the next room	**(a)**	**nose**

E. Answer the following questions.

1. How many organ system are there in our body? Name them.

Ans: There are seven organ systems in our body. They are digestive, respiratory, circulatory, skeletal and muscular, nervous, excretory, and reproductive systems.

2. What are the main organs of digestive system of a man?

Ans: The main organs of the digestive system are mouth, oesophagus (food pipe), stomach, small intestine, large intestine, liver and pancreas.

3. What are the main organs of circulatory system?

Ans: The main organs of the circulatory system are the heart, arteries and veins. They help in carrying blood to all parts of the body.

4. Which organs form the nervous system?

Ans: The brain, spinal cord and nerves together form the nervous system. It controls all the activities of our body.

5. How the digestive system helps to digest the food?

Ans: The teeth and tongue help to chew and swallow food. The stomach and intestines digest the food and absorb nutrients for the body.

6. What is the function of the respiratory system in our body?

Ans: The respiratory system helps us to breathe in oxygen and breathe out carbon dioxide. Oxygen is needed for energy and life.

11 Measurement

A. Darken the correct option in the OMR Sheet :

1. The standard unit of length is _____.

Ans. (b) metre

2. The standard unit of mass is _____.

Ans. (a) kilogram

3. The standard unit of Volume is _____.

Ans. (a) litre

4. An instrument use to measure temperature is _____.

Ans. (c) thermometre

B. Fill in the blanks using the clue box.

1. A metre is divided into 100 equal divisions called **centimetres.**
2. To measure weight, we use different kinds of **weighing machines.**
3. **Volume** may be defined as the space occupied by a given thing.
4. The body temperature of a normal person is **37.4°C** (98.4°F).
5. The degree of hotness and coldness is called **temperature.**

C. Write 'T' for a true statement and 'F' for a false one.

1.	Length is measured in metres.	**True**
2.	In a watch there are three hands.	**True**
3.	The body temperature of a normal person is 36°C.	**False**
4.	Weight is measured in grams and kilograms.	**True**
5.	We weigh ourselves with the help of a weighing machine.	**True**

D. Match the following.

1.	Volume	**(c) litre**
2.	Time	**(d) hour**
3.	Weight	**(e) kilogram**
4.	Length	**(b) metre**
5.	Temperature	**(a) degree celsius**

E. Complete the following.

1.	1 kilogram	=	**1000**	grams
2.	1 metre	=	**100**	centimetres
3.	1 kilometre	=	**1000**	metres
4.	1 minute	=	**60**	seconds
5.	1 litre	=	**1000**	millilitres

F. Answer the following questions.

1. What is measurement?

Ans. Measurement is the process of finding the length, weight, volume, or time of an object using standard units. It helps us to know the exact size or amount of things.

2. What is the body temperature of a normal person?

Ans. The normal body temperature of a healthy person is 37.4°C or 98.4°F. It shows that the body is in a healthy condition.

3. Name the instrument which we use to measure rainfall.

Ans. Rainfall is measured with the help of an instrument called a rain gauge. It measures the amount of rain received.

4. Name the units used to measured the following things :

(a)	A piece of cloth of shirt	**metre / centimetre**
(b)	Milk in a container	**litre / millilitre**
(c)	Temperature of your body	**degree Celsius (°C)**
(d)	Duration of your journey from Meerut to Delhi	**hour / minute**

12 Safety Habits and First-aid

A. Darken the correct option in the OMR Sheet :

1. Never play on the _____.

Ans. (a) road

2. Always cross the road by using the _____.

Ans. (a) zebra crossing

3. While walking on a busy road always use the _____.

Ans. (a) pavement

4. Always keep your toys, bags, books and shoes _____.

Ans. (a) at the correct place

B. Fill in the blanks using the clue box.

1. The help which you give to a patient who is hurt or injured, before the doctor's arrival, is called **first-aid.**
2. Cross the road only at the **zebra**-crossing.
3. We should not touch electrical switches with **wet** hands.
4. Never play games on **roads.**

C. Write 'T' for a true statement and 'F' for a false one.

1. First-aid is given to a patient after he arrives at the hospital. **False**
2. Always cross the road only at the zebra-crossing. **True**
3. Red light indicates to stop. **True**
4. Playing on the road is safe. **False**

D. Match the following.

1.	Antiseptic	**(b) dettol**
2.	Gives treatment to patient	**(c) doctor**
3.	Cotton	**(a) to clean the wound**
4.	Accident	**(e) occur in hurry**
5.	Sharp-edged instrument	**(d) razor**

E. Answer the following questions.

1. What is first-aid? List important things to be kept in a First-aid box.

Ans. First-aid is the immediate help given to an injured person before the doctor comes. **First-aid box items:** cotton roll, gauze pieces, bandages, adhesive tape, forceps, scissors, tincture iodine, Dettol/Savlon, Burnol, soap, etc.

2. Where and when should we cross the road?

Ans. We should cross the road only at the zebra crossing. If there is a traffic light, cross when the light is red for vehicles, and after looking both sides.

3. Why should we not play on the road?

Ans. Roads have fast-moving vehicles. Playing on the road can cause serious accidents and we may get hurt or hit by a vehicle.

4. Write three rules of safety on the road.

Ans. **1.** Always walk on the pavement/footpath.
2. Cross only at the zebra crossing (or when traffic stops).
3. Obey traffic lights (Red-stop, Yellow-wait, Green-go).

5. What are safety rules?

Ans. Safety rules are rules and methods that help us stay safe. If we follow them carefully, accidents can be prevented.

1 Plants : Food Producers

A. Darken the correct option in the OMR Sheet :

1. All men and animals depend on plants for _____.

Ans. (b) food

2. Green leaves of the plants are called _____.

Ans. (a) food factories

3. Gas taken in by the plants during photosynthesis is _____.

Ans. (b) carbon dioxide

4. During photosynthesis, plants give off _____.

Ans. (c) oxygen

5. The food is stored in the leaves in the form of _____.

Ans. (a) starch

B. Fill in the blanks using the clue box.

1. **Plants** are the basic sources of food.
2. Plants are **necessary** for life in world.
3. In cactus, photosynthesis takes place in the **stem.**
4. We eat leaves of plants like **spinach.**
5. Grasses like **wheat** and **paddy** are called cereals.

C. Write 'T' for a true statement and 'F' for a false one.

1. The presence of chlorophyll in leaves makes leaves green. **True**
2. In the absence of sunlight green leaves put together water and carbon dioxide to make food. **False**
3. Water is necessary for photosynthesis. **True**
4. Some plants get their food from dead and decayed plants and animals. **True**
5. Stomata is always present on the upper side of a leaf. **False**

D. Match the following.

1.	Grasses like wheat and paddy	**(d)**	**cereals**
2.	Cactus	**(a)**	**unusual plant**
3.	Food factories	**(c)**	**green leaves**
4.	Chlorophyll	**(b)**	**green substance present in leaves**

E. Answer the following questions.

1. What materials do leaves need to prepare their food?

Ans. Leaves need sunlight, water, carbon dioxide and chlorophyll to prepare food by the process of photosynthesis.

2. Where does food get stored in the plants?

Ans. Food is stored in the form of starch in different parts of plants like leaves, stems, roots, fruits and seeds.

3. Does photosynthesis take place twenty-four hours of the day? Why

Ans. No, photosynthesis does not take place all the time because sunlight is necessary for this process, and it is not available at night.

4. How do plants like cactus and red maroon get food?

Ans. In cactus, green stem prepares food as leaves are changed into thorns. Red maroon leaves also have chlorophyll, so they can make food.

5. How are plants and animals interdependent on each other?

Ans. Plants provide food and oxygen to animals. Animals give out carbon dioxide, which plants use to make food.

2 Plants Adaptations

A. Darken the correct option in the OMR Sheet :

1. Insect-eating plants are called _____.

Ans. (a) insectivorous plants

2. The plants which grow on land are called _____.

Ans. (a) terrestrial plants

3. The plants found under the water are called _____.

Ans. (a) submerged plants

4. Process of food preparation in plants is called _____.

Ans. (a) photosynthesis

B. Fill in the blanks using the clue box.

1. Terrestrial plants grow on **land.**
2. Aquatic plants grow in **water.**
3. Plants of cold climate have **needle** like leaves.
4. The coconut tree grows in **hot** and damp climate.
5. Lotus is a **fixed** aquatic plant.

C. Write 'T' for a true statement and 'F' for a false one.

1. Terrestrial plants grow on land. **True**
2. Stomata help in gaseous exchange. **True**
3. Aquatic plants grow in water and in extremely wet soil. **True**
4. Wind, water and animals are the main agencies of dispersal of seeds. **True**
5. Roots of marshy plants grow above the ground. **True**

D. Match the following.

1.	Spruce	**(e) plant of cold climate**
2.	Mango	**(d) plant of plains**
3.	Coconut	**(c) plant of hot and damp climate**
4.	Nerium	**(a) desert plant**
5.	Lotus	**(b) a fixed plant**

E. Answer the following questions.

1. What do you understand by adaptation? Give an example.

Ans. Adaptation means special features in plants that help them survive in their surroundings. **For example**, desert plants have spines instead of leaves to reduce water loss.

2. What are 'floating plants'? Give two examples.

Ans. Floating plants float freely on the water surface. Their stem is reduced and roots are poorly developed. **Examples:** water hyacinth, duckweed (or trapa).

3. Why do the plants of cold areas have pointed leaves?

Ans. They have needle-like/pointed leaves so that snow can slide off easily during snowfall. This prevents branches from breaking due to heavy snow.

4. Why are seeds dispersed from one place to another place?

Ans. If all seeds fall near the parent plant, there will be no space and resources (water, minerals) get exhausted. So seeds are dispersed to help plants grow well in new places.

5. Why is a pitcher plant so colourful?

Ans. Pitcher plant leaves become colourful to attract insects. Then it traps them to fulfil its protein requirement.

3 Animals Adaptations

A. Darken the correct option in the OMR Sheet :

1. The animals that spend most of their time on trees are called _____.

Ans. (b) arboreal

2. The camel is also called the _____.

Ans. (b) ship of the desert

3. Tapeworm is a :

Ans. (a) parasite

B. Fill in the blanks using the clue box.

1. Animals who live mostly on trees are called **arboreal** animals.
2. Aerial animals have **wings** o fly.
3. **Amphibians** live on both land and water.
4. **Camels** can live three months without water.
5. Animals which eat plants are called **herbivorous** animals.

C. Write 'T' for a true statement and 'F' for a false one.

1. Chameleon is an arboreal animal. **True**
2. Frog is an amphibian. **True**
3. Fox is a herbivorous animal. **False**
4. Cockroach is a parasite. **False**

D. Match the following column.

1.	A carnivorous animal	**(d)**	**lion**
2.	A herbivorous animal	**(e)**	**zebra**
3.	An omnivorous animal	**(c)**	**crow**
4.	An aquatic animal	**(a)**	**dolphin**
5.	A parasite	**(b)**	**bug**

E. Answer the following questions.

1. Why do animals adapt themselves?

Ans. Animals adapt themselves to survive in their surroundings. Adaptations help them to get food, protect themselves from enemies, and live comfortably in different climates.

2. What do you mean by 'terrestrial animals'?

Ans. Animals that live on land are called terrestrial animals. **Examples:** are lion, elephant, horse, cow, and dog.

3. What are parasites? Give examples.

Ans. Parasites are animals that live on or inside another animal (host) and get food from it. **Examples:** are tapeworm, mosquito, leech, and bug.

4. How can animals be grouped according to their different food habits?

Ans. Animals are grouped as herbivores (eat plants), carnivores (eat flesh), omnivores (eat both plants and animals), and parasites (depend on hosts for food).

4 Animals Reproduction

A. Darken the correct option in the OMR Sheet :

1. Which one of the following animals does not lay eggs?

Ans. (c) Cow

2. Which one of the following groups of animals gives birth to young ones?

Ans. (a) Mammals

3. When the young ones hatch out, they look like the adults in _____.

Ans. (c) snakes

4. It is the development of an animal from the time it is born till it becomes on adult.

Ans. (c) Life cycle

B. Fill in the blanks by using the clue box.

1. The way in which new living things are made is called **reproduction.**
2. Those animals in which the female suckles the young ones are called **mammals.**
3. A **hen** sits on her eggs to keep them warm.
4. Young crocodiles hatch out from eggs in **90** days.
5. Snakes lay their eggs in **burrows.**

C. Write 'T' for a true statement and 'F' for a false one.

1. All snakes lay eggs. **False**

2. The highest degree of parental care is seen in birds. **False**
3. All fish give birth to their young ones directly. **False**
4. The tadpoles are similar to their adults. **False**
5. Mammals give birth to their young ones directly. **True**

D. Match the following.

1.	Horse	**(d) colt**
2.	Elephant	**(e) calf**
3.	Sheep	**(b) lamb**
4.	Cow	**(a) calf**
5.	Hen	**(c) chick**

E. Answer the following questions.

1. What is reproduction?

Ans. Reproduction is the process by which living beings produce new young ones of their own kind. It helps in the continuation of life on Earth.

2. What are the ways in which animals reproduce?

Ans. Animals reproduce in two ways. Some animals give birth to young ones, while others lay eggs.

3. Name the four stages in the life-cycle of a butterfly.

Ans. The four stages in the life-cycle of a butterfly are:

1. Egg
2. Caterpillar (Larva)
3. Pupa
4. Adult Butterfly

4. Where do reptiles lay their eggs?

Ans. Reptiles lay their eggs on land, usually in burrows, holes or sandy places to keep them safe.

5. Describe parental care in birds.

Ans. Birds make nests and lay eggs in them. They sit on the eggs to keep them warm and take care of the chicks after hatching by feeding and protecting them.

5 Plants and Animals : Care and Protection

A. Darken the correct option in the OMR Sheet :

1. All men and animals depend on plants for _____.

Ans. (b) food

2. Our national bird is _____.

Ans. (c) peacock

3. Watering and manuring are necessary for the growth of _____.

Ans. (b) crops

4. Crops are protected from pests and insects by _____.

Ans. (b) pesticides

5. Jim Corbett National Park is in _____.

Ans. (d) Uttarakhand

6. Our national animals is _____.

Ans. (c) tiger

B. Fill in the blanks by using the clue box.

1. Plants gives out **oxygen** in the air by making food.
2. The air we breathe out contains more **carbon dioxide.**
3. National parks and sanctuaries are places where wild animals are **protected.**
4. Plants need protection against **insects** and pests.
5. Sick **animals** are treated in veterinary hospitals.

C. Write 'T' for a true statement and 'F' for a false one.

1. Trees are natural homes to many animals. **True**
2. Extreme cold is good for the growth of plants. **False**
3. The air we breathe contains more oxygen and less carbon dioxide. **True**
4. Green plants make their own food. **True**
5. Animal wastes can be used for making gobar gas. **True**

D. Match the following.

1.	Green plants make their food in the presence of	**(d) sunlight**
2.	Plants kept in the dark	**(c) do not grow well**
3.	Plants need care against	**(b) pests and diseases**
4.	Domestic animals need	**(e) proper care**
5.	Pollution of water and air	**(a) is harmful to living beings**

E. Answer the following questions.

1. How do green plants make their own food?

Ans. Green plants make their own food by using carbon dioxide and water in the presence of sunlight and chlorophyll. This process is called photosynthesis.

2. Give two important ways of protecting our wild life.

Ans. Wildlife can be protected by stopping hunting and poaching. Making national parks and wildlife sanctuaries also helps in protecting animals.

3. State two harmful effects caused by cutting down of trees.

Ans. Cutting trees causes soil erosion and floods because soil gets washed away. It also reduces rainfall and destroys homes of wild animals.

4. Name the National animal and National bird of our country.

Ans. The National animal of India is the Tiger and the National bird is the Peacock.

5. How do the forest help us?

Ans. Forests provide us wood, medicines, fruits and paper. They also prevent floods, stop soil erosion and help in rainfall.

6 Homes of Animals

A. Darken the correct option in the OMR Sheet :

1. The hard covering of an animal is called _____.

Ans. (b) shell

2. A place where rabbits breed is called _____.

Ans. (a) warren

3. A _____ is a burrowing animal.

Ans. (a) mole

4. _____ is a social insect.

Ans. (a) Ant

5. Bees live in _____.

Ans. (b) hive

B. Fill in the blanks using the clue box.

1. Rats make **tunnels** in the soil and live inside.
2. Bees make a **hive.**
3. The elephants live under the shade of **trees.**
4. Earthworms live in **burrows.**
5. Wasps and bees are **social** insects.

C. Name the following.

1. Three animals which live in natural shelters — **Lion, Tiger, Fox**
2. Three animals which live in burrows — **Mole, Rabbit, Earthworm**
3. Three materials that the birds use to build their nests — **Grass, Twigs, Feathers**
4. Three animals which use their own bodies as their homes — **Snail, Tortoise, Armadillo**
5. Three different members of an ant colony — **Queen, Males, Workers**

D. Answer the following questions.

1. Why do animals need homes?

Ans. Animals need homes to stay safe from heat, cold, rain, wind and to protect themselves and their young ones from enemies.

2. Name the animals who live in burrows.

Ans. Animals like mole, rabbit, rat and earthworm live in burrows. Burrows protect them from danger and extreme weather.

3. Where does each of the following animals live:
The rabbit, the butterfly, the frog, the parrot, the monkey, the deer, the cockroach.

Ans. **1. Rabbit:** in a burrow / warren
2. Butterfly: in a cocoon
3. Frog: near ponds and water bodies

4. Parrot: in a nest on trees
5. Monkey: on trees
6. Deer: in forests under the shade of trees
7. Cockroach: in dark and damp places / cracks

4. Why are ants, and bees called social insects?

Ans. Ants and bees live together in colonies. They work together and have different members like queen, males and workers, so they are called social insects.

7 Food We Eat

A. Darken the correct option in the OMR Sheet :

1. Dehydration is a method of preserving food by _____.

Ans. (d) drying

2. For digestion of food we need _____.

Ans. (a) water

3. Food passes into the small intestine from the _____.

Ans. (d) stomach

4. A balanced diet keeps us _____.

Ans. (a) healthy

5. Our food remains in stomach about _____.

Ans. (d) 3 to 5 hours

B. Fill in the blanks using the clue box.

1. Fresh fruits, vegetables, milk and meat give us **vitamins.**
2. **Digestion** begins when we put food into our mouth.
3. Digestive **juices** are present in stomach.
4. We should eat slowly and chew our food well before **swallowing.**
5. Boiling is the common method of **preserving.**

C. Write 'T' for a true statement and 'F' for a false one.

1.	We should always wash fruits and vegetables after cutting.	**False**
2.	Mineral salts are important to keep us fit and healthy.	**True**
3.	From the stomach, food goes into the large intestine.	**False**
4.	The food we eat cannot be used as same by our body.	**True**
5.	Food remains in stomach for 6 to 7 hours.	**False**

D. Match the following.

1.	Complete food	**(b)**	**milk**
2.	Protective food	**(c)**	**vitamins and minerals**
3.	Energy-giving food	**(e)**	**carbohydrates and fats**
4.	Butter	**(a)**	**fat**
5.	Body-building food	**(d)**	**proteins**

E. Answer the following questions.

1. Why are vitamins and minerals called protective foods?

Ans. Vitamins and minerals protect our body from diseases. They help us stay healthy and keep our body functioning properly.

2. Write any six healthy eating habits.

Ans. **1.** Wash hands before and after meals.
2. Eat slowly and chew food well.
3. Avoid overeating; eat according to appetite.
4. Eat at fixed time regularly.
5. Do not eat uncovered or stale food.
6. Brush teeth before sleeping.

3. What nutrients does our food contain?

Ans. Our food contains carbohydrates, proteins, fats, vitamins, and minerals. It also contains water and roughage which help in digestion.

4. What is meant by digestion?

Ans. Digestion is the process of breaking down food into simpler forms. This helps our body absorb and use the food properly.

5. What helps making the food soft?

Ans. Saliva present in our mouth helps to make food soft. It also helps in easy swallowing of food.

8 Teeth and Microbes

A. Darken the correct option in the OMR Sheet :

1. Cutting teeths are called _____.

Ans. (a) incisors

2. The soft material inside the dentine is called _____.

Ans. (d) pulp

3. By the age of three, babies have a set of about _____.

Ans. (c) 20 teeth

4. The sticky layer of germs on teeth is called _____.

Ans. (b) plaque

5. The number of premolars in a healthy set of teeths is _____.

Ans. (c) 4

B. Fill in the blanks using the clue box.

1. **Teeth** give form and shape to the face.
2. The hard layer on our teeth is called **enamel.**
3. Canines are used for **tearing** food.
4. The sticky layer of germs is called **plaque.**
5. Microbes like **bacteria** and **viruses** cause diseases.

C. Write 'T' for a true statement and 'F' for a false one.

1. The soft material inside the dentine is called pulp. **True**
2. The canine teeth are used for grinding the food. **False**
3. If proper care is not taken, teeth start decaying. **True**
4. We should brush our teeth at least twice a week. **False**
5. Microbes are always harmful to man. **False**

D. Match the following.

1.	Canines	**(d) tearing teeth**
2.	Premolars	**(e) cracking teeth**
3.	Molars	**(c) grinding teeth**
4.	Incisors	**(b) cutting teeth**
5.	Microbes	**(a) protozoa**

E. Answer the following questions.

1. Why are teeth important us?

Ans. Teeth help us chew and bite food properly, which makes digestion easy. They also help us speak clearly and give shape to the face.

2. What are different layers of teeth called?

Ans. The tooth has three main layers: enamel (outer hard layer), dentine (inner hard layer), and pulp (soft part with nerves and blood vessels).

3. What is tooth decay? How shall we know that our teeth have decayed?

Ans. Tooth decay happens when food particles stick to teeth and form plaque; plaque reacts with sugar to make acid, which damages enamel and forms cavities. We know teeth are decayed if there are holes/cavities, toothache, bad smell, or teeth become loose.

4. What are microbes? Name different kinds of microbes.

Ans. Microbes are very tiny organisms that cannot be seen with naked eyes; they are seen under a microscope. Kinds of microbes: bacteria, viruses, protozoa, fungi.

9 Water and Weather Phenomena

A. Darken the correct option in the OMR Sheet :

1. The process of water changing into water vapour is called _____.

Ans. (a) evaporation

2. Moisture in the form of small drops called _____.

Ans. (d) dew

3. Tiny ice crystals are called _____.

Ans. (a) frost

4. The method which is used to remove sand from water is called _____.

Ans. (b) sedimentation

5. The process of changing water vapour into water is known as _____.

Ans. (a) condensation

6. The time of the day when the land breeze blows _____.

Ans. (b) night

B. Fill in the blanks using the clue box.

1. **Water** covers over 70% of the Earth's surface.
2. Warm air is **lighter** than cold air.
3. The amount of water vapour in the air is called **humidity.**
4. The **Sun** plays an important role in causing changes in weather.
5. A gentle wind is called **breeze.**

C. Write 'T' for a true statement and 'F' for a false one.

1.	A process of purifying water is called filtration.	**True**
2.	Insoluble impurities of water are removed by sedimentation.	**True**
3.	The moving air is called breeze.	**False**
4.	Dew is the moisture in small drops.	**True**
5.	Meteorologists give weather forecasts.	**True**

D. Match the following.

1.	Dew	**(d)**	**the moisture in the form of small drops**
2.	Our body	**(a)**	**contains water**
3.	Frost	**(b)**	**tiny ice droplets**
4.	Water	**(c)**	**very precious**
5.	Water vapour	**(e)**	**an invisible gas**

E. Answer the following questions.

1. What are the different ways of purifying water?

Ans. Water can be purified by sedimentation, decantation and filtration. Boiling is also used to kill germs in water.

2. Summer days are hotter than winter days. Why?

Ans. In summer, the Sun's rays fall directly on the Earth, giving more heat. In winter, the rays are slanting and spread over a larger area, so less heat is received.

3. What is land breeze? Why does it occur?

Ans. Land breeze is the cool wind that blows from land to sea at night. It occurs because land cools faster than water, and warm air over the sea rises.

4. What is evaporation?

Ans. Evaporation is the process by which water changes into water vapour due to heat. It mostly happens when the Sun heats water.

5. What is condensation?

Ans. Condensation is the process by which water vapour cools and changes back into water droplets. It occurs when air becomes cool.

6. How is dew different from frost?

Ans. Dew is moisture in the form of small water drops on cool surfaces. Frost is formed when these drops freeze into tiny ice crystals in very cold weather.

10 Our Solar System

A. Darken the correct option in the OMR Sheet :

1. The process of water changing into water vapour is called _____.

Ans. (a) evaporation

2. A planet is a body which revolves around the _____.

Ans. (b) Sun

3. The morning star is a _____.

Ans. (b) planet

4. The planet having the greatest number of moons is _____.

Ans. (b) Saturn

5. Planets look bright _____.

Ans. (c) because of Sunlight

B. Fill in the blanks using the clue box.

1. **Aryabhatta** was India's first man-made satellite.
2. The **Sun** is the centre of the Solar system.
3. Uranus was the first planet discovered with the help of a **telescope.**
4. Venus is also called the **morning** or **evening** star.
5. The Earth has one natural satellite called the **Moon.**

C. Write 'True' or 'False' for the following statements.

1. The Earth is the centre of the Solar System. **False**
2. Saturn is the largest planet. **False**
3. Mercury is the hottest planet **False**
4. Moon gets its light from the Sun. **True**
5. Aryabhatta was the first satellite sent up into space by India. **True**

D. Match the following.

	Column A	Column B
1.	Saturn	**(e) planet with rings**
2.	Earth	**(a) blue Planet**
3.	Mars	**(d) red Planet**
4.	Neptune	**(b) farthest Planet**
5.	Venus	**(c) hottest Planet**

E. Answer the following questions.

1. Name three Indian artificial satellites.

Ans. Aryabhatta, Bhaskara and Rohini are three Indian artificial satellites. They were launched by India for scientific and communication purposes.

2. List the planets in the Solar System.

Ans. The planets in the Solar System are Mercury, Venus, Earth, Mars, Jupiter, Saturn,

Uranus and Neptune.

3. Write two uses of artificial satellites.

Ans. **1.** They are used for weather forecasting and help in predicting rain, storms, and cyclones.

2. They are used for communication, such as television broadcasting and long-distance telephone calls.

4. State two points of distinction between stars and planets.

Ans. **1.** Stars have their own light and heat, while planets do not have their own light and shine by reflecting sunlight.

2. Stars are very large and made of hot gases, while planets are smaller and mostly solid bodies that revolve around stars.

5. How many moons does Jupiter have?

Ans. Jupiter has 95 moons. It has the largest number of moons among all the planets.

11 Solid, Liquid, Gas

A. Darken the correct option in the OMR Sheet :

1. A mixture of solute and solvent is called _____.

Ans. (c) solution

2. The liquid which dissolves in the solid, is called _____.

Ans. (b) solvent

3. Which of these is not a form of matter?

Ans. (d) heater

4. Which of these does not dissolve in water?

Ans. (c) Iron

B. Fill in the blanks using the clue box.

1. Matter is made of very tiny particles called **molecules.**
2. Molecules of matter are constantly **moving.**
3. Substances that have a fixed shape and definite volume are called **solids.**
4. **Liquids** have no fixed shape.

C. Write 'True' or 'False' for the following statements.

1. Liquid cannot dissolve with liquid. **False**
2. Air is a mixture of gases. **True**
3. Liquid has no fixed shape. **True**
4. Gas does not have a fixed shape and no definite volume. **True**
5. We can differentiate between materials by touch and smell. **True**

D. Match the following.

1. Heating and cooling **(c) produce important change in materials**
2. When salt is dissolved in water **(a) the salt molecules spread through the water**

3. Fishes can stay alive in water because **(b) water contains oxygen dissolved in it**

E. Answer the following questions.

1. How is solid different from liquid?

Ans. **1. Solid:** fixed shape and fixed volume; particles are tightly packed.
2. Liquid: no fixed shape but fixed volume; it flows and takes the container's shape.

2. What is matter? Write about the different states (forms) of water.

Ans. Matter is anything that occupies space and has weight.
Water exists in three forms: ice (solid), water (liquid), and water vapour/steam (gas).

3. Define physical change and chemical change with activity.

Ans. A physical change is a change in the shape, size, or state of a substance in which no new substance is formed, **for example**, ice melting into water and freezing again. A chemical change is a permanent change in which a new substance is formed, **for example**, heating sugar turns it into black charcoal.

4. Write the different properties of material.

Ans. Materials can be identified by their weight, colour, taste, smell, and touch.Some materials are hard or soft, heavy or light, and have different smells and colours.

12 Force : Effects and Types

A. Darken the correct option in the OMR Sheet :

1. Which of these is a stationary object?

Ans. (a) House

2. The capacity to do work is called _____.

Ans. (d) energy

3. The push or pull on an object is called a _____.

Ans. (a) force

4. The force exerted by the muscles is called the _____.

Ans. (a) muscular force

B. Fill in the blanks using the Clue Box.

1. A magnet attracts iron nails because of **magnetic** force.
2. **James Watt** invented steam engine.
3. A **machine** is a device by which a greater amount of work is done applying a small effort or force.
4. The **wind** has the power to move sailboats.
5. Pieces of papers are attracted towards a comb that has been rubbed against the dry hair due to **electrostatic** force.

C. Write 'T' for a true statements and 'F' for a false ones.

1. The force of friction acts in the direction of motion of a body. **False**
2. A magnet attracts iron nails because of magnetic force. **True**
3. Force can not change the shape of an object. **False**

4. A smooth surface offers more friction than a rough surface. **False**

5. An apple falls to the ground due to the elctrostatic force. **False**

D. Answer the following questions.

1. What is force?

Ans. Force is a push or pull applied on an object. It can change the shape, speed, or direction of an object.

2. Define the term 'motion'.

Ans. Motion is the change in position of an object with time. An object is said to be in motion when it moves from one place to another.

3. What is the force of friction?

Ans. Friction is the force that opposes motion when two surfaces slide over each other (like a ball slowing down on ground)

4. Mention two disadvantages of friction.

Ans. **1.** Friction causes wear and tear of machine parts and shoes.

2. Friction produces heat and wastes energy, making machines less efficient.

5. What are simple machines? Describe any four simple machines.

Ans. Simple machines are simple tools with few parts that make our work easier.

Any four simple machines:

1. Lever – A rigid rod that helps to lift or move heavy loads (e.g., see-saw, pliers).

2. Pulley – A wheel with a rope used to lift heavy objects (e.g., drawing water from a well).

3. Wheel and Axle – Two circular parts that help in easy movement (e.g., bicycle).

4. Inclined Plane – A sloping surface used to raise or lower heavy loads easily (e.g., ramp).

1 Reproduction

A. Darken the correct option in the OMR Sheet :

1. Monsoon crops are called _____.

Ans. (a) kharif

2. Winter crops are called _____.

Ans. (b) rabi

3. Oil-Producing crops are _____.

Ans. (d) all of these

4. Food crops is _____.

Ans. (a) wheat

5. A seed has _____ parts.

Ans. (c) three

B. Fill in the blanks using the clue box.

1. Seeds of cotton are dispersed by **wind.**
2. **Tea** plants are grown on the slopes of hilly areas.
3. Plants like **Bryophyllum** have buds on the edges of their leaves.
4. Air, water and suitable temperature are essential for the **germination** of seeds.
5. The seed coat protects the **baby plant.**
6. In coconut, the dispersal of fruits takes place by **water.**

C. Write 'True' or 'False' for the following statements.

1.	Yeasts divide and multiply by layering.	**Flase**
2.	Seeds can germinate in the absence of sunlight.	**True**
3.	Cotton seeds are dispersed by water.	**Flase**
4.	Tea and coffee grow well in hilly slopes of Darjeeling, Assam, Nilgiris.	**True**
5.	The seeds, on germination, give rise to new plants.	**True**
6.	Flowering plants reproduce from seeds.	**True**

D. Match the following.

1.	Sugarcane	**(b) stem cutting**
2.	Potato	**(a) eye**
3.	Bryophyllum	**(d) leaves**
4.	Ginger	**(c) underground part**
5.	Paddy	**(e) grains**

E. Answer the following questions.

1. What is reproduction?

Ans. Reproduction is the process by which living things produce new young ones of their own kind. It helps in continuing the life of plants and animals.

2. What are the conditions essential for germination?

Ans. Air, water and a suitable temperature are essential for germination. These help the seed to sprout and grow.

3. What is germination ?

Ans. Germination is the process by which a seed sprouts and begins to grow into a new plant. It starts when the seed gets water, air and warmth.

4. Write a note on dispersal of seeds.

Ans. Dispersal of seeds means the spreading of seeds away from the parent plant. Seeds are dispersed by wind, water, animals and bursting of fruits.

5. What are the conditions necessary for the growth of seeds?

Ans. For proper growth, seeds need sunlight, water, air and good soil. These help the young plant to grow healthy.

6. Explain layering as a method of reproduction.

Ans. Layering is a method in which a branch of a plant is bent and covered with soil. Roots grow from the covered part and it becomes a new plant.

2 Locomotion in Different Animals

A. Darken the correct option in the OMR Sheet :

1. _____ have pillar like legs.
   (a) Elephants
2. Lizard has two pairs of short weak _____.
   (b) limbs
3. _____ are called 'the ship of desert'.
   (a) Camels
4. _____ gallop fast on their toes.
   (a) Horses

B. Fill in the blanks using the clue box.

1. The movement of animals from one place to another is called **locomotion.**
2. All birds walk with the help of their **hind** limbs.
3. A snake moves in a **zig-zag** manner.
4. **Snake** and **earthworm** cannot move on very smooth surfaces.

C. Name the following.

1. Three mammals that walk on their nails. **Cow, Goat, Sheep**
2. An animal with long slender legs. **Giraffe**
3. An animal ideally suited for making long journeys across the deserts. **Camel**
4. Three animals that swim in water. **Fish, Whale, Turtle**

D. Write 'True' or 'False' for the following statements.

1. Cow walks on its nails. **True**
2. The body of a fish a boat-shaped. **True**
3. Insects have two legs and can walk on land. **False**

4. Aquatic animals have fins. **True**

E. Match the following.

1.	Horse	**(d)**	**galloping**
2.	Human	**(f)**	**upright posture**
3.	Birds	**(e)**	**wings and feathers**
4.	Fish	**(c)**	**fins**
5.	Frog	**(b)**	**hopping**
6.	Earthworm	**(a)**	**crawling**

F. Answer the following questions.

1. What is locomotion?

Ans. The movement of animals from one place to another is called locomotion. Animals move to find food and shelter.

2. What are fins?

Ans. Fins are flat parts of the body found in fishes. They help fishes to swim and maintain balance in water.

3. Why do animals move from place to place?

Ans. Animals move to search for food and water. They also move to escape from enemies and find shelter.

4. What is the use of flight muscles and flight feathers in birds?

Ans. Flight muscles help birds to flap their wings. Flight feathers help birds to fly and change direction.

5. What type of legs do camels have?

Ans. Camels have long, strong legs with soft padded feet. These help them walk easily on hot desert sand.

3 Respiration and Reproduction

A. Darken the correct option in the OMR Sheet :

1. We breathe in oxygen from the air is called _____.

Ans. (b) inhalation

2. We breathe out carbon dioxide is called _____.

Ans. (a) exhalation

3. Aquatic animals breathe through _____.

Ans. (b) gills

4. A larva grows into a _____.

Ans. (c) pupa

B. Fill in the blanks using the clue box.

1. Producing offsprings of one's own kind is called **reproduction.**
2. A fish breathes through **gills.**

3. Birds and reptiles also breathe with the help of **lungs.**
4. Those animals in which the female suckles the young ones are called **mammals.**

C. Write 'True' or 'False' for the following statements.

1. Reptiles breathe through lungs. **True**
2. All snakes lay eggs. **False**
3. Birds breathe through gills. **False**
4. Mammals give birth to their young ones directly. **True**
5. Some fishes give birth to their young ones directly. **True**

D. Match the following.

1.	Mammals	**(b)**	**lungs**
2.	Fishes	**(c)**	**gills**
3.	Grasshopper	**(e)**	**spiracles**
4.	Frog	**(d)**	**lungs and skin**
5.	Earthworm	**(a)**	**moist skin**

E. Name the following.

1. An egg-laying animal. **Hen**
2. Fish giving birth to young ones directly. **Shark**
3. Larvae stage of a butterfly. **Caterpillar**

F. Answer the following questions.

1. How do the birds, amphibians and mammals breathe?

Ans. Birds and mammals breathe through lungs. Amphibians like frogs breathe through lungs on land and moist skin in water.

2. Who breathe through gills?

Ans. Aquatic animals such as fishes breathe through gills. Gills help them take oxygen from water.

3. Name the four stages in the life-cycle of a butterfly.

Ans. The four stages are Egg, Larva (caterpillar), Pupa (chrysalis), and Adult butterfly.

4. What is reproduction?

Ans. Reproduction is the process by which living beings produce young ones of their own kind.

5. How do the insects breathe?

Ans. Insects breathe through small air holes called spiracles. These spiracles are connected to air tubes that carry oxygen inside the body.

4 Functions of the Skeletal System

A. Darken the correct option in the OMR Sheet :

1. The skull protects the_____.

Ans. (a) brain

2. Vertebral column protects the _____.

Ans. (a) spinal cord

3. Rib and sternum (rib-cage) protects the _____.

Ans. (a) heart and lungs

4. We must sleep for at least _____ a day.

Ans. (a) eight hours

B. Fill in the blanks by using clue box.

1. The knee joint is a **hinge** joint.
2. Our body consists of more than **600** muscles.
3. The joint in the wrist is a **gliding** joint.
4. Exercise keeps our **muscles** strong and firm.

C. Write 'True' or 'False' for the following statements.

1. Ball and sockets joints allow movement in many directions. **True**
2. The skull protects the brain. **True**
3. Correct posture affects the bones and the muscles badly. **False**
4. The rib-cage enables any movement. **False**
5. Muscles are joined to the bones by ligaments. **False**

D. Match the following.

1.	Skeleton System	**(d)**	**gives shape and support to the body.**
2.	Hinge Joint	**(c)**	**knee**
3.	Ball and Socket Joint	**(e)**	**hip and shoulder**
4.	Heart	**(a)**	**cardiac muscles**
5.	Backbone	**(b)**	**33 small bones**

E. Answer the following questions.

1. What are the uses of muscles?

Ans. Muscles help us to move our body parts. They also help in walking, running, breathing and doing daily activities.

2. What is a joint? Give two examples.

Ans. A joint is the place where two or more bones meet. **Examples:** knee joint and elbow joint.

3. What is the difference between bones and muscles?

Ans.	**Bones**	**Muscles**
1.	Bones are hard parts of the body.	Muscles are soft tissues of the body.
2.	They give shape and support to the body.	They help in movement of the body.
3.	Bones form the skeleton.	Muscles are attached to bones.
4.	Bones do not contract or relax.	Muscles contract and relax to move bones.

4. Differentiate between the movable and immovable joints.

Ans.	**Movable Joints**	**Immovable Joints**
1.	These joints allow movement of bones.	These joints do not allow movement.
2.	Bones can move in one or more	Bones remain fixed in one position.

directions.

3.	Found in arms, legs, knees and shoulders.	Found in the skull.
4.	**Example:** knee joint, shoulder joint.	**Example:** skull joints.

5. List any two important functions of the skeletal system.

Ans. Two important functions of the skeletal system:

- It gives shape and support to the body.
- It protects important organs like the brain, heart and lungs.

5 Nervous System, Kinds of Nerves and Sense Organs

A. Darken the correct option in the OMR Sheet :

1. The weight of brain is about _____.

Ans. (d) 1.4 kg

2. The system that controls all other systems of our body is _____.

Ans. (a) nervous system

3. The part of the brain that controls our sense organs _____.

Ans. (a) cerebrum

4. The nerves that carry orders from the brain to the muscles _____.

Ans. (b) motor nerves

B. Fill in the blanks using the clue box.

1. **Nervous system** controls all the systems of the body.
2. Medulla controls the **involuntary** actions such as breathing and **circulation.**
3. Reflex actions are controlled by the **spinal cord.**
4. The round coloured part of the eye is called **iris.**

C. Write 'True' or 'False' for the following statements.

1. We can feel heat, cold, pain, pressure and touch with the help of our skin. **True**
2. Without nervous system we can't see, hear, smell, feel, taste, think and even do anything. **True**
3. The lens, behind the pupil forms the images of the objects we see, on the retina. **True**
4. The spinal cord is made up of nerve fibres. **True**

D. Match the following.

1.	Medulla	**(a) controls the involuntary action**
2.	Reflex action	**(e) controlled by the spinal cord**
3.	Eyes	**(d) delicate sense organs**
4.	Ears	**(b) eardrum**
5.	Tongue	**(c) taste buds**

E. Answer the following questions.

1. What is a reflex action?

Ans. A reflex action is a quick and automatic action. We do not think before doing it. It is controlled by the spinal cord.

2. What is the nervous system? How does it help us?

Ans. The nervous system includes the brain, spinal cord and nerves. It controls all body activities and helps us to see, hear, smell, taste, feel and think.

3. What are the functions of the brain?

Ans. The brain is the control centre of the body. It controls our movements, thinking, memory and involuntary actions like breathing.

4. What are nerves? Write their kinds and functions.

Ans. Nerves are thin fibres that carry messages between the brain and body parts. Sensory nerves carry messages to the brain, motor nerves carry orders from the brain, and mixed nerves do both.

6 Food, Nutrients and Preservation of Food

A. Darken the correct option in the OMR Sheet :

1. Diseases that are caused due to deficiency of proper nutrients in diet are called _____.

Ans. (a) non-communicable diseases

2. Deficiency of this vitamin in the diet causes night blindness :

Ans. (a) Vitamin A

3. Deficiency of iron in the diet causes _____.

Ans. (c) anaemia

4. Which of the following is a good source of roughage?

Ans. (b) Corn

5. Which of the following food items has proteins, fats and minerals?

Ans. (d) Milk

B. Fill in the blanks using the clue box.

1. Roasting method results in loss of the **vitamins** in the food.
2. Cooking helps to kills the **disease germs.**
3. Food is spoiled by **micro-organisms**, **insects** and **enzymes.**
4. In steaming method, the heat of **steam** is used for cooking the food.
5. **Bacteria** cannot survive at very low temperature.

C. Write 'True' or 'False' for the following statements.

1. The food we eat daily is called our diet. **True**
2. Vitamins help us to keep our body fit. **True**
3. Vitamins C is found in egg, milk, butter, etc. **False**
4. Green leaves are good sources of minerals. **True**

D. Match the following columns.

1.	Vitamin A	**(d) night blindness**
2.	Vitamin B	**(e) nervous disorders**
3.	Vitamin C	**(b) scurvy**
4.	Vitamin D	**(c) rickets**
5.	Goitre	**(a) iodine**

E. Write two examples for each of the following.

1.	Protein rich food	**Egg**	**Pulses**
2.	Fat that can cause obesity	**Butter**	**Ghee**
3.	Food rich in roughage	**Fruits**	**Vegetables**
4.	Deficiency disease	**Scurvy**	**Rickets**

F. Answer the following questions.

1. Explain why are the following nutrients needed by our body.
(a) Carbohydrates (b) Proteins (c) Vitamins and Minerals

Ans. **(a) Carbohydrates:** Carbohydrates give energy to our body. They help us to work, play, and stay active.

(b) Proteins: Proteins help in the growth of the body. They also repair damaged and worn-out body cells.

(c) Vitamins and Minerals: Vitamins and minerals protect us from diseases. They keep our body healthy and help in proper growth.

2. Why do we cook the food?

Ans. We cook food to kill harmful germs. Cooking also makes food soft, tasty, and easy to digest.

3. Why do we preserve vegetables and fruits in cold storage?

Ans. Cold storage prevents the growth of bacteria. It keeps fruits and vegetables fresh for a long time.

4. Why should we not eat cut fruits from hawkers?

Ans. Cut fruits from hawkers may contain dust and germs. Eating them can cause stomach infections and diseases.

5. Why should we not eat stale food?

Ans. Stale food develops bacteria and moulds that produce toxins, leading to food poisoning and stomach infections. Always eat freshly cooked food.

7 Safety Rules and First-aid

A. Darken the correct option in the OMR Sheet :

1. _____ are important and to be followed every where.

Ans. (d) Safety rules

2. Always cross the road at the _____.

Ans. (a) zebra-crossing

3. Always _____ on the footpath.

Ans. (a) walk

4. The immediate help given to an injured person before doctor arrives is called _____.

Ans. (b) first-aid

B. Fill in the blanks by using clue box.

1. Always walk on the **footpath.**
2. Always cross the road at the **zebra-crossing.**
3. Snake-bite can cause **death.**
4. Dogs carry virus of **rabies** in their bodies.
5. We must have **first-aid** box at our home.

C. Write 'True' or 'False' for the following statements.

1. It is safe to play with fire crackers. **False**
2. It is necessary to take all injured person to the doctor. **True**
3. First-aid increases the pain of the injured person. **False**
4. Never take any medicine without doctor's consult. **True**
5. When a bone breaks, it is called fracture. **True**

D. Match the following.

1.	Fire	**(c)**	**fire extinguisher**
2.	Accidents	**(d)**	**due to carelessness**
3.	Animal Bite	**(b)**	**wash wound with soap and water**
4.	Nose Bleeding	**(a)**	**ice and wet cloth over the nose**

E. Answer the following questions.

1. Why is bandage tied above the wound in case of a snake-bite?

Ans. A bandage is tied above the bite to slow down the spread of poison in the body. It helps prevent the venom from reaching the heart quickly.

2. What will you do if a person has chemical burns?

Ans. Wash the affected area immediately with plenty of clean water. Cover it with a clean cloth and take the person to a doctor.

3. How would you help someone with a bleeding nose?

Ans. Make the person sit upright and press the nose gently. Put ice or a cold wet cloth on the nose to stop bleeding.

4. What first-aid should be given in case of wounds?

Ans. Clean the wound with water and soap. Apply antiseptic and cover it with a clean bandage.

8 Air For Survival

A. Darken the correct option in the OMR Sheet :

1. The thick layer of air around the Earth is called _____.

Ans. (b) atmosphere

2. The percentage of nitrogen gas in air is _____.

Ans. (a) 78%

3. The percentage of oxygen gas in air is _____.

Ans. (a) 21%

4. Air is a mixture of _____.

Ans. (a) many gases

B. Fill in the blanks using the words from the clue box.

1. The **atmosphere** is made up of five layers.
2. The closest layer to the Earth is **troposphere.**
3. The process by which green plants make food is called **photosynthesis.**
4. A syringe works by **air pressure.**

C. Match the following.

1.	Troposphere	**(c)**	**water vapor is present in this layer**
2.	Stratosphere	**(d)**	**jet planes fly in this layer**
3.	Ionosphere	**(e)**	**it reflects radio waves**
4.	Exosphere	**(a)**	**outermost layer**
5.	Syringe	**(b)**	**air pressure**

D. Write 'True' or 'False' for the following statements.

1.	Air exerts pressure.	**True**
2.	Nitrogen is present in the maximum amount in air.	**True**
3.	Expired air is rich in carbon dioxide.	**True**
4.	Inspired air is rich in oxygen.	**True**

E. Answer the following questions.

1. Name the gases present in air.

Ans. Air mainly contains nitrogen, oxygen, carbon dioxide and small amounts of other gases (like helium, ozone, etc.).

2. What is atmosphere? What are the layers of atmosphere?

Ans. The thick layer of air around the Earth is called the atmosphere. It has five layers: Troposphere, Stratosphere, Mesosphere, Thermosphere and Exosphere.

3. On what principle does a lift pump work? Explain.

Ans. A lift pump works on the principle of air pressure. When the handle of the pump is moved up and down, the air pressure inside the pipe changes and outside air pressure pushes water up through the pipe.

4. Give three uses of air pressure.

Ans. **1.** Drinking water with a straw
2. Medicine dropper works due to air pressure
3. Syringe works due to air pressure

9 Water is life

A. Darken the correct option in the OMR Sheet :

1. Water is a universal _____.

Ans. (b) solvent

2. The impurities which dissolve in water are called _____.

Ans. (a) soluble

3. The impurities which do not dissolve in water are called _____.

Ans. (b) insoluble

4. _____ is the purest form of water.

Ans. (a) rain

B. Fill in the blanks using the clue box.

1. **Rain water** is the purest form of water.
2. The impurities which dissolve in water are called **soluble** impurities.
3. The method of removing insoluble impurities is called **filtration.**
4. Addition of **crystals** to water is a popular method of cleaning water.

C. Write 'True' or 'False' for the following statements.

1. Distilled water is used for preparing medicines. **True**
2. We use water only for drinking. **False**
3. About 3/4 of Earth consists of water. **True**
4. Water can be purified by heating. **True**

D. Match the following.

1.	Rain water	**(d) is used for preparing medicines**
2.	Water filter machine	**(a) is used to clean water regularly at home**
3.	Filteration	**(c) filter paper**
4.	Potassium Permagnate	**(b) is used to kill germs in water**

E. Answer the following questions.

1. What is distillation?

Ans. Distillation is a method of purifying water by boiling it into vapour and then cooling the vapour to change it back into pure water.

2. How can we remove dissolved impurities from water?

Ans. Dissolved impurities can be removed by evaporation and distillation, which separate pure water from the impurities.

3. How can we remove insoluble impurities from water?

Ans. Insoluble impurities can be removed by sedimentation, decantation, and filtration.

4. Why should our drinking water be made clean and pure?

Ans. Dirty water contains germs and harmful substances that cause diseases. Clean and pure water keeps us healthy.

5. Write the uses of water.

Ans. Water is used for drinking, cooking, bathing, washing, watering plants, agriculture, and putting out fire.

10 Rocks and Minerals

A. Darken the correct option in the OMR Sheet :

1. Molten rock inside the Earth is called _____.

Ans. (a) magma

2. This is a hard and smooth metamorphic rock.

Ans. (a) Marble

3. Remains of plants and animals under the Earth are called _____.

Ans. (a) fossils

4. Rocks formed as a result of cooling of lava is called _____.

Ans. (b) igneous rock

5. Which of the following is used to make cement and concrete?

Ans. (a) Limestone

B. Fill in the blanks using the clue box.

1. **Sedimentary** rocks contain skeletons of sea animals.
2. The **Shelly** limestone is made up of broken sea shells.
3. Many buildings in Jaipur are built of **Sandstone.**
4. **Marble** is used in making statues.
5. The fiery hot substance inside the Earth is called **Magma.**

C. Write 'True' or 'False' for the following statements.

1.	Petrol is used for dry cleaning of woollen clothes.	**True**
2.	Coal is used as a fuel for cooking food.	**True**
3.	Chalk is a king of sand stone.	**Flase**
4.	Pumica is black or white in colour	**Flase**
5.	Granite is an intrusive igneous rock.	**True**

D. Match the following.

1.	Conglomerate	**(d)**	**pebbles and gravel**
2.	Pumice	**(e)**	**igneous rock**
3.	Metamorphic	**(a)**	**state**
4.	Underground resources	**(b)**	**coal**
5.	Gneiss	**(c)**	**statues**

E. Write two examples for each of the following.

1.	Igneous rocks	**Granite**	**Basalt**
2.	Sedimentary rocks	**Sandstone**	**Limestone**
3.	Metamorphic rocks	**Slate**	**Marble**

4. Non-Metallic minerals **Quartz** **Mica**

F. Answer the following questions.

1. What is an ore? Name any two common ones.

Ans. An ore is a rock or mineral from which a metal can be extracted. Common ores are iron ore and bauxite.

2. How are igneous rocks formed?

Ans. Igneous rocks are formed when molten magma or lava cools and solidifies. **Examples:** are granite and basalt.

3. How is coal formed? Also write of coal?

Ans. Coal is formed from the remains of plants buried under the Earth for millions of years under heat and pressure. Coal is used as a fuel and for generating electricity.

4. How was petroleum formed?

Ans. Petroleum was formed from the remains of tiny plants and animals buried under the sea. Over millions of years, heat and pressure changed them into petroleum.

5. How are sedimentary rocks formed?

Ans. Sedimentary rocks are formed by the deposit of sediments in layers at the bottom of rivers and seas. These layers get pressed and hardened over time to form rocks.

11 Force, Work and Energy

A. Darken the correct option in the OMR Sheet :

1. Simple machine makes our work _____.

Ans. (b) easier

2. A bottle opener is an example of a/an _____.

Ans. (b) second class lever

3. An ice tong is an example of _____.

Ans. (b) third class lever

4. A screw jack used to lift a car, is a _____.

Ans. (d) bigger screw

5. Fork and knife are examples of _____.

Ans. (d) wedge

B. Fill in the blanks using the clue box.

1. The thing that is being carried using a machine is called **load.**
2. A lever is a **simple machine** which consists of a rigid rod which can turn about a fixed point called the **fulcrum.**
3. A pulley consists of a wheel with a **grooved wheel** with a rope on the groove.
4. The two types of pulleys are **fixed pulley** and **movable pulley**
5. The force that is exerted on the lever to move an objet is called **effort.**

C. Write 'True' or 'False' for the following statements.

1. Force cannot changes the speed of an object. **False**
2. Friction is always harmful. **False**
3. The energy stored in a fire cracker is chemical energy. **True**
4. Energy is stored in us is in the form of chemical energy. **True**
5. We use grease in bicycle to reduce friction. **True**

D. Match the following.

1.	Energy	**(d) ability to do work**
2.	Wrok	**(c) force**
3.	Solar panel	**(e) solar energy**
4.	Lever	**(b) moves loads**
5.	Pulley	**(a) changes direction of force in convenient direction**

E. Write one word the following.

1. A force that can slow down the movement of an object. **Friction**
2. Energy that an object has because of its position. **Potential energy**
3. The fixed point around which a rod moves in lever. **Fulcrum**
3. Object on which work is to be performed. **Load**
5. The force that needs to ne applied in order to perform a task. **Effort**

F. Answer the following questions.

1. What is energy? Name five different forms of energy and their sources.

Ans. Energy is the ability to do work. Different forms are muscular energy (food), chemical energy (fuel), heat energy (burning fuel), solar energy (Sun), and wind energy (moving air).

2. What is a simple machine?

Ans. A simple machine is a tool that makes our work easier by changing the direction or amount of force. **Examples:** are lever, pulley, and inclined plane.

3. What is a lever? How are they classified?

Ans. A lever is a rigid rod that turns about a fixed point called the fulcrum. Levers are classified into first, second, and third class based on the position of load, effort, and fulcrum.

4. What do you understand by force? Name the different types of forces.

Ans. Force is a push or pull that can change the shape, speed, or direction of an object. Types of forces include gravitational force, frictional force, and magnetic force.

5. What is friction? Why is friction necessary?

Ans. Friction is a force that opposes motion between two surfaces in contact. It is necessary for walking, writing, holding objects, and stopping vehicles.

12 Microbes or Micro-organisms

A. Darken the correct option in the OMR Sheet :

1. Micro-organisms are also called _____.

Ans. (a) microbes

2. Disease causing bacteria are known as _____.

Ans. (a) germs

3. _____ the first antibiotic drug is obtained from fungus.

Ans. (a) Penicillin

4. Protozoa are called as _____.

Ans. (a) first animals

B. Fill in the blanks using the clue box.

1. The science which deals with the study of micro-organisms is known as **microbiology.**
2. AIDS is a **virus** disease.
3. **Malaria** is caused by a protozoan *Plasmodium*.
4. The first antibiotic is isolated from a **fungus.**
5. **Penicillium** fungi gives a special taste to cheese.

C. Match the following.

1.	Protozoan	**(d)**	**malaria**
2.	Fungi	**(a)**	**ringworm**
3.	Virus	**(b)**	**covid–19**
4.	Bacteria	**(c)**	**typhoid**

D. Write 'True' or 'False' for the following statements.

1.	The study of micro-organism is called microbiology.	**True**
2.	There are only 50 kinds of fungi.	**False**
3.	The disease causing bacteria is known as germs.	**True**
4.	Protozoa are multi-celled organisms.	**False**
5.	Yeast is an important source of vitamin B-complex.	**True**

E. Answer the following questions.

1. What are microbes?

Ans. Microbes are very tiny living organisms which cannot be seen with the naked eye. They can be seen only with the help of a microscope.

2. What is microbiology?

Ans. Microbiology is the branch of science that deals with the study of micro-organisms.

3. Give any five uses of micro-organisms.

Ans. **1.** Micro-organisms are used to make curd and cheese.
2. Yeast is used in making bread and cakes.
3. They are used to make antibiotics like penicillin.
4. Micro-organisms help in the production of alcohol.
5. They help in decomposition of waste and sewage disposal.

4. Name any five diseases that are caused in man by bacteria.

Ans. Some bacterial diseases in humans are cholera, typhoid, tuberculosis, tetanus and leprosy.

13 The Earth

A. Darken the correct option in the OMR Sheet :

1. The study of the Earth is called _____.

Ans. (a) geology

2. The shocks of earthquakes may be recorded on an instrument called a _____.

Ans. (a) seismograph

3. The outermost layer of the Earth is called the _____.

Ans. (a) crust

4. The region between the crust and core of the Earth is called _____.

Ans. (a) mantle

B. Fill in the blanks using the words from the clue box.

1. The innermost part of the Earth is called **core.**
2. The region between the crust and core of the Earth is called **mantle.**
3. The outermost layer of the Earth is called the **crust.**
4. The spinning of the Earth on its axis is called **rotation.**

C. Write 'True' or 'False' for the following statements.

1. The study of the Earth is called geology. **True**
2. The shocks of earthquakes may be recorded on an instrument called a seismograph. **True**
3. From time to time, some volcanoes, pour out hot liquid rock called lava. **True**
4. The study of the Sky is called geology. **False**

D. Answer the following questions.

1. How did the Earth form?

Ans. The Earth was formed from a very hot mass of gases and rocks in space. As it cooled slowly over millions of years, a solid crust formed on its surface.

2. How mountains are formed?

Ans. Mountains are formed due to movements in the Earth's crust. When the crust is pushed or folded, the land rises and forms mountains.

3. What is meant by the 'rotation' of the Earth?

Ans. Rotation is the spinning of the Earth on its axis. It takes about 24 hours and causes day and night.

4. What do you understand by the 'revolution' of the Earth?

Ans. Revolution is the movement of the Earth around the Sun in its fixed path. It takes about 365 days and helps in the change of seasons.

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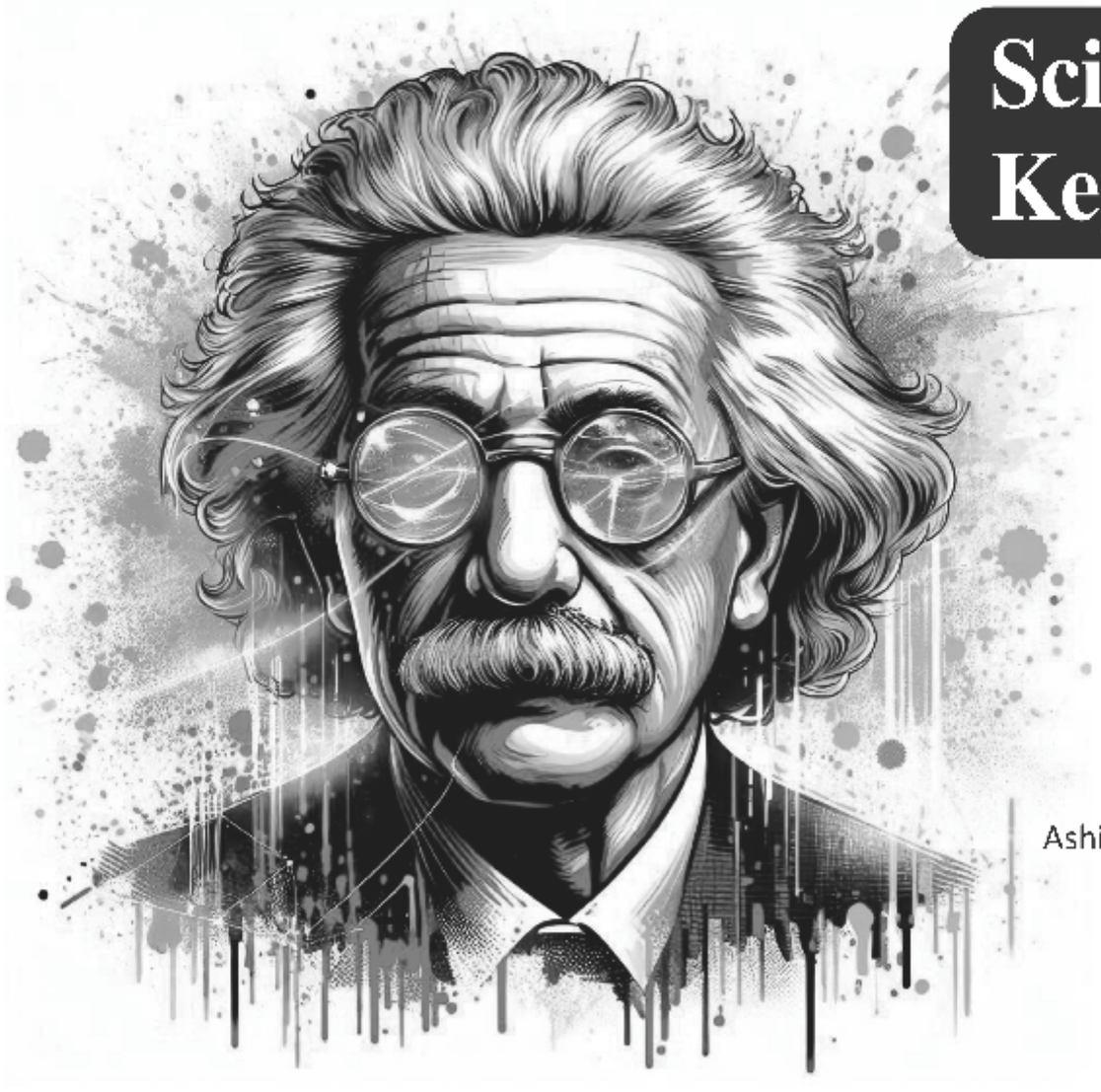

Author :
Ashish Bhatnagar
(Msc.)

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2 Sources of Food

A. Multiple Choice Questions :

1. Which mineral is required for haemoglobin formation?

Ans. (b) Iron

2. Marasmus is the disease which is caused by the deficiency of :

Ans. (a) Proteins

3. Night blindness is caused due to the deficiency of:

Ans. (a) Vitamin A

4. Protein deficiency in diet causes :

Ans. (d) Kwashiorkor and Marasmus

5. Which of the following component of food are energy - giving?

Ans. (b) Carbohydrates and Fats

B. Fill in the blanks :

1. **Vultures** are natural scavengers.
2. Kites and eagles are examples of **carnivores.**
3. The first level in a food chain is always **producers**.
4. A diet which contains all nutrients is a **balanced** diet.
5. Ginger and potato are examples of **stems.**
6. Swelling of gums, loose teeth, bleeding of gums are symptoms of **scurvy.**

C. State whether the following statements are 'True' or 'False' :

1.	Food habits of all living beings are the same.	**False**
2.	Mustard plants seed and leaves are used as food.	**True**
3.	A clerck's energy needs are less than that of a farmer.	**True**
4.	Guava is a good source of vitamin C.	**True**
5.	Vitamins are good sources of energy.	**False**
6.	Deficiency of vitamin causes rickets, anaemia and goitre.	**False**

D. Match the columns :

	Column A		Column B
1.	Fluorine	**(a)**	**Enamel of teeth**
2.	Phosphorus	**(b)**	**Bones and teeth**
3.	Niacin	**(c)**	**Vitamin B_3**
4.	Thiamine	**(d)**	**Vitamin B_1**
5.	Ascorbic acid	**(e)**	**Vitamin C**
6.	Retinol	**(f)**	**Vitamin A**

E. Answer in one or two sentences :

1. What are the herbivores in a food chain called ?

Ans. Herbivores in a food chain are called primary consumers.

2. What are the carnivores in a food chain called ?

Ans. Carnivores in a food chain are called secondary consumers.

3. Which component of the food is called body-building food ?

Ans. Proteins are body-building foods.

4. What is the component of the food that is not digested by our body called ?

Ans. Roughage is the part of food not digested by our body.

5. What component of our food transports materials throughout our body ?

Ans. Water transports materials throughout our body.

6. What is the deficiency of haemoglobin in the blood called ?

Ans. Deficiency of haemoglobin is called anaemia.

7. Which mineral deficiency results in goitre ?

Ans. Iodine deficiency causes goitre.

8. Which mineral deficiency causes anaemia ?

Ans. Iron deficiency causes anaemia.

9. What are the two diseases caused by protein deficiency ?

Ans. Kwashiorkor and Marasmus are protein deficiency diseases.

10. Which plant products are added to the food for taste and flavour ?

Ans. Spices are added to food for taste and flavour.

F. Short answer type questions :

1. Why are plants called producers ?

Ans. Plants prepare their own food by the process of photosynthesis. Hence, plants are called producers.

2. What is roughage ?

Ans. Roughage is the indigestible fibrous part of food. It helps in digestion and prevents constipation.

3. Why is the presence of roughage in food essential ?

Ans. Roughage adds bulk to food and helps in easy bowel movement. It prevents constipation and keeps the digestive system healthy.

4. What is anaemia ?

Ans. Anaemia is a disease caused due to deficiency of iron in the body. It leads to lack of haemoglobin in blood.

5. What is the significance of scavengers ?

Ans. Scavengers feed on dead animals. They keep the environment clean and prevent diseases.

6. What are parasites ? Give some examples of parasites.

Ans. Parasites live on or inside other organisms for food. Examples are mosquito, tapeworm and lice.

7. What are the components of our food ?

Ans. The components of food are carbohydrates, proteins, fats, vitamins, minerals and water. Roughage is also an important part of our diet.

8. What are deficiency diseases ?

Ans. Deficiency diseases occur due to lack of nutrients in food. Examples are scurvy, rickets and anaemia.

9. What are the sources of proteins ?

Ans. Proteins are obtained from pulses, milk, eggs, fish and meat. They help in growth and repair of body tissues.

10. What is a staple diet ?

Ans. Staple diet is the main food eaten by people of a region. Rice and wheat are examples of staple food.

11. Vegetarians eat only plant food. Non-vegetarians eat both plant and animal food.

Ans. Vegetarians eat plant food only; non-vegetarians eat plant and animal food.

12. Define herbivores and carnivores.

Ans. Herbivores eat plants and plant products. Carnivores eat the flesh of other animals.

G. Long answer type questions :

1. What are the food items that you get from plants ?

Ans. We get many kinds of food from plants. The main food items obtained from plants are cereals, pulses, vegetables, fruits, spices and beverages. Cereals like rice, wheat and maize give us energy. Pulses like gram, lentils and beans are rich in proteins. Vegetables and fruits provide vitamins, minerals and roughage which keep us healthy. Spices like turmeric, chilli and cardamom add taste and flavour to food. Beverages such as tea and coffee are also obtained from plants.

2. What are the sources of various food materials ?

Ans. The main sources of food are plants and animals. From plants, we get cereals, pulses, fruits, vegetables, spices and beverages. From animals, we get milk, eggs, meat, fish and honey. Plants prepare their own food by photosynthesis, so they are called producers. Animals depend on plants directly or indirectly for food. Thus, both plants and animals are important sources of food.

3. What is a balanced diet ?

Ans. A balanced diet is a diet that contains all the nutrients such as carbohydrates, proteins, fats, vitamins, minerals, water and roughage in proper quantity. A balanced diet helps in growth, energy, repair of body tissues and protection from diseases. The balanced diet differs according to age, sex and work. Children need more proteins, while people doing hard work need more carbohydrates and fats.

4. What are carbohydrates and what are their sources ?

Ans. Carbohydrates are energy-giving nutrients. They provide energy to perform daily activities. Carbohydrates are of three types: sugar, starch and cellulose. Sources of carbohydrates include rice, wheat, maize, potatoes, sweet potatoes, bananas, mangoes and sugar. Since carbohydrates are the cheapest source of energy, they are called energy-giving foods.

5. Describe the role of spices in our food. Give examples.

Ans. Spices are parts of plants that are added to food to give taste, colour and flavour. They also help in protecting our body from diseases. Some spices have medicinal value. Examples of spices are turmeric, chilli, cardamom, cinnamon and clove. Spices used in uncooked food are called condiments.

6. What are proteins and what are their sources?

Ans. Proteins are body-building nutrients. They help in growth, repair of tissues and healing of wounds. Proteins are obtained from both plant and animal sources. Animal sources include milk, eggs, meat and fish. Plant sources include pulses, soybean, nuts and cereals. Growing children and injured persons need more protein-rich food.

7. What are fats and what are their sources ?

Ans. Fats are energy-giving nutrients and give more energy than carbohydrates. They also help to keep the body warm and store energy. Fats are obtained from both plants and animals. Animal sources of fats are butter, ghee, milk and meat. Plant sources include groundnut oil, mustard oil, sunflower oil and nuts. Excess intake of fats can cause obesity and heart diseases.

8. What is a food chain ? Explain it with the help of a suitable example.

Ans. A food chain shows the sequence of who eats whom in nature. Energy flows from one organism to another through a food chain. The food chain always starts with plants (producers). Example: Grass, Deer, Lion Here, grass is the producer, deer is the primary consumer and lion is the secondary consumer.

9. What is PEM? What does its deficiency lead to?

Ans. PEM stands for Protein Energy Malnutrition. It is caused due to deficiency of proteins and carbohydrates in the diet. PEM leads to diseases like Kwashiorkor and Marasmus, mainly in children below five years. Symptoms include stunted growth, weak muscles, mental retardation and thin body. It can be prevented by giving protein and energy-rich food.

3 Plant–Form and Function

A. Multiple Choice Questions :

1. Shoot system does not have _____ .

Ans. (a) Roots

2. Which of the following is not a type of root?

Ans. (c) Node

3. Which is a modified stem?

Ans. (b) Ginger

4. Leaf helps in _____ .

Ans. (b) Photosynthesis

5. Which is storehouse of pollen grains?

Ans. (d) Anther

B. Fill in the blanks :

1. A plant is divided into two systems **root system** and **shoot system.**
2. **Tap root** is the main thick root of the root system.
3. Banyan tree has **prop (supporting)** roots.
4. The points at the stem from the leaves grow are **nodes.**
5. In cacti, **leaves** are modified **spines.**
6. Plants reproduce by **pollination** followed by **fertilization.**

C. State whether the following statements are 'True' or 'False' :

1. Trunks of large trees carry out photosynthesis. **False**
2. Leaves help plants in absorbing water and minerals from the soil. **False**
3. Stem conducts water up to the leaves. **True**
4. Leaves help plant get rid of excess water. **True**

5. In some flowers you may not see all its parts – sepals, petals, anthers, pistil. **True**

D. Match the columns :

	Column A		Column B
1.	Stomata	**(c)**	**transpiration**
2.	Modified root	**(a)**	**fibrous root**
3.	Modified stem	**(e)**	**onion**
4.	Green pigment in leaves	**(b)**	**chlorophyll**
5.	Storehouse of pollen grains	**(d)**	**anther**
6.	Parallel venation	**(f)**	**Sugarcane**

E. Very short answer type questions :

1. What is the name of fibrous underground part of a plant ?

Ans. Fibrous underground part of a plant is called root.

2. What type of venation will you find in a plant with tap root ?

Ans. A plant with tap root has reticulate venation.

3. In which part of the flower will you find the ovary ?

Ans. Ovary is found in the pistil of a flower.

4. What is the process called through which plants lose water ?

Ans. Plants lose water by the process of transpiration.

5. Write down the names of main parts of a flower.

Ans. Main parts of a flower are sepals, petals, stamens and pistil.

F. Short answer type questions :

1. What are the function of modified stems ?

Ans. Modified stems store food, help in photosynthesis and provide support to plants.

2. What are functions performed by modified leaves ?

Ans. Modified leaves help to reduce water loss, protect plants from animals and help in climbing.

3. What is photosynthesis ?

Ans. Photosynthesis is the process by which green plants make food using sunlight, carbon dioxide and water in the presence of chlorophyll.

4. What is transpiration ?

Ans. Transpiration is the process by which plants lose excess water through stomata present on leaves.

5. What is the function of pistil ?

Ans. Pistil is the female reproductive part of a flower and helps in formation of seeds and fruits.

G. Long answer type questions :

1. What are the main parts of a plant ? What are their functions ?

Ans.

Part of Plant	Function
1. Root	Absorbs water and minerals from the soil.
2. Root	Fixes the plant firmly in the soil.
3. Root	Prevents soil erosion and stores food in some plants.
4. Stem	Supports the plant body and holds leaves and flowers.
5. Stem	Transports water and minerals to the leaves.
6. Leaf	Prepares food by the process of photosynthesis.

7. Leaf	Helps in transpiration and respiration.
8. Flower	Helps in reproduction of the plant.
9. Fruit	Protects the seeds and helps in their dispersal.
10. Seed	Grows into a new plant under suitable conditions.

2. Differentiate between tap roots and fibrous roots.

Ans.

Tap Root	Fibrous Root
1. Tap root has one main thick root.	**1.** Fibrous root has many thin roots.
2. The main root grows straight downward.	**2.** All roots grow from the base of the stem.
3. Side roots grow from the main root.	**3.** No main root is present.
4. It goes deep into the soil.	**4.** It spreads near the soil surface.
5. It provides strong support to the plant.	**5.** Support is less strong than tap root.
6. Mostly found in dicot plants.	**6.** Mostly found in monocot plants.
7. It helps in storing food in some plants.	**7.** It does not store food generally.
8. It helps in preventing soil erosion deeply.	**8.** It prevents soil erosion on surface.
9. Leaves show reticulate venation.	**9.** Leaves show parallel venation.
10. Examples: mango, neem, carrot.	**10.** Examples: wheat, rice, grass.

3. Describe the process of food production by plants.

Ans.
1. Green leaves contain a green pigment called chlorophyll.
2. Chlorophyll helps the leaves to trap sunlight.
3. Roots absorb water and minerals from the soil.
4. Water is carried to the leaves through the stem.
5. Leaves take carbon dioxide from air through stomata.
6. Sunlight provides energy for the process.
7. Water and carbon dioxide react in the leaves.
8. Food in the form of glucose is prepared.
9. Excess glucose is stored as starch.
10. Oxygen is released into the air as a by-product.

4. Describe different parts of a flower.

Ans. A flower is the reproductive part of a plant. It has four main part:

1. Sepals: Green leaf-like structures that protect the flower bud.

2. Petals: Brightly coloured parts that attract insects for pollination.

3. Stamens: Male reproductive part consisting of anther and filament. Anther produces pollen grains.

4. Pistil: Female reproductive part consisting of stigma, style and ovary. Ovary contains ovules which form seeds.

5. How does the stem protect the plant and what are its function?

Ans. The stem supports the plant and keeps it upright. In trees, the stem is thick and woody and covered with bark, which protects the inner tissues. Functions of stem:

1. Transports water and minerals from roots to leaves.
2. Carries food from leaves to other parts.
3. Supports leaves, flowers and fruits.
4. In some plants, stem stores food and helps in climbing.

H. HOTS question :

1. Why is the banana tree a herb?

Ans. Banana tree is called a herb because its stem is soft, green and tender. Although the banana plant is tall, it does not have a hard, woody stem like trees. Hence, it is classified as a herb.

2. How are the nature of roots and venation in the leaves of a plant related?

Ans. Plants having tap roots show reticulate venation in their leaves. Plants having fibrous roots show parallel venation in their leaves. Thus, the type of root system is directly related to the type of venation in leaves.

4 The Living Organisms and their Surroundings

A. Multiple Choice Questions :

1. Which of the following is found in a fresh water habitat ?

Ans. (c) Water lily

2. Which of the following is found in a desert habitat ?

Ans. (d) Camel

3. Which of the following is found in the tundra region ?

Ans. (c) Reindeer

4. Which of these soils is best-suited for plant growth ?

Ans. (c) Loam

5. Organisms living in water are called _____ .

Ans. (a) Aquatic

B. Fill in the blanks :

1. Soil is formed by **breaking** down of rocks into small pieces.
2. The surrounding where organisms live is called a **habitat.**
3. Salt water habitats in seas and oceans are referred to as **marine** habitats.
4. The habitat of plants and animals that live in water is called **aquatic** habitat.

C. Write one word for the following :

1. The dwelling place of living beings.

Ans. Habitat.

2. The plants that grow in or around water.

Ans. Hydrophytes.

3. The plants with thick fleshy stem.

Ans. Succulent plants.

4. The breathing organs of whale and dolphins.

Ans. Nostrils (lungs).

5. The tendency of living beings to develop special features so that it can survive in the surrounding where it lives.

Ans. Adaptation.

D. Match the columns :

	Column A		**Column B**
1.	Cactus	**(d)**	**Desert habitat**

2. Lotus **(e) Water habitat**
3. Penguin **(f) Cold weather habitat**
4. Lemur **(c) Arborea**
5. Fish **(b) Aquatic animal**
6. Stone **(a) Non-living thing**

E. Very short answer type questions :

1. Which aquatic animals breathe through nostrils ?

Ans. Dolphins and whales breathe through nostrils. They come to the surface of water to take in air.

2. What is the reaction of a living organism to a stimulus called ?

Ans. The reaction of a living organism to a stimulus is called response. This ability is known as irritability.

3. Give an example of non-living thing that shows any two characteristics of living things.

Ans. A car is a non-living thing. It moves and needs energy like living things.

4. Name two biotic components of a habitat.

Ans. Plants and animals are biotic components. They are living parts of the environment.

5. What are the plants living in and around water called?

Ans. Plants living in and around water are called hydrophytes. Example: Lotus and water lily.

F. Short answer type questions :

1. Why are the green plants called autotrophs ?

Ans. Green plants prepare their own food by the process of photosynthesis. They use sunlight, water and carbon dioxide to make food. Chlorophyll present in leaves helps in this process. Since they do not depend on others for food,green plants are called autotrophs.

2. What is meant by habitat? Name the three habitats in our biosphere.

Ans. A habitat is the place where an organism lives. It provides food, shelter and suitable climate. Every organism has a specific habitat. The three main habitats are:

1. Aquatic habitat **2.**Terrestrial habitat **3.** Arboreal habitat

3. What is hibernation ? Give an example.

Ans. Hibernation is the winter sleep of some animals. During this period, animals remain inactive to save energy. It helps them survive extreme cold. **Example:** Bear.

4. How are cacti adapted to survive in the desert ?

Ans. Cacti have thick fleshy stems to store water. Their leaves are reduced to spines to reduce water loss. They have long roots to absorb water from deep soil. A thick waxy layer prevents evaporation. These adaptations help them survive in deserts.

5. How do aquatic animals breathe ?

Ans. Aquatic animals like fish breathe through gills. Gills extract oxygen dissolved in water. Water enters through the mouth and passes over gills. Oxygen is absorbed and carbon dioxide is released. This helps fish survive underwater.

6. How are animals adapted to live in mountains?

Ans. Mountain animals have thick fur or skin to protect from cold. They have strong hooves for walking on rocky slopes. Some animals have white fur for camouflage in snow. These adaptations help them survive harsh climate. **Example:** Yak and snow leopard.

G. Long answer type questions :

1. Explain briefly the type of components of an environment.

Ans. An environment consists of two main components:

1. Biotic components:

- These include all living organisms.
- Plants, animals and microorganisms are biotic components
- Producers, consumers and decomposers are included in this group.

2. Abiotic components:

- These include non-living factors.
- Air, water, soil, sunlight, temperature and wind are abiotic components.
- Both components together support life on Earth.

2. What is a habitat ? Name them.

Ans. A habitat is the natural home of an organism.It provides food, shelter and suitable climate. Different organisms live in different habitats. Types of habitat:

1. Aquatic habitat – water bodies like ponds and oceans

2. Terrestrial habitat – land areas like deserts and forests

3. Arboreal habitat – trees and air. Each habitat supports specific organisms.

3. What are the common characteristics of living things ?

Ans. Living things show the following characteristics:

1. They are made up of cells.
2. They need food and water.
3. They grow and develop.
4. They respire and release energy.
5. They respond to stimuli.
6. They excrete waste materials.
7. They reproduce their own kind.
8. They show movement.
9. They have a definite life span.
10. All living things die.

4. What is an adaptation ? What is its importance?

Ans. Adaptation is a special feature or habit of an organism. It helps the organism survive in its habitat. Importance of adaptation:

1. Helps organisms adjust to surroundings.
2. Protects them from enemies.
3. Helps in getting food easily.
4. Enables survival in extreme climate.
5. Prevents extinction of species. Adaptation takes place over a long period of time.

5. Why do all living beings need food ?

Ans. All living beings need food for the following reasons:

1. Food provides energy.
2. It helps in growth and development.
3. It repairs damaged body parts.
4. It helps in carrying out life processes.
5. It supports reproduction.
6. It helps organisms stay healthy.
7. Without food, life is not possible.

6. How is a camel adapted to survive in a desert?

Ans. Camel has many adaptations to survive in desert:

1. It has a hump to store fat and water.

2. It can live without water for many days.

3. It drinks a large amount of water at one time.

4. It excretes very little water.

5. Its long legs keep body away from hot sand.
6. Broad feet help it walk on sand easily.
7. Thick eyelashes protect eyes from sandstorms.

7. How is a submerged plant adapted to survive under water ?

Ans. Submerged plants show following adaptations:

1. Leaves are thin and ribbon-like. **2.** Leaves allow water currents to pass easily.
3. Roots are weak or poorly developed. **4.** Water and minerals are absorbed directly.
5. Flexible stems prevent breaking. **6.** Large surface area helps in photosynthesis.
7. These adaptations help plants survive underwater.

5 Sorting Materials into Groups

A. Multiple Choice Questions :

1. Which of the following is a transparent material ?

Ans. (b) Glass

2. Which of the following is a translucent material ?

Ans. (c) Waxed paper

3. Which of the following is soluble in water ?

Ans. (a) Sugar

4. Which of the following does not float in water ?

Ans. (b) A piece of iron

5. Which of the following is the hardest substance ?

Ans. (d) Diamond

6. Which of the following is a good conductor of heat ?

Ans. (a) Brass

7. Which of the following is a bad conductor of heat ?

Ans. (b) Dry wood

8. Which of the following has more density ?

Ans. (d) 1 kg iron

B. Fill in the blanks :

1. Metals are **good conductors** of heat.
2. **Iron and steel** are magnetic materials.
3. Matter exists in three states as **solid**, **liquid** and **gas.**
4. Metals lose their shine because of action of **air** and **moisture** in the atmosphere.
5. Grouping of similar things together is called **classification.**
6. Things can be grouped into several groups on the basis of their **similarities** and **differences.**

C. State whether the statements are True or False :

1. Metals generally dissolve in water. **False**
2. Gases like oxygen and carbon dioxide slightly dissolves in water. **True**
3. Air is a good conductor of heat. **False**
4. Wood and coal do not show any lustre. **True**
5. Diamond is the softest material. **False**

D. Match the columns :

	Column A		Column B
1.	Shoe	**(e)**	**Leather**
2.	Toy	**(d)**	**Plastic**
3.	Chair	**(c)**	**Wood**
4.	Iron	**(b)**	**Good conductor of heat and electricity**
5.	Metals	**(a)**	**Good conductors of electricity**

E. Very short answer type questions :

1. Write two properties of metals.

Ans. Metals are generally shiny in appearance. They are good conductors of heat and electricity.

2. Which materials can we see through ?

Ans. Materials through which light can pass completely are called transparent materials. **Example:** Glass and water.

3. Name two soft materials which you can compress with hand.

Ans. Cotton and sponge are soft materials. They can be easily compressed by hand.

4. Which materials can we not see through ?

Ans. Materials that do not allow light to pass through them are called opaque materials. **Example:** wood and stone.

5. Which of the following materials are transparent Glass, wood, plastics, water, waxed paper ?

Ans. Glass and water are transparent materials. Waxed paper is translucent, while wood is opaque.

6. Which material has loosely packed molecules ?

Ans. Gases have loosely packed molecules. That is why gases can move freely.

7. Which property of metals makes them block light ?

Ans. Metals are opaque in nature. Due to opacity, they do not allow light to pass through.

F. Short answer type questions :

1. What is a material ?

Ans. A material is a substance from which objects are made.Different objects are made from different materials. Materials have different properties like hardness, colour and solubility. These properties decide their use. **For example**, metals are used to make utensils.

2. What is a substance ?

Ans. A substance is a pure form of matter.It can be an element or a compound. Materials are made by combining one or more substances. **For example,** a shirt is made of fibres and buttons. Each fibre is a substance.

3. What is solubility ?

Ans. Solubility is the property of a substance to dissolve in water. Substances that dissolve are called soluble substances. Salt and sugar are soluble in water. Substances that do not dissolve are called insoluble. **Example:** sand and chalk powder.

4. How are soluble material differ from insoluble materials?

Ans. Difference between Soluble and Insoluble Materials:

Soluble Materials	Insoluble Materials
1. These materials dissolve in water.	**1.** These materials do not dissolve in water.

2. They form a solution when mixed with water.	**2.** They do not form a solution with water.
3. Particles mix completely with water.	**3.** Particles remain separate in water.
4. They cannot be seen after dissolving.	**4.** They can be seen in water.
5. Examples are salt and sugar.	**5.** Examples are sand and chalk powder.
6. Water becomes uniform after mixing.	**6.** Water does not become uniform.

5. What are magnetic materials ? Give examples.

Ans. Magnetic materials are materials that are attracted towards a magnet. They stick to a magnet when brought near it. These materials show the property of magnetism. Iron is a common magnetic material. Steel is also attracted by a magnet. **Examples:** Of magnetic materials are iron, steel and nickel.

6. What are transparent materials ?

Ans. Transparent materials allow light to pass through completely. We can see clearly through them. **Examples** include glass, water and air. They are used in windows and lenses. They help in visibility.

G. Long Answer type questions :

1. What is the need of classification of objects ?

Ans.
1. Classification helps in grouping similar objects together.
2. It makes study of materials easier and systematic.
3. It helps us to understand properties of materials.
4. It saves time in searching objects.
5. It helps in proper storage of materials.
6. Shopkeepers use classification to arrange goods.
7. Scientists classify materials for better study.
8. It helps in identifying unknown materials.
9. Daily life becomes more organised.
10. Classification makes learning simple and clear.

2. Describe an experiment to show that water has no definite shape.

Ans.

1. Take water in a glass tumbler.	**2.** Observe the shape of water.
3. Pour the same water into a bottle.	**4.** Observe that water changes its shape.
5. Now pour it into a bowl.	**6.** Water again takes the shape of the bowl.
7. The volume of water remains same.	**8.** Only the shape changes.

9. This shows water has no fixed shape.
10. Water has a definite volume but no definite shape.

3. What is matter ? What are different states of matter ?

Ans.
1. Matter is anything that has mass and occupies space.
2. All objects around us are made of matter.
3. Matter exists in three states.
4. Solid state has fixed shape and volume.
5. Example: stone and wood.
6. Liquid state has fixed volume but no fixed shape.
7. Example: water and oil.

8. Gas state has no fixed shape and volume.

9. Example: air and oxygen.

10. Different states have different properties.

4. Write two differences each of solids, liquids and gases.

Ans.	**Property**	**Solids**	**Liquids**	**Gases**
1.	Shape	Solids have a definite shape.	Liquids do not have a definite shape.	Gases do not have a definite shape.
2.	Volume	Solids have a definite volume.	Liquids have a definite volume.	Gases do not have a definite volume.
3.	Arrangement of particles	Particles are closely packed.	Particles are loosely packed.	Particles are very loosely packed.
4.	Movement of particles	Particles vibrate at one place.	Particles move slowly.	Particles move freely and fast.
5.	Compressibility	Solids cannot be compressed easily.	Liquids can be compressed slightly.	Gases can be compressed easily.
6.	Flow	Solids do not flow.	Liquids can flow.	Gases flow very easily.
7.	Example	Stone, book.	Water, milk.	Air, oxygen.
8.	Space between particles	Very little space	Some space	Large space
9.	Rigidity	Solids are rigid.	Liquids are not rigid.	Gases are not rigid.
10.	Storage	Stored in open containers.	Stored in containers.	Stored in closed containers.

5. Some materials float on water while some others sink. Why ?

1. Floating and sinking depend on density.

2. Materials lighter than water float.

3. Materials heavier than water sink.

4. Wood floats because it is lighter than water.

5. Iron sinks because it is heavier than water.

6. Density is mass per unit volume.

7. Objects with low density float.

8. Objects with high density sink.

9. Shape also affects floating.

10. Density plays the main role.

H. HOTS questions :

1. Why are the handles of cooking utensils made from bakelite or wood?

Ans.

1. Bakelite and wood are bad conductors of heat.

2. They do not allow heat to pass through easily.

3. This prevents our hands from getting burnt.

4. They remain cool even when the utensil is hot.

5. They are safe and easy to hold.

6. Therefore, utensil handles are made of bakelite or wood.p

2. Why is water called a universal solvent?

Ans.

1. Water can dissolve many substances easily.

2. Substances like salt and sugar dissolve in water.

3. Many gases also dissolve in water.

4. More substances dissolve in water than in any other liquid.
5. Because of this property, water is very useful.
6. Hence, water is called a universal solvent.

3. Why does ice float on water?

Ans. **1.** Ice is lighter than water. **2.** The density of ice is less than that of water.
3. Water expands on freezing. **4.** Due to expansion, ice becomes less dense.
5. Objects with lower density float on water. **6.** Therefore, ice floats on water.

6 Separation of Substances

A. Multiple Choice Questions :

1. Common salt and camphor can be separated by _____.
Ans. (c) Sublimation
2. Growth of crystals takes place in _____.
Ans. (d) Evaporation
3. Oil and water are _____.
Ans. (b) Immiscible liquids
4. Which of the following methods is used to separate a solid substance dissolved in water ?
Ans. (b) Evaporation
5. Most materials present in nature are :
Ans. (a) Mixtures
6. A mixture of tea, sugar and iron fillings can be separated by _____.
Ans. (b) Magnetic separation, winnowing

B. Fill in the blanks :

1. Seeds of paddy are separated from its stalk by a method called **threshing.**
2. The milk is boiled and cooled and after sometime is poured into another pot leaving the upper creamy layer.
This process of separating creamy layer from milk is an example of **centrifugation.**
3. To get salt from sea water, the process involved is **evaporation.**
4. The processes involved in causing rain are **evaporation** and **condensation.**
5. Mixer grinder is a domestic example of **centrifugation.**
6. Pond water is a **heterogeneous** mixture.

C. State whether the statements are True or False :

1. Filtration can be used to separate a mixture of milk and water. **Fasle**
2. Winnowing can be used to seperate a mixture of powdered salt and sugar. **Fasle**
3. We can separate sugar from tea by filtration. **Fasle**
4. We can separate husk from grains by decantation. **Fasle**
5. Quickening of sedimentation of clay particles by adding a small quantity of alum to the muddy water is called loading. **True**

D. Match the columns :

	Column A	Column B
1.	Pond water	**(f) Heterogeneous mixture**
2.	Loading	**(e) Alum**
3.	Aqueous solution	**(d) Mixture in water**
4.	Solubility of gases	**(c) Aeroted drinks**
5.	Magnetic separation	**(b) Iron from scrap heap**
6.	Best solvent	**(a) Water**

E. Very short answer type questions :

1. Do kerosene and water form a homogeneous mixture ?

Ans. No, kerosene and water do not form a homogeneous mixture. They are immiscible liquids and form separate layers.

2. What is the solution in which no more solute can dissolve called ?

Ans. It is called a saturated solution. In such a solution, no more solute can dissolve at a given temperature.

3. By which process is husk separated from grains ?

Ans. Husk is separated from grains by winnowing. The lighter husk is blown away by wind.

4. By which process will you separate husk or dirt from pulses and rice before cooking ?

Ans. Husk or dirt is separated by hand-picking and washing. Heavier grains settle down and dirt is removed with water.

5. Which process will you use to get butter from milk and curd ?

Ans. Butter is obtained by centrifugation. Churning separates butter from milk or curd.

6. Which processes will you use to remove insoluble liquids ?

Ans. Insoluble impurities are removed by filtration or decantation. These processes separate solid impurities from liquids.

7. Which process will you use to remove iron from a heap of scrap ?

Ans. Iron is removed by magnetic separation. A magnet attracts iron from the scrap.

8. Name the substance that can be purified by the process of sublimation.

Ans. Ammonium chloride can be purified by sublimation. It changes directly from solid to vapour on heating.

F. Short answer type questions :

1. What is loading ?

Ans. Loading is a process used to speed up sedimentation. In this method, a small amount of alum is added to muddy water. Alum makes light impurities heavier. These heavier particles settle down quickly at the bottom. Thus, clear water is obtained easily.

2. What is a saturated solution ?

Ans. A saturated solution is a solution in which no more solute can dissolve. This happens at a particular temperature. Any extra solute added remains undissolved. Heating the solution may dissolve more solute. On cooling, excess solute settles down again.

3. What is distillation ?

Ans. Distillation is a method of obtaining a pure liquid from a solution. In this process, the liquid is first evaporated by heating. The vapours are then cooled and condensed back into liquid. It involves evaporation and condensation. Distillation is used to separate liquids with different boiling points.

4. What is solubility of a substance ?

Ans. Solubility is the ability of a substance to dissolve in a solvent. It depends on the nature of solute and solvent. Solubility generally increases on heating. Only a fixed amount of solute can dissolve at a given temperature. Beyond this limit, the solution becomes saturated.

5. What is evaporation ?

Ans. Evaporation is the process of changing a liquid into vapours. It occurs when a liquid is heated. In this process, the liquid slowly disappears as vapour. Evaporation is used to separate soluble solids from solutions. Salt is obtained from sea water by evaporation.

6. How will you separate sand from a mixture of sand and water ?

Ans. First, the mixture is kept undisturbed for some time. Sand settles at the bottom by sedimentation. The clear water is poured out carefully by decantation. Filtration can also be used to remove sand completely. Thus, sand is separated from water.

7. Define solvent and solute.

Ans.

Solvent	Solute
1. A solvent is a substance in which another substance dissolves.	**1.** A solute is a substance that dissolves in a solvent.
2. It is usually present in larger quantity.	**2.** It is usually present in smaller quantity.
3. Water is the most common solvent.	**3.** Salt and sugar are common solutes.
4. It dissolves the solute to form a solution.	**4.** It gets dissolved to form a solution.
5. Example: Water in salt solution.	**5. Example:** Salt in salt solution.

G. Long answer type questions :

1. Why do we separate different components of a mixture ? Give examples.

Ans. We separate different components of a mixture because a mixture often contains useful substances along with unwanted or harmful materials. By separating them, we can remove dust, stones or impurities and make the useful material safe for use. Separation also helps us obtain pure substances that are required for cooking, drinking or industrial use. **For example,** stones are removed from rice and wheat before cooking to avoid damage to our teeth. Butter is separated from milk so that it can be used for making ghee or other food items. Clean water is obtained by filtering impurities to make it safe for drinking. Thus, separation is necessary to improve the quality and usability of materials in our daily life.

2. What are homogeneous and heterogeneous mixtures ? Give an example of each.

Ans. Homogeneous and heterogeneous mixtures are two types of mixtures found in our surroundings. A homogeneous mixture has a uniform composition throughout, meaning its components are mixed so well that they cannot be seen separately, like salt completely dissolved in water. In contrast, a heterogeneous mixture does not have uniform composition,

and its different components can be easily seen, such as oil floating on water. A homogeneous mixture looks the same in every part, while a heterogeneous mixture looks uneven because its components remain separate. **Example of homogeneous mixture:** sugar solution. **Example of heterogeneous mixture:** sand mixed with water.

3. Explain sedimentation and decantation.

Ans. Sedimentation and decantation are two related processes used to separate insoluble solid particles from a liquid. When a mixture of sand and water is left undisturbed for some time, the heavier sand particles slowly settle at the bottom; this process is called sedimentation. After the solid settles, the clear water remains at the top. The upper clear liquid is then slowly poured into another container without disturbing the settled particles; this process is called decantation. These methods are commonly used at home for cleaning rice and pulses before cooking, where dirt and dust are removed with the unwanted water. **Example:** separating muddy water to obtain clearer water for further purification.

4. What is sublimation ?

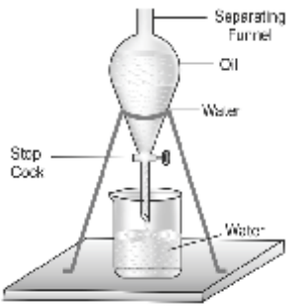
Ans. Sublimation is a process in which certain solid substances change directly into vapour on heating without becoming liquid in between. When the vapours are cooled, they turn back into solid form again. This special property is used to separate substances in a mixture where one component undergoes sublimation and the other does not. Sublimation helps in obtaining pure crystals of the sublimable substance. **For example,** when a mixture of common salt and ammonium chloride is heated, the ammonium chloride changes into vapour and later cools down into solid on a cold surface, while salt remains in the container. **Example:** purification of ammonium chloride from an impure mixture.

5. What is winnowing ? When is it used ?

Ans. Winnowing is a traditional method used to separate lighter solids from heavier solids with the help of wind or blowing air. In this method, a mixture such as grains and husk is dropped slowly from a height in an open area. The lighter husk particles are carried away by the wind, while the heavier grains fall straight to the ground, forming a separate heap. Winnowing is mostly used by farmers after threshing to clean harvested crops and make grains ready for storage or sale. This method works well when the difference in weight between the two components is large. **Example:** separating husk from wheat grains after harvesting.

6. How do you separate a mixture of oil and water? Draw a diagram.

Ans. Oil and water can be separated because they do not mix with each other and form two distinct layers due to their different densities. Water is heavier and settles at the bottom, while oil is lighter and forms the upper layer. To separate them, the mixture is poured into a separating funnel and allowed to stand undisturbed. Once the layers clearly appear, the stopcock at the bottom is opened slowly, allowing the water to drain out first into a container. When only oil remains, the stopcock is closed and the oil is collected separately. This method gives a clean separation of both liquids. **Example:** separating kerosene from water stored in a container.



Separating funnel method

7 Measurement and Motion

A. Multiple Choice Questions :

1. Unit of current is–

Ans. (c) Ampere

2. Length is measured in–

Ans. (d) Metres

3. Falling of a leaf from a tree shows–

Ans. (c) Random motion

4. Spinning of a top shows–

Ans. (d) Rotational motion

5. One of the following is a translatory motion :

Ans. (c) Rolling motion

6. How many kilograms make one metric ton?

Ans. (c) 1000

B. Fill in the blanks :

1. Measurement means the **comparison** of an unknown quantity with a fixed standard quantity of its own kind.
2. SI units was a system developed by **French Academy of Science** and was adopted in **1960.**
3. The objects' changing position with respect to time is said to be in **motion.**
4. When oscillatory motion is quick, it is called **vibratory** motion.
5. The wheel of moving car shows **rolling** motion.
6. 1000 times the length of a metre is called **kilometre.**

C. Match the columns :

	Column A	**Column B**
1.	Length	**(f) Metre**
2.	Mass	**(e) Kilogram**
3.	Temperature	**(d) Kelvin**
4.	Speed of an object	**(a) Distance/time**
5.	Hands of a clock	**(b) Periodic motion**
6.	Electric current	**(c) Ampere**

D. Give one word for the following :

1. Taking some quantity of things required on the basis of one's experience.

Ans. Estimation.

2. To-and-fro motion of an object about its mean position.

Ans. Oscillatory motion.

3. A change in the position of an object or body with respect to time.

Ans. Motion.

4. The units made directly or indirectly from SI units.

Ans. Derived units.

5. The motion of a body along a curved path.

Ans. Curvilinear motion.

E. Very short answer type quesitons :

1. What is main difference between ancient and modern means of transport?

Ans. Ancient means of transport depended on animals like bullock carts, horses and camels, so travelling was slow and took many days. Modern transport uses vehicles like cars, trains and aeroplanes, which help people travel faster and reach long distances in less time.

2. Which type of motion is seen both in oscillatory and vibratory motions ?

Ans. Both oscillatory and vibratory motions show a repeated to-and-fro motion around a central or mean position, only vibratory motion is much faster.

3. What is the motion of a body along a curved path called ?

Ans. The motion of a body along a curved path is called curvilinear motion or circular motion, depending on the shape of the path.

4. What is the other name of linear motion ?

Ans. The other name of linear motion is rectilinear motion, because the body moves in a straight line.

5. List the precautions which need to be taken while measuring the length of an object.

Ans. While measuring length, the scale must be placed straight along the object and the eye should be in line with the marking to avoid errors. If the zero end of the scale is damaged, measurement should start from another mark and the difference should be calculated.

F. Short answer type questions :

1. Define the following terms :

(a) Periodic Motion

(b) Random Motion

(c) Rolling Motion

Ans. **(a) Periodic Motion** Periodic motion is the type of motion that repeats itself after fixed intervals of time. In this motion, an object completes one full cycle and then returns to its starting position in the same time again and again. Examples include the motion of a pendulum, a swing, or the earth revolving around the sun. Because the time taken in each repetition remains constant, periodic motion is helpful in measuring time and understanding natural cycles.

(b) Random Motion Random motion is the motion in which an object changes its direction continuously without following a fixed path. Such motion does not have a predictable movement pattern, and the object may turn in any direction at any time. A common example is the irregular movement of a fly or mosquito in the air. Since there is no fixed path or interval, random motion cannot be used for measuring time or distance accurately.

(c) Rolling Motion Rolling motion occurs when an object rotates about its own axis while also moving forward on a surface at the same time. This motion combines both rotational and translatory motion, making the object travel smoothly. A moving car tyre or a rolling ball are clear examples of rolling motion. Because both spinning and forward movement happen together, rolling motion helps objects travel easily across roads or surfaces.

2. Why do we need to measure distance?

Ans. We need to measure distance so that we can know how far one place is from another and plan our travel properly. Measurement of distance helps us choose suitable transport, manage time and estimate how long a journey will take. In daily life, measuring distance is useful in tasks such as construction, sports, mapping and travel. Without proper measurement, activities would become confusing and decisions would be inaccurate. Thus, measurement makes work easy, safe and reliable.

3. When is an object said to be in motion?

Ans. An object is said to be in motion when its position keeps changing with respect to time. For example, a running boy, a moving bus or a flying bird are all in motion because they continuously change their location. Even when we sit still, many things inside our body like blood are moving. Motion depends on the observer's point of view; a person sitting inside a moving bus feels at rest, but for someone standing outside, that person is in motion

G. Long answer type questions :

1. What are the SI units ? Why are they required ?

Ans. SI units are Standard International Units used all over the world to measure physical quantities like length, mass, time, temperature and current. These units were developed by the French Academy of Science and were adopted internationally in 1960 to bring uniformity in measurement. Earlier, measurements were done using body parts such as hand span or cubit, but these were different for every person and caused confusion. SI units solve this problem by providing fixed values that remain the same everywhere, making measurements accurate and understandable globally. They are required so that scientific results, trade values and daily measurements can be compared without any difference. With SI units, calculations are reliable, experiments can be repeated with the same results and international communication becomes easy and correct.

2. How would you measure the length of a curved line ?

Ans. The length of a curved line cannot be measured accurately using a straight ruler, so a flexible object like a thread is used. The thread is gently placed along the entire curved line without stretching it, making sure it follows the exact curve from start to end. After marking the points on the thread, it is then removed carefully and straightened on a flat surface. The straightened thread is measured using a metre scale or ruler to know the exact length of the curve. This method works because the thread adjusts to the curve while the ruler measures its straightened length. Measuring tape can also be used because it bends easily and gives a proper reading.

3. What is motion ? When is a body is said to be in motion ?

Ans. Motion is the change in position of an object with respect to time. It means that if an object keeps changing its place as time passes, it is in motion. A moving bus, running boy, spinning top or swinging pendulum are all examples of motion found in daily life. A body is said to be in motion when its location keeps changing continuously compared to a fixed point around it. For example, a person sitting inside a moving bus seems at rest to another passenger, but to someone standing outside, that person is in motion because the bus is changing position. This shows that motion is relative and depends on the observer's point of view.

4. Why do we need standard units for measurement ?

Ans. Standard units are needed so that measurement remains the same for everyone in every place. Earlier, people used body-based measurements like foot, cubit and hand span, but these differed from person to person and led to confusion. Standard units such as metre, kilogram and second remove this variation and make measurement accurate and reliable. Without standard units, there would be misunderstandings in science, travel, business and construction because everyone would measure differently. Standard units allow scientists to share results confidently, engineers to make safe structures and buyers to get the correct amount of goods. They make comparison easier and communication clearer, which is why they are essential for all types of measurements.

8 Magnetism

A. Multiple Choice Questions :

1. When a magnet is rolled over iron fillings, most of them stick to the magnet at :

Ans. (c) Both the poles

2. A freely suspended magnet points in the _____ direction.

Ans. (a) north-south

3. When the north pole of a magnet is brought near the north pole of another suspended magnet, _____ takes place.

Ans. (b) repulsion

4. A steel blade can be magnetised with the help of a magnet by :

Ans. (a) rubbing

B. Fill in the blanks :

1. Materials which are attracted towards a magnet are called **magnetic substances.**
2. Paper is not a **magnetic** material.
3. A magnet always has **two** poles.
4. Like poles **repel** whereas unlike poles **attract** each other.
5. The strength of a magnet is negligible at its **centre.**

C. State whether the following statements are True or False :

1. Chinese sailors used magnets to find directions. **True**

2. Lodestone is an artificial magnet. **False**
3. Magnetic force is almost nil at the centre. **True**
4. Magnetic compass is used to draw diagrams. **False**
5. A permanent magnet can be made using the striking method. **True**
6. Like poles repel each other. **True**

D. Answer in one or two sentences :

1. What are magnets? Name a natural magnet.

Ans. Magnets are materials that attract substances like iron, nickel and cobalt. A natural magnet is lodestone.

2. In which direction does a freely suspended bar magnet align itself?

Ans. A freely suspended bar magnet always aligns itself in the North–South direction.

3. Why do travellers and navigators use the magnetic compass?

Ans. Travellers and navigators use the magnetic compass to find directions while travelling, especially when the Sun or Pole Star is not visible.

E. Match the columns :

	Column A	**Column B**
1.	Natural magnet	**(a) lodestone**
2.	Magnes	**(e) shepherd**
3.	Magnetic keepers	**(f) bars of soft iron**
4.	Leading stone	**(b) directions**
5.	Unlike poles	**(d) attract each power**
6.	Magnetic compass	**(c) low magnetic power**

F. Short answer type questions :

1. What are magnetic substances? Name two magnetic materials.

Ans. Magnetic substances are those materials which get attracted towards a magnet because they contain magnetic properties. When a magnet is brought near them, they stick to the magnet due to magnetic force. These materials are often used to make tools and machines that work with magnets. **Examples:** iron, nickel.

2. What are non-magnetic substances? Name two non-magnetic materials.

Ans. Non-magnetic substances are materials that do not get attracted towards a magnet. Even if a strong magnet is placed close to them, they show no reaction. These materials are used where magnetic disturbance should not happen. **Examples:** wood, plastic.

3. How can you make your own compass?

Ans. To make a compass, first take a sewing needle and magnetise it by rubbing a bar magnet on it several times in the same direction. Then insert the magnetised needle through a small piece of cork and place it gently on the surface of water. The needle will start rotating freely and finally settle in the North–South direction. This setup works like a compass because the magnetic needle finds the Earth's magnetic direction.

G. Long answer type questions :

1. Describe the method of making a magnet.

Ans. A magnet can be made by rubbing a strong permanent bar magnet repeatedly on a steel bar in the same direction. This rubbing arranges the tiny magnetic particles inside the steel bar so that it begins to behave like a magnet. The bar magnet should not change direction while stroking, otherwise the alignment will break. After rubbing around 30–40 times, the steel bar starts attracting small iron objects. The more we rub, the stronger the magnet becomes because the magnetic alignment increases. **Example:** A screwdriver can be magnetised in this way so it can pick up small screws while repairing things.

2. What is meant by the poles of a magnet? Where are the poles of a bar magnet located?

Ans. The poles of a magnet are the two ends where the magnetic force is strongest and attraction is maximum. These two poles are called the North pole and the South pole and they control how magnets attract or repel. If iron filings are sprinkled around a magnet, most of them collect near these two ends, proving the position of poles. In a bar magnet, the poles are located close to the extreme ends and not at the exact edges.The centre of the magnet has very weak magnetic force compared to the poles. **Example:** When a bar magnet is dipped in iron filings, the filings cling mainly at both ends showing the poles.

3. What happens when the north pole of a magnet is brought near (a) the north pole of a freely suspended magnet, and (b) the south pole of a freely suspended magnet?

Ans. When the north pole of a magnet is brought near the north pole of a freely suspended magnet, the hanging magnet moves away because like poles repel each other. This repulsion pushes the suspended magnet aside and prevents both magnets from staying close. But when the north pole is brought near the south pole of the suspended magnet, both attract and move towards each other. This attraction pulls the suspended magnet in the direction of the magnet being held. These behaviours show that magnets follow the law: like poles repel, unlike poles attract. **Example:** A compass needle moves when a bar magnet is brought close because its poles interact with the bar magnet's poles.

4. State the uses of magnets.

Ans. Magnets are used in many devices where movement, sound or direction is required. They are used in motors and generators to help convert electrical energy into mechanical motion. Magnets are also used in speakers and microphones to change electrical signals into sound. In scrapyards, large magnets help lift metal objects and separate iron from waste. Magnets store data in ATM cards, credit cards and hard disks using magnetic strips. **Example:** A crane magnet can lift a whole damaged car from a junkyard by magnetic attraction.

5. What is the story behind the magnet?

Ans. According to a famous story, a shepherd named Magnes used to take his sheep to nearby hills carrying a stick with an iron tip. One day, the iron tip of his stick got stuck to a rocky mountain and he could not pull it away easily. He later discovered that the rock was attracting iron naturally, and this rock was named magnetite after him. This natural attraction became the first known use of magnets in human history. People later learned that this material could be used to find directions while travelling. **Example:** Chinese sailors used lodestone, a natural magnet, to guide their ships during cloudy weather.

H. Very short answer type questions :

1. What are magnets?

Ans. Magnets are objects that attract iron-like materials due to magnetic force. **Example:** A bar magnet can pull iron nails toward it.

2. What is a magnetic compass?

Ans. A magnetic compass is an instrument that shows direction using a magnetised needle. **Example:** Its needle always points North–South to guide travelers.

3. Name the natural magnet.

Ans. The natural magnet is lodestone, which attracts iron without being made by humans. **Example:** Lodestone can lift small iron pins toward itself.

I. HOTS questions :

1. A carpenter by chance mixed iron nails and screws with wood shavings while working. How can you help him to get back the nails and screws from the wood shavings?

Ans. I would move a magnet over the mixture so the iron nails and screws stick to it while the wood shavings remain behind. This separates the metal pieces easily because wood is non-magnetic. **Example:** A bar magnet can lift scattered nails from the floor in the same way.

2. How do you separate metal scrap from a heap of waste materials in a scrapyard?

Ans. A large electromagnet attached to a crane is used to pick up only metal scrap because metals stick to the magnet. This method quickly removes metal from mixed waste without touching it by hand. **Example:** Junkyard cranes use strong magnets to lift old cars and metallic parts.

9 Air Around Us

A. Multiple Choice Questions :

1. The main component of air which forms 78% of it is :

Ans. (b) nitrogen

2. Windmills are used to :

Ans. (d) all of the above

3. Which of the following gas is used to manufacture fertilizers ?

Ans. (d) nitrogen

4. Fish and other aquatic animals take oxygen through :

Ans. (c) gills

5. Mangrooves have roots that grow out of the soil to get :

Ans. (b) air

B. Fill in the blanks :

1. A weather cock shows the **direction** in which the air is moving.
2. The layer of air around the earth is known as **atmosphere.**
3. The component of air used by green plants to make their food is **carbon dioxide.**
4. The fertilizers also provide the essential requirement of **nitrogen** in the plants.
5. The amount of water vapours present in the air **varies** from place to place and time to time.

C. State whether the following statements are True or False :

1. Nitrogen and oxygen are in the ratio of 4 : 1. **False**
2. Fish get oxygen dissolved in water through their gills. **True**
3. Carbon dioxide and gases do not dissolve in water. **False**
4. Atmospheric nitrogen can be used to make fertilizers. **True**
5. Water vapour in air gives rise to humidity. **True**

D. Very short answer type questions :

1. What is the thin layer of air around the earth called

Ans. The thin layer of air around the Earth is called the atmosphere.

2. Through which organ animals on land breathe in air ?

Ans. Animals living on land breathe through their lungs.

3. Through which organ aquatic animals absorb oxygen from water ?

Ans. Aquatic animals like fish absorb dissolved oxygen through gills.

4. Which machine is used to tap the kinetic energy of moving air ?

Ans. A windmill is used to tap the kinetic energy of moving air.

5. Which device is used to convert wind energy to electrical and mechanical energy ?

Ans. A wind turbine converts wind energy into electricity and mechanical power.

E. Short answer type questions :

1. Define atmosphere.

Ans. The atmosphere is a thin layer of air surrounding the Earth which contains gases like nitrogen, oxygen, carbon dioxide and water vapour. It protects us from the harmful rays of the Sun and helps maintain temperature on Earth. **For example,** without atmosphere, living beings would not survive due to lack of oxygen and extreme temperatures.

2. List some uses of air.

Ans. Air is essential for breathing, as living beings need oxygen to stay alive. It is used for burning fuels like wood and LPG which require oxygen to burn. Air helps in moving sailing boats, parachutes and gliders using wind force. Windmills use moving air to generate electricity and pump water. **Example:** Kites fly in the air because of wind.

3. What is the significance of carbon dioxide in air ?

Ans. Carbon dioxide is used by green plants during photosynthesis to make food. When animals breathe out carbon dioxide, plants absorb it and release oxygen back into the air. This maintains the balance between oxygen and carbon dioxide in nature. **Example:** Plants need CO_2 to make glucose (food) and release oxygen which humans breathe.

4. What is humidity ?

Ans. Humidity is the amount of water vapour present in the air, and it changes with weather. When humidity is high, we feel sticky and sweaty because sweat doesn't evaporate quickly. Humidity increases during rainy season and decreases during winter. **Example:** Water droplets form on a cold glass of water due to humidity in the air.

5. List some activities that are possible due to the presence of air.

Ans. Due to the presence of air, we can fly kites, sail boats, use gliders and parachutes using wind. Air helps in drying clothes because moving air carries away water vapour. Windmills turn with

air and help generate electricity. Air also helps in spreading seeds and pollen of plants. **Example:** Firki (pinwheel) spins when you run because of moving air.

F. Long answer type questions :

1. What is air ? What is its composition ?

Ans. Air is a mixture of many gases that surrounds the Earth and is essential for life. It mainly contains nitrogen (78%) and oxygen (21%), while the remaining 1% includes carbon dioxide, argon, water vapour, and dust. Oxygen is needed for breathing and burning, while nitrogen helps in plant growth. Carbon dioxide is used by plants to make food, and water vapour causes humidity and rainfall. Dust particles in air help clouds to form by giving surfaces for water droplets to cling. **Example:** Animals breathe oxygen, plants need carbon dioxide, and fertilizers contain nitrogen.

2. Which gas in the air is essential for respiration?

Ans. Oxygen is the gas essential for respiration in all living beings.When we breathe in oxygen, our body uses it to break down food and release energy, which is needed for daily activities. Without oxygen, cells cannot produce energy, and life cannot exist. Aquatic animals also use oxygen dissolved in water for breathing. **Example:** Humans, birds, and animals inhale oxygen through lungs, while fish use gills to absorb dissolved oxygen.

3. How do aquatic animals breathe ?

Ans. Aquatic animals like fish breathe using special organs called gills. Gills extract dissolved oxygen from water when water passes through them. This oxygen is used by the animal's body to release energy from food. Some animals like whales and dolphins have lungs, so they come to the surface to breathe air. **Example:** Fish stay underwater because gills help them breathe, but dolphins must come up to breathe. Without dissolved oxygen in water, aquatic life cannot survive.

4. How is the carbon dioxide important for plants and animals ?

Ans. Carbon dioxide is very important because plants use it in photosynthesis to make food. During photosynthesis, plants absorb carbon dioxide and release oxygen, which animals need to breathe. This creates a balance between oxygen and carbon dioxide in nature. Animals breathe out carbon dioxide during respiration, which plants reuse. **Example:** Humans exhale CO_2, which trees absorb, and trees release oxygen, which humans breathe. Thus, plants and animals depend on each other to survive.

5. What is the significance of nitrogen present in the air ?

Ans. Nitrogen is needed by plants to grow properly, as it forms proteins and other important compounds. Although plants cannot absorb nitrogen directly from the air, they take it from soil in the form of nitrates. Nitrogen in the air is used to make fertilizers, which increase crop production. Some bacteria in soil convert nitrogen into a form that plants can use; this is called nitrogen fixation. **Example:** Leguminous plants like peas and beans have nitrogen-fixing bacteria in their roots. Nitrogen is also used to make medicines and explosives.

G. Match the columns :

	Column A		**Column B**
1.	Oxygen	**(c)**	**is used for respiration**
2.	Carbon dioxide	**(d)**	**plants need for photosynthesis**
3.	Nitrogen	**(e)**	**plants need for their growth**

4. Water vapour **(b) make the air moist**

5. Smoke **(a) is released by burning of fuels**

H. HOTS Questions :

1. What steps would you take to improve the quality of air inside your home?

Ans. I would keep windows open for ventilation, avoid burning plastic or incense, and grow air-purifying plants like Aloe vera or Money plant. **Example:** Keeping plants in the room helps remove dust & increases oxygen, making the air cleaner.

2. Is it good to sleep under a tree at night ? Why.

Ans. No, it is not good to sleep under a tree at night because trees release carbon dioxide at night and do not release oxygen, making the air less suitable for breathing. **Example:** More CO_2 under the tree at night can cause breathing problems, so sleeping there is unsafe.

10 Water

A. Multiple Choice Questions :

1. What do we see on the outer surface of the glass containing ice-chilled water?

Ans. (b) water droplets

2. Water spilled on a floor dries up due to :

Ans. (c) evaporation

3. Evaporation of water in shade is :

Ans. (c) slow

4. Water is needed for

Ans. (d) all of the above

5. The coming down of water in the form of rain, hail or snow is called :

Ans. (c) precipitation

6. Which of the following maintains the supply of water on land?

Ans. (b) water cycle

B. Fill in the blanks :

1. The **solid** state of water is ice.
2. Water cycle helps regulating the **temperature** on the earth.
3. Loss of water from plant is called **transpiration.**
4. Lack of rain may cause **drought.**
5. The process of changing water vapour into water is called **condensation.**

C. State whether the following statements are True or False :

1. Water is used in radiators of vehicles. **True**
2. Rain water is the purest form of natural. **True**
3. Rain water harvesting increases water shortage. **False**
4. Steam is the solid state of water. **False**
5. Floods may lead to soil erosion. **True**

D. Match the columns :

	Column A		Column B
1.	Sea water	**(c)**	**saline water**
2.	Earth	**(e)**	**watery planet**
3.	Ice	**(a)**	**solid state of water**
4.	Flood	**(b)**	**soil erosion**
5.	Water table	**(d)**	**level of ground water**

E. Very short answer type questions :

1. Why is the earth known as a watery planet?

Ans. Because two-third of the Earth's surface is covered with water.

2. What is groundwater?

Ans. Water present below the surface of the earth and stored over hard rocks is called groundwater.

3. Why do our clothes dry up when left out under the sun?

Ans. Because water in the clothes evaporates due to the heat of the sun.

F. Short answer type questions :

1. Define transpiration.

Ans. Transpiration is the process in which excess water absorbed by plants is released into the air as water vapour through tiny pores called stomata. **For example,** on a sunny day leaves lose water vapour, which helps plants stay cool and maintain water balance. This released vapour also adds moisture to the air and becomes a part of the water cycle.

2. What is drought?

Ans. Drought is a condition caused due to lack of rain for a long time, leading to severe water shortage. **For example,** in drought-affected areas soil becomes dry and cracked, crops fail to grow, and even ponds and small rivers may dry up. It causes shortage of food, water and fodder for animals, making life very difficult.

3. How is rain useful to us? Give any three reasons.

Ans. Rain is useful to us in many ways:

1.It cools the environment after hot summer days, bringing relief to people, animals and plants.

2.It helps farmers to grow crops, because rainwater provides essential water for agriculture.

3. It fills ponds, lakes, streams and increases groundwater, maintaining the supply of water on land.For example, during monsoon, fields turn green again and wells refill due to rainfall, helping villages survive.

G. Long answer type questions :

1. What is formed on :
   (a) melting of ice
   (b) freezing of water
   (c) evaporation of water

Ans. **(a) melting of ice -** water

(b) freezing of water - ice

(c) evaporation of water - water vapour / steam

Water exists in three states — solid (ice), liquid (water) and gas (water vapour).When ice melts,

it absorbs heat from the surroundings and changes into liquid water. If water is cooled or frozen, it loses heat and changes into ice, which is its solid form. When water is heated, it changes into steam or water vapour, which is its gaseous form. These changes happen due to heating and cooling, and can be reversed back, showing water's changeable states. **Example:** Ice cubes left outside melt into water; boiled water turns into steam; and when steam cools, it becomes water again. Thus, water can change from solid, liquid, gas and back, depending on temperature.

2. How do the animals living in soil get affected by heavy rain?

Ans. Animals like earthworms, insects, moles and snakes live inside the soil, where small air spaces supply them oxygen. During heavy rain, water fills these spaces, reducing the amount of air in soil. As a result, these animals cannot breathe properly and come out of the soil to survive. Sometimes, they die due to lack of oxygen or get washed away by floodwater. **For example,** after rainfall you can often see earthworms and snakes on roads, searching for air. Thus, heavy rain disturbs their natural habitat and may be dangerous for their survival.

3. What is the advantage of rainwater harvesting?

Ans. Rainwater harvesting is useful because it collects and stores rainwater, which can later be used during water shortage. It raises the groundwater level, helping wells, handpumps and borewells provide more water. This method reduces dependence on river water, which often becomes polluted. Rainwater harvesting is especially helpful during dry seasons or drought, when rainfall is very less. **For example,** many schools and houses store rooftop rainwater in tanks or pits, which later helps in gardening and daily use. This process prevents wastage of rainwater and supports the idea "Catch water where it falls."

H. HOTS questions :

1. Why do prices of food grains, fruits and vegetables go up during floods or drought? Give reasons.

Ans. During floods or drought, crops get damaged because fields either get too much water or no water at all. As a result, the supply of food grains, fruits and vegetables decreases, but the demand remains the same. When supply is less and demand is high, the prices naturally increase. **Example:** During a severe drought, many farmers cannot grow wheat, so there is less wheat in the market and its price becomes very high.

2. Give reasons for the following :

(a) Several accidents take place on cold winter mornings.

(b) Our feet become wet while walking on grass on cold winter mornings.

(c) Rain maintains the supply of water on land.

(d) Floods cause extensive damage to human life and property.

Ans. **(a) Several accidents take place on cold winter mornings.** - On cold winter mornings, fog reduces visibility, making it difficult for drivers to see the road clearly. Slippery roads due to dew or frost also increase the chances of accidents. **Example:** A car may not see a bicycle ahead due to dense fog, leading to a collision.

(b) Our feet become wet while walking on grass on cold winter mornings. - At night, water vapour in the air cools down and condenses on grass as tiny water droplets called dew. When we walk barefoot on grass, these droplets stick to our feet, making them wet. **Example:** Early morning walkers often notice their feet becoming wet due to dew drops collected on

the lawn.

(c) Rain maintains the supply of water on land. - Rainwater fills rivers, lakes, ponds and also seeps into the soil to replenish groundwater. This ensures that plants, animals and humans get a continuous supply of fresh water. **Example:** After monsoon rains, wells and tube wells start giving more water because rainwater has filled underground water sources.

(d) Floods cause extensive damage to human life and property. - Floods submerge houses, roads and fields, destroying crops, homes, and vehicles. Strong water currents can wash away people and animals, causing loss of life. **Example:** During a major flood, many houses collapse and roads break, forcing people to leave their homes and seek shelter.

11 Temperature: Meaning and Measurement

A. Multiple Choice Questions:

1. Normal human body temperature is:

Ans. (b) 37 °C

2. Which thermometer was widely used during COVID-19?

Ans. (c) No-contact infrared thermometer

3. Water freezes at ___ on the Celsius scale.

Ans. (b) 0 °C

4. The Kelvin scale is mainly used in:

Ans. (b) Scientific research

5. Which liquid is commonly used in laboratory thermometers?

Ans. (b) Mercury or colored alcohol

B. Fill in the blanks :

1. Temperature is the measure of how **hot** or **cold** an object is.
2. A thermometer works on the principle of substances **expand** when heated and **contract** when cooled.
3. The normal human body temperature is about **37** °C or **98.6** °F.
4. The lowest possible temperature is called **absolute zero.**
5. Air temperature is measured by a **maximum–minimum** thermometer.
6. Laboratory thermometers do not have a **constriction** in their tube.

C. State whether the following statements are True or False :

1. Touch is always a reliable method to measure temperature. **False**
2. A digital thermometer can display temperature in both °C and °F. **True**
3. The Kelvin scale uses the word "degree" before its unit. **False**
4. Laboratory thermometers are used for measuring human body temperature. **False**
5. Air temperature plays an important role in farming and weather. **True**

D. Match the columns:

	Column A	**Column B**
1.	Celsius scale	**(b) 37 °C**
2.	Fahrenheit scale	**(a) 98.6 °F**
3.	Kelvin scale	**(c) 0 K**

4. Clinical thermometer **(d) Human body**

5. Laboratory thermometers **(e) Substances in experiment**

E. Short answer type questions :

1. What is temperature?

Ans. Temperature is the measure of how hot or cold an object is. It shows the degree of heat present in a substance. **For example,** hot tea has a higher temperature, while ice has a lower temperature. Doctors measure body temperature to check fever. Normal human body temperature is 37°C (98.6°F).

2. Why is our sense of touch unreliable for measuring temperature?

Ans. Our skin feels temperature relatively, not accurately. If one hand is in hot water and the other in cold water, then both are placed in warm water, one feels hot and the other cold. Therefore, our touch can confuse us. For exact values, we use thermometers instead of touch. **Example:** Feeling a metal chair in winter feels colder than wood but both may have the same temperature.

3. Mention two uses of digital thermometers.

Ans. Digital thermometers are used to measure body temperature quickly, usually within seconds. They do not contain mercury, making them safer to use at home and in hospitals. They are easy to read because temperature shows directly on a screen. **Example:** Checking fever during COVID-19 or at home.

4. Write the freezing and boiling points of water on the Celsius scale.

Ans. On the Celsius scale, water freezes at 0°C and boils at 100°C. These points are used as reference temperatures in science. **For example,** ice cubes form at 0°C, and water for tea boils around 100°C. This scale helps compare temperatures of different substances.

5. Why can a laboratory thermometer not be used for body temperature?

Ans. A laboratory thermometer has no constriction, so mercury level falls back immediately. Its temperature range is wide (–10°C to 110°C), while human body temperature is limited. Therefore, readings cannot be held to check after removing it. **Example:** If used under the tongue, the reading drops before you can see it.

6. How does the time of day affect air temperature?

Ans. Air temperature is coolest early morning and highest in the afternoon due to sunlight. It becomes lower again in the evening when the sun sets. **Example:** We wear sweaters in the morning but feel hot in the afternoon. Farmers plan their work depending on temperature during the day.

7. Name two factors that cause variation in human body temperature.

Ans. Body temperature changes with age—children may have slightly higher temperatures. It also changes with activity level—running or exercising increases temperature. **Example:** After playing, body feels warm, but after resting it cools down. Time of day and climate also affect temperature.

8. Which scale of temperature is used in scientific experiments?

Ans. The Kelvin scale is used in scientific experiments. It begins at absolute zero (0 K), the lowest possible temperature. Scientists use Kelvin to measure temperature accurately in physics and chemistry. **Example:** Experiments in space research and laboratories record values like 300 K instead of 27°C.

F. Long answer type questions :

1. Explain how a clinical thermometer works.

Ans. A clinical thermometer is used to measure the temperature of the human body. It contains mercury in a glass bulb which expands when it comes in contact with body heat. As mercury expands, it rises in the thin tube and stops at a point that shows the body temperature. There is a constriction (kink) in the tube which prevents mercury from falling back immediately, so the reading can be seen even after removing it. The normal bod temperature is 37°C or 98.6°F. **Example:** When someone has fever, the thermometer shows above 37°C, like 39°C.

2. Compare clinical and laboratory thermometers.

Ans. Clinical thermometers measure body temperature, while laboratory thermometers measure temperature of substances like liquids and gases. A clinical thermometer has a narrow range from 35°C–42°C, while a laboratory thermometer has a wider range from–10°C–110°C. Clinical thermometers have a constriction to hold the reading, while laboratory thermometers do not have it. Clinical thermometers are used in hospitals or at home, while laboratory thermometers are used in science experiments. **Example:**Checking fever uses clinical thermometer, while heating water in a lab uses laboratory thermometer.

3. Write in detail about digital thermometers and their advantages.

Ans. Digital thermometers measure temperature using electronic sensors instead of mercury. They are safe because they do not contain mercury, which is poisonous.They show readings quickly, usually within 10–30 seconds, making them easy to use. The temperature appears in clear numbers on a screen, reducing chances of wrong reading. Some digital thermometers also store previous readings for comparison. **Example:** Digital thermometers were commonly used in homes and hospitals during COVID-19 to check fever quickly.

4. Describe the three different scales of temperature with examples.

Ans. Temperature can be measured using three main scales — Celsius (°C), Fahrenheit (°F), and Kelvin (K).

1. Celsius Scale (°C) – Used in daily life and weather reports. On this scale, water freezes at 0°C and boils at 100°C. **Example:** Normal body temperature is 37°C, and winter mornings may be around 10°C.

2. Fahrenheit Scale (°F) – Mostly used in the United States. Water freezes at 32°F and boils at 212°F. **Example:** Human body temperature is 98.6°F, and summer days in some cities reach 104°F.

3. Kelvin Scale (K) – Used in scientific research and laboratories. Starts from absolute zero (0 K = –273.15°C) where particle motion stops. **Example:** Room temperature is almost 300K, which is equal to 27°C. Thus, Celsius is used for everyday measurement, Fahrenheit in some countries, and Kelvin in science.

5. Explain the importance of air temperature in our daily life.

Ans. Air temperature tells us how hot or cold the surroundings are and helps us choose clothes accordingly. It affects weather, farming, travel, and health conditions around us. Farmers depend on temperature to plan sowing and harvesting, as crops grow better at suitable temperatures. Pilots, sailors, and drivers use temperature information to plan safe journeys. Scientists study rising air temperature to understand global warming and climate change. **Example:** In winter, low temperature makes farmers cover crops to protect them from frost, while in summer high temperature affects crop watering.

12 Journey Into the Outer Space

A. Multiple Choice Questions (MCQ):

1. Which is the brightest star in the night sky?

Ans. (b) Sirius

2. The Great Red Spot is found on:

Ans. (c) Jupiter

3. What are comets often called?

Ans. (c) Dirty snowball

4. Which planet is called the "Morning Star"?

Ans. (b) Venus

B. Fill in the Blanks:

1. Outer space begins just beyond the **Earth's atmosphere.**
2. The brightest star in the sky is **Sirius.**
3. **Earth** is the only planet known to support life.
4. The Milky Way is a **spiral** galaxy.
5. The Moon causes **tides** on Earth.
6. The universe began about **13.8 billion** years ago.

C. State whether the following statements are True or False:

1. The Pole Star is the brightest star in the sky. **False**
2. Mercury is the farthest planet from the Sun. **False**
4. Constellations were used for navigation in ancient times. **True**
5. Jupiter is the largest planet in the Solar System. **True**
6. Comets always move in circular paths. **False**

D. Match the Columns:

	Column A	Column B
1.	Ursa Major	**(a) Saptarishi**
2.	Halley's Comet	**(b) Appears every 76 years**
3.	Mars	**(c) Red Planet**
4.	Sirius	**(d) Brightest star**
5.	Milky Way	**(e) Our galaxy**

E. Short answer type questions:

1. What is meant by outer space?

Ans. Outer space is the vast region that begins just beyond Earth's atmosphere and stretches across the universe. It contains planets, stars, moons, asteroids, comets, and galaxies. There is no air or atmosphere in outer space, so sounds cannot travel. **Example:** The region where astronauts travel in rockets is outer space.

2. What are constellations? Give one example.

Ans. Constellations are patterns formed by groups of stars in the night sky that appear to make shapes. People in ancient times named them after animals, objects, and mythical figures. They helped sailors and travelers find directions at night. **Example:** Ursa Major (Saptarishi)

looks like a big ladle in the sky.

3. Why is the Sun important for life on Earth?

Ans. The Sun gives heat and light energy which is necessary for survival on Earth. Plants use sunlight to make food through photosynthesis, which supports all living beings. It controls weather, climate, and the water cycle on Earth. **Example:** Without sunlight, plants would die and animals including humans could not survive.

4. What causes the phases of the Moon?

Ans. The phases of the Moon occur because of the changing positions of the Earth, Moon, and Sun. As the Moon revolves around Earth, different parts of it are lit by the Sun. This makes the Moon appear in different shapes like crescent, half-moon, and full moon. **Example:** The Full Moon appears when the entire lit side of the Moon faces Earth.

5. Why is the universe called a mystery?

Ans. The universe is called a mystery because scientists still do not know everything about it. It has billions of stars, galaxies, black holes, and unknown matter and energy. Many parts of the universe are so far away that light takes millions of years to reach us. **Example:** The formation of black holes and dark matter is still not fully understood by scientists.

F. Long answer type questions:

1. Explain the importance of constellations in ancient times.

Ans. Constellations were very important in ancient times because people used them to identify stars and patterns in the night sky. Sailors and travelers used constellations to find directions when there were no compasses or maps. They also helped farmers decide the right time for sowing and harvesting crops by observing seasonal star patterns. Constellations were connected with myths, gods, and stories in many cultures, which helped people remember them easily. They were used to mark time and seasons before calendars were invented. Even today, some travelers use them for basic navigation if technology fails. **Example:** Ursa Major (Saptarishi) helped sailors locate the Pole Star (Dhruv Tara) to find north direction.

2. Describe the difference between inner and outer planets.

Ans. The planets of our solar system are divided into inner and outer planets based on their distance, size, and composition. Differences:

1. Inner planets — Mercury, Venus, Earth, Mars — are small, rocky, and close to the Sun, so they are called terrestrial planets.

2. Outer planets — Jupiter, Saturn, Uranus, Neptune — are very large and made mostly of gases & ice, so they are called gas giants / ice giants.

3. Inner planets have solid surfaces, no rings, and few or no moons, whereas outer planets have rings and many moons.

4. Inner planets have shorter revolution time around the Sun, while outer planets take much longer because they are far away.

5. Inner planets are hotter, but outer planets are colder due to their distance from the Sun. **Example:**

- Earth (inner planet) supports life and has a rocky surface.
- Saturn (outer planet) is a gas giant famous for its large ring system.

3. Write about the Moon's features and its role

Ans. The Moon is Earth's only natural satellite and is about 384,400 km away from Earth. Its

surface is covered with craters, mountains, and flat plains because it has no atmosphere to protect it from meteors. The Moon takes about 27.3 days to revolve around Earth and shows different shapes called phases of the Moon. Its gravity causes ocean tides on Earth, affecting fishing, sailing, and sea life.Since there is no air, water, or weather on the Moon, temperatures are extremely hot during day and freezing at night. For thousands of years, people have used Moon phases to create calendars and celebrate festivals. **Example:** Full Moon (Purnima) and New Moon (Amavasya) are important in many Indian festivals and traditions.

A. Multiple Choice Questions :

1. What is described as the "spark that ignites the flame of discovery"?

Ans. (c) Curiosity

2. Which step of the scientific method involves proposing a testable explanation for an observation?

Ans. (c) Hypothesis

3. The discovery of penicillin by Alexander Fleming is an example of:

Ans. (c) A significant finding from an unexpected accident

4. Learning that burning fossil fuels for electricity contributes to environmental issues helps us understand:

Ans. (b) The responsibility that comes with scientific knowledge

5. Which of the following topics would you study to understand how plants make their own food?

Ans. (b) Life Processes

B. **Fill in the blanks :**

1. Science is not just a collection of facts, but a powerful way of **thinking.**

2. A good experiment tests one **variable** at a time while keeping all others constant.

3. The scientific method is a never-ending **cycle**, often leading to new questions.

4. Physics, Chemistry, and Biology are not isolated; they are deeply **interconnected.**

5. In science, conclusions must be based on **evidence**, not just guesses.

C. **State whether the following statements are True or False :**

1. Science only happens inside laboratories. **False**

2. A hypothesis is the final answer to a scientific question. **False**

3. The story of the invention of the airplane shows how curiosity about nature can lead to human innovation. **True**

4. Once a scientific theory is established, it never changes. **False**

5. Understanding the water cycle can help us appreciate why water conservation is important. **True**

C. Short Answer Type Questions :

1. Give one example from the chapter that shows how science is part of our daily lives.

Ans. Science is present in everything we do, even in simple activities. **For example,** cooking food involves heat energy that changes raw vegetables into cooked meals— this is a scientific process.Similarly, using a mobile phone depends on electricity, circuits, and waves, all explained by science.Thus, science guides many actions in our daily routine. **Example:** Light from a bulb works because of electrical

energy.

2. What is the main difference between a physical change and a chemical change?

Ans. A physical change does not form a new substance and is usually reversible, such as melting ice into water. A chemical change forms a completely new substance and is not easily reversible, like burning wood to ash. The key difference is whether a new substance is created or not. **Example:** Paper torn = physical change; paper burnt = chemical change.

3. Why is it important for scientists to communicate their findings?

Ans. Scientists share their results so others can verify, repeat, or improve their work. Communication helps spread knowledge and prevents repeating the same mistakes. It also allows discoveries to be used for society's benefit. **Example:** Sharing research on fossil fuels helped people understand why saving energy is important.

4. State the first two steps of the scientific method.

Ans. The first step is Observation, where we notice something using our senses. The second step is Question, where we form a clear question based on what we observed. This leads us to think deeper and begin investigation. **Example:** Observation — "plants near window grow taller";

5. How does the Earth's revolution around the Sun affect life on our planet?

Ans. Earth's revolution causes seasonal changes, which affect temperature, rainfall, farming, and animal behavior. Different seasons help crops grow according to climate needs, supporting food production. It also controls day length and movement of winds and water. **Example:** In winter crops like wheat grow better, while in summer mango trees produce fruits.

D. Long Answer Type Questions :

1. Explain the "Cycle of Scientific Inquiry" with the help of a suitable example (like the plant and sunlight example from the chapter).

Ans. The Cycle of Scientific Inquiry is a repeated process that helps scientists find reliable answers. It begins with observation, followed by a question that we want to investigate. We then form a hypothesis, an educated guess, and test it using experiments. During the experiment, we collect data and later analyze it to check if our hypothesis was correct. After drawing a conclusion, we share the results, which often leads to new questions and further inquiry. This makes science a continuous cycle of learning and discovery. **Example:** Observing plants near sunlight grow taller -asking if light affects growth- experimenting with different light levels to confirm.

2. "Curiosity leads to invention." Justify this statement using an example from the chapter.

Ans. Curiosity encourages us to ask questions and explore possibilities, which often leads to new inventions. When humans observed birds flying, they became curious about how wings work. This curiosity led scientists to study airflow and wing shapes, inspiring the design of airplanes. Similarly, asking why mold killed bacteria in Fleming's lab resulted in the discovery of penicillin, an antibiotic. Thus curiosity turns simple observations

into ground-breaking ideas. Without curiosity, progress would stop and inventions would never happen. **Example:** Curiosity about flight- invention of airplanes that changed transportation.

3. Describe how the themes of heat, light, and living organisms are interconnected in the natural world. Provide a specific example.

Ans. Heat and light from the Sun are essential for the survival of living organisms. Plants use light energy to make food through photosynthesis, forming the base of the food chain. Heat helps water evaporate, creating the water cycle, which provides water for all life forms. Animals and humans depend on plants for food and oxygen, linking life directly to sunlight. Without sunlight, heat would drop, water would freeze, and life would not survive. Thus heat, light, and life are closely connected in nature's balance. **Example:** Sunlight - plant growth - food for animals - energy for humans.

4. Why is the scientific method considered a more reliable way of finding answers than just making guesses? Explain.

Ans. The scientific method follows organized steps like observation, hypothesis, experimentation, and analysis.It depends on evidence, not assumptions, making results more trustworthy. Experiments can be repeated and verified by other scientists, ensuring accuracy. It helps remove personal bias and prevents false beliefs from spreading. Making guesses may lead to wrong conclusions, while science corrects itself with new data. This structured approach makes scientific answers more dependable and useful. **Example:** Earlier people guessed the Sun moved around Earth, but scientific evidence proved the opposite.

5. Pick any three topics from the "Sneak Peek" section and explain how learning about them could help you become a more informed and responsible citizen.

Ans.1. Learning about the Water Cycle teaches us how water is recycled and why saving water is necessary to prevent shortage.

2. Understanding Heat and Energy helps us realize that burning fossil fuels harms the environment, so we should save electricity.

3. Studying Life Processes explains the importance of clean food, clean air, and hygiene, helping us protect health.

These lessons guide us to make wise decisions that reduce pollution and conserve resources. They also help us understand how daily choices affect the planet, making us responsible. **Examples:** Closing taps to save water - switching off lights - eating healthy food & planting trees. Thus, science knowledge shapes us into informed and thoughtful citizens.

2 Exploring Substances - Acidic, Basic and Neutral

A. Multiple Choice Questions :

1. Which acid is present in our stomach and aids in digestion?

Ans. (c) Hydrochloric acid

2. What is the colour change when a red litmus paper is dipped into a basic solution like soap water?

Ans. (a) Red to Blue

3. Which of the following is a natural indicator?

Ans. (c) Litmus

4. The reaction between an acid and a base is called _____ and results in the formation of salt and water.

Ans. (b) Neutralisation

5. Which base is commonly used for whitewashing walls?

Ans. (c) Calcium Hydroxide

6. Turmeric stain on a white cloth turns reddish when washed with soap because soap is:

Ans. (c) Basic

B. Fill in the blanks :

1. Lemon juice and orange juice taste sour because they contain **citric acid.**
2. Blue litmus paper turns **red** when dipped in an acidic solution.
3. Bases that are soluble in water are called **alkalis.**
4. The chemical reaction between an acid and a metal produces **hydrogen** gas.
5. **Turmeric** is a natural indicator that turns red in basic solutions.
6. Farmers add **quicklime / slaked lime** to the soil to neutralise its acidity.

C. State whether the following statements are True or False :

1. All acids are corrosive and should be tasted to be identified. **False**
2. Sodium hydroxide is used in the manufacture of soap. **True**
3. Litmus is a synthetic indicator. **False**
4. Neutralisation reactions always produce heat. **True**
5. Vinegar contains acetic acid. **True**
6. An ant's sting contains a base which causes pain. **False**

D. Match the Following :

	Column A	**(Substance) Column B (Nature/AcidPresent)**
1.	Curd	**(c) Acid (Lactic Acid)**
2.	Baking Soda	**(d) Base (Sodium Hydrogen Carbonate)**
3.	Vinegar	**(b) Acid (Acetic Acid)**
4.	Lime Water	**(a) Base (Calcium Hydroxide)**
5.	Spinach	**(e) Acid (Oxalic Acid)**

E. Answer in One or Two Sentences :

1. Define an acid based on its effect on litmus paper.

Ans. An acid is a substance that turns blue litmus paper red.

2. Why should we not taste unknown substances found in a science laboratory?

Ans. Because unknown substances may be corrosive, poisonous, or harmful, and tasting them can cause injury.

3. What is the main use of antacids?

Ans. Antacids are used to neutralise excess stomach acid and give relief from indigestion or acidity.

4. Name the acid present in an ant's sting. What remedy can be applied to neutralise it?

Ans. Formic acid is present in an ant's sting; applying baking soda paste or calamine lotion helps neutralise it.

5. Give two examples of organic acids and their sources.

Ans. Citric acid – lemon, acetic acid – vinegar.

6. What are the two products formed when an acid reacts with a base?

Ans. The reaction forms salt and water.

F. Short Answer Type Questions :

1. Differentiate between an acid and a base based on any three properties.

Ans.

	Property	**Acids**	**Bases**
1.	Taste	Sour in taste	Bitter in taste.
2.	Litmus test	Turns blue litmus red	Turns red litmus blue.
3.	Feel	Do not touch (may be corrosive)	Slippery or soapy touch in solution.
4.	Examples	Lemon juice, vinegar	Soap solution, baking soda.

Thus, acids and bases show opposite characteristics in taste, touch and litmus colour change.

2. Explain with an example how neutralisation is applied in treating soil for agriculture.

Ans. Sometimes excessive use of fertilisers makes soil too acidic, and plants cannot grow well in such soil. To solve this problem, farmers add slaked lime (calcium hydroxide) or quicklime to the soil. The base neutralises the excess acid present in the soil. This process is an example of neutralisation helping restore soil balance and improving crop growth.

3. Describe an activity to show that acetic acid is present in vinegar.

Ans. Take a small amount of vinegar in a test tube and add a few pieces of baking soda. You will observe bubbles forming in the mixture. These bubbles are carbon dioxide gas, which forms when vinegar (acetic acid) reacts with baking soda (a base). This reaction shows that vinegar contains acetic acid, as acids react with bases to produce gas.

4. What are indicators? Name two natural indicators and state the colour change they show in acidic and basic solutions.

Ans. Indicators are substances that show different colours in acidic and basic solutions, helping us identify them.

Turmeric:

- Acid - yellow
- Base - red

Litmus:

• Acid - blue litmus turns red
• Base - red litmus turns blue

Thus, indicators help in detecting the nature of substances easily.

5. Why is sulphuric acid called the 'King of Chemicals'? Give two reasons.

Ans. Sulphuric acid is called the 'King of Chemicals' because it is used in the manufacture of many important products. It is widely used in fertilisers, car batteries, paints, detergents and industrial chemicals. The amount of sulphuric acid a country produces shows its industrial growth and strength. Therefore, due to its wide applications and industrial importance, it is known as the King of Chemicals.

6. Write any three important uses of bases in our daily life.

Ans. Bases are very useful in everyday life.
(1) Sodium hydroxide is used in soap and detergent making.
(2) Magnesium hydroxide in antacid tablets helps relieve indigestion.
(3) Calcium hydroxide is used for whitewashing walls and treating acidic soil.
Thus, bases play an important role in health, cleaning and agriculture.

G. Long Answer Type Questions :

1. Explain the process of neutralisation with the help of a word equation. Describe any two real-life situations where this reaction is used.

Ans. Neutralisation is a chemical reaction in which an acid reacts with a base to form salt, water, and heat, removing the acidic or basic nature of the substances.

WordEquation:
Acid + Base - Salt + Water + Heat

Real-life applications:
• **Indigestion:** Excess hydrochloric acid in the stomach causes acidity; antacids like magnesium hydroxide neutralise it and give relief.
• **Soil treatment:** When soil becomes too acidic, farmers add slaked lime (calcium hydroxide) to neutralise the acid and improve crop growth.
Thus, neutralisation helps maintain balance in our bodies and environment.

2. (a) Classify acids based on their origin. Give two examples of each.
(b) Describe an activity to show the reaction of an acid with a metal. What is the gas evolved? How can you test for this gas?

Ans. **(a) Classification of Acids**

	Type of Acid	Origin	Examples
1.	Organic acids	Found naturally in plants/animals.	Citric acid (lemon), Acetic acid (vinegar).
2.	Mineral acids	Made from minerals/industrial.	Hydrochloric acid, Sulphuric acid.

(b) Activity
Take a small piece of zinc metal in a test tube and add dilute hydrochloric acid. You will see bubbles forming, showing that a reaction is taking place. The gas evolved is hydrogen gas. **Test:** Bring a burning matchstick near the mouth of the test tube — a

'pop' sound is heard, confirming hydrogen gas. This proves acids react with metals to release hydrogen.

3. Design an activity to prove that the neutralisation reaction is exothermic. List the steps, required materials, and expected observation.

Ans. Materials: Dilute hydrochloric acid, sodium hydroxide solution, beaker, thermometer. Steps:

1. Pour sodium hydroxide solution into a beaker and measure its temperature.

2. Slowly add dilute hydrochloric acid to it while stirring gently.

3. Measure the temperature again after mixing.

Observation: The temperature of the mixture increases.

Conclusion: Heat is released during neutralisation, so the reaction is exothermic in nature.

4. With the help of a labelled diagram, explain how you would use litmus paper to test the nature of lemon juice and baking soda solution.

Ans. Take two small samples — lemon juice and baking soda solution. Dip blue litmus paper into lemon juice; it turns red, showing it is acidic. Dip red litmus paper into baking soda solution; it turns blue, showing it is basic. This method helps identify whether a substance is an acid or a base using colour change. The diagram below shows how litmus strips change colour.

Blue litmus turns red

Red litmus turns blue

Testing Lemon Juice (Acid)	**TestingBakingSoda Solution(Base)**
Blue Litmus - Red (Acid)	Red Litmus - Blue (Base)
[Blue strip] + Lemon juice	[Red strip] + Baking soda solution

Conclusion: Lemon juice is acidic (blue - red) and baking soda solution is basic (red - blue). Thus, litmus paper is a useful indicator for testing substances.

3 Electricity - Circuits and Their Components

A. Multiple Choice Questions :

1. Which scientist proved that lightning is a form of electricity?

Ans. (c) Benjamin Franklin

2. What type of cell can be recharged and used again?

Ans. (b) Secondary cell

3. Which gas is filled inside an electric bulb to protect the filament?

Ans. (c) Argon

4. Which device protects electrical appliances by melting when current is too high?

Ans. (b) Fuse

5. Which material is a good conductor of electricity?

Ans. (c) Copper

B. Fill in the blanks :

1. The flow of electrons in a circuit is called **current.**
2. A group of cells connected together is called a **battery.**
3. A circuit with a gap where electricity cannot flow is called an **open** circuit.
4. The thin wire inside a bulb that glows when current passes through it is called the **filament.**
5. Materials like rubber and glass that do not allow electricity to flow are called **insulators.**

C. State whether the following statements are True or False :

1. In a dry cell, the carbon rod acts as the negative terminal. **False**
2. A battery is formed when cells are connected in series. **True**
3. A fuse wire melts when current is too high, protecting the circuit. **True**
4. LEDs waste a lot of energy as heat. **False**
5. Conductors allow electricity to pass through them easily. **True**

D. Short Answer Type Questions :

1. Define electricity in simple terms.

Ans. Electricity is a form of energy produced by the movement of tiny particles called electrons through a conductor, like a metal wire. It helps operate many devices such as bulbs, fans, computers, and mobiles. Electricity flows only when it gets a complete path called a circuit. Without electricity, most of our machines and tools would not work.

2. What is the difference between a closed circuit and an open circuit?

Ans.	**Closed Circuit**	**Open Circuit**
1.	Electricity flows because the path is complete.	Electricity does not flow because the path has a gap.
2.	Devices work like bulbs glow or fans run.	Devices do not work.
3.	**Example:** Switch ON position.	**Example:** Switch OFF position.

In simple words, closed circuit = working, open circuit = not working.

3. What is the function of a switch in a circuit?

Ans. A switch is a device that controls the flow of electricity in a circuit. When the switch is ON, it completes the path and allows current to flow so devices work. When the switch is OFF, it breaks the path and stops the current so devices turn off. It helps us use electricity safely and conveniently in daily life.

4. Give two examples each of conductors and insulators.

Ans.	**Conductors (electricity passes)**	**Insulators (electricity does not pass)**
1.	Copper, Aluminium	Plastic, Rubber
2.	Conductors are used to make wires	Insulators cover wires and switches so we

because they allow electricity to move easily.

don't get electric shocks.

5. Why do we cover wires with plastic?

Ans. Wires are covered with plastic because plastic is an insulator and does not allow electricity to pass through. This protects us from electric shocks when we touch the wire. Plastic coating also prevents wires from touching each other and causing a short circuit. Therefore, plastic makes the use of electricity safe in homes, schools, and appliances.

E. Long Answer Type Questions :

1. Explain the difference between primary and secondary cells with examples.

Ans.

	Primary Cells	**Secondary Cells**
1.	Cannot be recharged once the chemicals are used up.	Can be recharged and used again many times.
2.	Chemical reactions are not reversible.	Chemical reactions are reversible.
3.	Provide less power and used for small devices.	Provide more power and used for high-power devices.
4.	Used once and then discarded.	Reusable after charging.
5.	**Example:** Dry cell, pencil cell	**Example:** Car battery, mobile battery

Conclusion: Primary cells are suitable for small, portable devices, while secondary cells are used where long-lasting and rechargeable power is required.

2. Describe the structure and working of a dry cell.

Ans. A dry cell has a zinc container that acts as the negative terminal, and inside it is a carbon rod with a brass cap, which forms the positive terminal. The space between them is filled with a moist paste of ammonium chloride, which acts as an electrolyte and allows chemical reactions to occur. When the two terminals are connected through wires, a chemical reaction starts inside the cell. This reaction causes electrons to move through the external wire, producing electric current. Dry cells are compact, portable and commonly used in devices like torches and toys.

3. How does a light bulb produce light? Why does a bulb fuse?

Ans. A light bulb contains a very thin tungsten filament supported by metal wires inside a glass bulb filled with inert gas like argon. When electricity flows through the filament, it resists the flow of electrons, causing the filament to heat up and glow, producing light. This process converts electrical energy into light and heat energy. However, if too much current passes through the filament, it becomes overheated and breaks or melts, stopping the flow of current. When the filament breaks, the circuit opens and the bulb no longer glows, meaning the bulb has fused.

4. What are circuit diagrams? Why are they important?

Ans. Circuit diagrams are drawings that use symbols to represent components like cells, bulbs, wires, and switches instead of real pictures. **For example,** a long and short line shows a cell, a circle with a cross shows a bulb, and a breakable line shows a switch. These diagrams make it easy to plan and understand the flow of electricity in

a circuit. Electricians and engineers use them to design, repair and test circuits accurately without confusion. Thus, circuit diagrams act like maps of electricity, making circuits safe, simple, and organized to work with.

5. Compare fuses and circuit breakers as safety devices.

Ans. A fuse is a thin wire that melts when too much current passes, breaking the circuit and protecting appliances from damage. Once a fuse melts, it must be replaced with a new one of the same rating to work again. A circuit breaker also stops the flow of electricity during overload, but instead of melting, it trips and can be reset easily. Circuit breakers are commonly used in homes and buildings because they are safer and reusable, while fuses are used in small appliances. Both devices prevent fires and damage, but circuit breakers provide faster and more convenient protection.

4 The World of Metals and Non-metals

A. Multiple Choice Questions :

1. Which of the following is a good conductor of electricity?

Ans. (c) Copper

2. The property of metals by which they can be beaten into thin sheets is called:

Ans. (b) Malleability

3. Which non-metal is liquid at room temperature?

Ans. (b) Bromine

4. What is the gas released when metals react with acids?

Ans. (d) Hydrogen

5. The iron pillar in Delhi has not rusted significantly because:

Ans. (c) Of the high purity of iron and a protective layer

B. Fill in the blanks :

1. Metals are generally **good** conductors of heat and electricity.
2. The shining quality of a metal is known as its **lustre.**
3. **Mercury** is the only metal that is liquid at room temperature.
4. A more reactive metal can **displace** a less reactive metal from its compound.
5. **Graphite**, a form of carbon, is a non-metal that can conduct electricity.
6. Non-metal oxides are **acidic** in nature.

C. State whether the following statements are True or False :

1. Sodium metal is safe to touch with bare hands. **False**
2. Non-metals are generally malleable and ductile. **False**
3. Copper displaces zinc from zinc sulphate solution. **False**
4. Air and water are necessary for the rusting of iron. **True**
5. Plastic is a good conductor of electricity. **False**
6. Diamond is the hardest natural substance and is a metal. **False**

D. Short Answer Type Questions :

1. Differentiate between metals and non-metals on the basis of their physical properties (any three points).

Ans.

	Metals	Non-metals
1.	Metals are lustrous (shiny).	Non-metals are dull in appearance.
2.	Metals are malleable & ductile — they can be beaten into sheets and drawn into wires.	Non-metals are brittle, cannot be hammered or stretched.
3.	Metals are good conductors of heat & electricity.	Non-metals are poor conductors (except graphite).

2. Explain displacement reaction with an example and a balanced chemical equation.

Ans. A displacement reaction occurs when a more reactive metal replaces a less reactive metal from its compound. **For example**, iron is more reactive than copper, so when iron is placed in copper sulphate solution, copper is displaced. This reaction shows difference in reactivity of metals.

Balanced equation:

$Fe + CuSO_4 - FeSO_4 + Cu$

(Iron + Copper sulphate - Iron sulphate + Copper)

3. Why do we apply paint on iron articles?

Ans. Paint acts as a protective coating on iron so that air and moisture cannot reach the surface. Since rusting requires both oxygen and water, the paint layer prevents rust formation. This helps increase the life of iron objects like grills, gates, bridges and machines. Thus painting is an easy and effective method to prevent corrosion.

4. Describe an activity to show that metals are good conductors of heat.

Ans. Take a metal rod and fix small wax-coated pins along its length using wax. Heat one end of the rod using a flame. After some time, the pins start falling one by one as the wax melts. This shows that heat travels along the metal rod, proving that metals are good conductors of heat.

5. List any four important uses of non-metals.

Ans. **1. Oxygen –** required for breathing and burning.
2. Nitrogen – used in fertilizers to help plant growth.
3. Iodine – used as an antiseptic to clean wounds.
4. Carbon (graphite) – used in batteries and pencil lead.
So, non-metals play vital roles in daily life, health, agriculture and industry.

6. What are the two main environmental benefits of recycling metals?

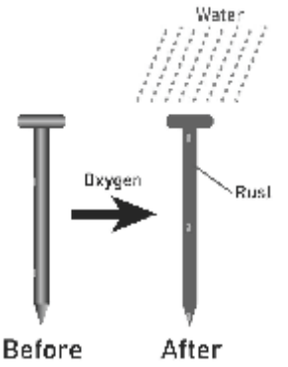
Ans. Recycling metals saves natural mineral resources that would otherwise be mined again. It also reduces air, land and water pollution caused during mining and metal extraction. Recycling uses less energy, helping reduce greenhouse gas emissions. Thus, it supports a cleaner environment and sustainable development.

E. Long Answer Type Questions :

1. With the help of a labelled diagram, describe an activity to show that both air and

water are necessary for the rusting of iron. Write your observations and conclusion.

Ans. **Activity Setup:** Take three test tubes and place an iron nail in each.



- **Test Tube A:** Iron nail + water + air (open tube)
- **Test Tube B:** Iron nail + dry air only (add calcium chloride to absorb moisture)
- **Test Tube C:** Iron nail + boiled water (to remove air) + oil layer on top (to stop air entry) Diagram (labelled): (simple representation for notebook)

Observations:

- **Test Tube A** rusts because both air and water are present.
- **Test Tube B** does not rust because no water is present.
- **Test Tube C** does not rust because no air is present in water.

Conclusion: Rusting of iron requires both air (oxygen) and water. If either air or water is absent, rusting does not occur.

2. Explain the chemical properties of metals with examples of their reactions with oxygen, water, and acids. Write word equations for each.

Ans. Metals show specific chemical reactions with oxygen, water, and acids. When metals react with oxygen, they form metal oxides. **For example**, iron forms rust when exposed to oxygen and water.

(a) With Oxygen: Metals form metal oxides.

Iron + Oxygen + Water - Iron oxide (rust)

Iron + Oxygen - Iron oxide

(b) With Water: Some metals react vigorously to form metal hydroxide + hydrogen gas.

Sodium + Water - Sodium hydroxide + Hydroge

$2Na + 2H_2O - 2NaOH + H_2$

(c) With Acids: Most metals react with acids to form salt + hydrogen gas.

Zinc + Hydrochloric acid - Zinc chloride + Hydrogen

$Zn + 2HCl - ZnCl_2 + H_2$

Thus, metals show reactivity, displacement, and hydrogen release in these reactions.

3. Despite being a non-metal, graphite is a good conductor of electricity and is used in making electrodes. Diamond, another allotrope of carbon, is the hardest natural substance and is used in cutting tools. Explain this contrasting behaviour.

Ans. Graphite and diamond are both allotropes of carbon, meaning they are made from the same element but have different structures, giving them different properties. In graphite, carbon atoms are arranged in layers, and each atom has one free electron,

allowing electricity to pass through, which is why graphite is used in electrodes and batteries. In diamond, carbon atoms are linked in a strong 3D lattice, making it extremely hard, but no free electrons are available, so diamond cannot conduct electricity. Thus, graphite is soft and conductive, while diamond is hard and insulating. Their different arrangements of atoms cause this contrasting behaviour even though both are forms of carbon.

5 Sorting Materials into Groups

A. Multiple Choice Questions :

1. Which of the following is a transparent material ?
Ans. (b) Glass
2. Which of the following is a translucent material ?
Ans. (c) Waxed paper
3. Which of the following is soluble in water ?
Ans. (a) Sugar
4. Which of the following does not float in water ?
Ans. (b) A piece of iron
5. Which of the following is the hardest substance ?
Ans. (d) Diamond
6. Which of the following is a good conductor of heat ?
Ans. (a) Brass
7. Which of the following is a bad conductor of heat ?
Ans. (b) Dry wood
8. Which of the following has more density ?
Ans. (d) 1 kg iron

B. Fill in the blanks :

1. Metals are **good conductors** of heat.
2. **Iron and steel** are magnetic materials.
3. Matter exists in three states as **solids , liquids** and **gases.**
4. Metals lose their shine because of action of **air** and **moisture** in the atmosphere.
5. Grouping of similar things together is called **classification.**
6. Things can be grouped into several groups on the basis of their **similarities** and **differences.**

C. State whether the statements are True or False :

1. Metals generally dissolve in water. **False**
2. Gases like oxygen and carbon dioxide slightly dissolves in water. **True**
3. Air is a good conductor of heat. **False**
4. Wood and coal do not show any lustre. **True**
5. Diamond is the softest material. **False**

D. Match the columns :

	Column A		Column B
1.	Shoe	**(e)**	**Leather**
2.	Toy	**(d)**	**Plastic**
3.	Chair	**(c)**	**Wood**
4.	Iron	**(b)**	**Good conductor of heat and electricity**
5.	Metals	**(a)**	**Good conductors of electricity**

E. Very short answer type questions :

1. Write two properties of metals.

Ans. Metals are hard and shiny (lustrous).

2. Which materials can we see through ?

Ans. Glass and water (transparent materials).

3. Name two soft materials which you can compress with hand.

Ans. Cotton and sponge.

4. Which materials can we not see through ?

Ans. Wood and cardboard (opaque materials).

5. Which of the following materials are transparent Glass, wood, plastics, water, waxed paper ?

Ans. Glass and water.

6. Which material has loosely packed molecules ?

Ans. Gases have loosely packed molecules.

7. Which property of metals makes them block light ?

Ans. Opacity — metals do not allow light to pass through.

F. Short answer type questions :

1. What is a material ?

Ans. A material is a substance used to make different kinds of objects around us. **For example**, wood, plastic, glass, metal, cotton are materials used to make chairs, bottles, windows, utensils and clothes. Choice of material depends on its properties, use and availability. Also, one material can be used to make many objects, and one object can be made of different materials.

2. What is a substance ?

Ans. A substance is a pure chemical element or compound from which materials are made. **Examples** include gold, iron, silver, oxygen, water, sugar, etc. Different substances combine to form materials and objects we use in daily life. Substances can be natural (like cotton, wood) or man-made (like plastic, nylon).

3. What is solubility ?

Ans. Solubility is the property of a substance to dissolve in water or any liquid. If a substance dissolves completely, it is called soluble (**example:** salt, sugar). If it does not dissolve, it is insoluble (**example:** sand, chalk powder). Solubility helps in identifying materials and is used in separation and purification processes.

4. How are soluble material differ from insoluble materials?

Ans.	Soluble Materials	Insoluble Materials
1.	These materials dissolve in water.	These materials do not dissolve in water.
2.	They form a clear solution when mixed with water.	They form a cloudy mixture or remain separate.
3.	The particles are not visible after dissolving.	The particles remain visible in water.
4.	They do not settle down at the bottom.	They usually settle at the bottom or float on water.
5.	**Examples:** salt, sugar	**Examples:** sand, chalk powder

5. What are magnetic materials ? Give examples.

Ans. Magnetic materials are those which get attracted towards a magnet. They are usually strong, hard, and metallic in nature. **Examples:** iron, steel, nickel, cobalt. These materials are used to make magnets, tools, machinery parts and motors.

6. What are transparent materials ?

Ans. Transparent materials allow light to pass through them completely, so we can clearly see objects through them. **Examples** include glass, water, air, clear plastic. These materials are used in windows, lenses, spectacles and containers. They help us see through doors, vehicles, and microscope lenses because they transmit light.

G. Long Answer type questions :

1. What is the need of classification of objects ?

Ans. Classification means grouping objects on the basis of similarities and differences. It helps us to study materials in an organized way and understand their properties easily. By grouping similar objects, we can identify, locate, store, and use things conveniently. Shopkeepers arrange goods in groups so that they can be found quickly when needed. In science, classification helps us compare materials, learn their uses, and choose correct materials for making objects. Thus, classification makes study and daily work easier, systematic, and time-saving.

2. Describe an experiment to show that water has no definite shape.

Ans. Take three containers of different shapes — a glass, a bowl, and a bottle. Now pour equal amounts of water into each container. You will observe that water takes the shape of the container it is poured into — tall, wide or round. However, the volume of water remains the same in all containers. This shows that water does not have a fixed shape, but has a fixed volume. Conclusion: Water has no definite shape, it only takes the shape of its container.

3. What is matter ? What are different states of matter ?

Ans. Anything that occupies space and has mass is called matter. All things around us — air, water, stone, wood, clothes — are forms of matter. Matter exists in three physical states: solids, liquids and gases.

Solids have definite shape and volume; molecules are tightly packed.

Liquids have definite volume but take the shape of the container; molecules are less

packed.

Gases have no definite shape or volume; molecules are very loosely packed and move freely.

4. Write two differences each of solids, liquids and gases.

Ans. Solids, liquids and gases differ in their shape, volume and molecular arrangement.

	Property	**Solids**	**Liquids**	**Gases**
1.	Shape	Definite shape	No definite shape	No definite shape
2.	Volume	Fixed volume	Fixed volume	No fixed volume
3.	Molecules	Tightly packed	Less packed	Very loosely packed
4.	Movement	Very little movement	Slide over each other	Move freely in all directions
5.	**Example**	Stone	Water	Oxygen

These differences explain why solids are rigid, liquids flow, and gases spread everywhere.

5. Some materials float on water while some others sink. Why ?

Ans. Materials float or sink depending on their density compared to water. Objects with less density than water are lighter and float on the surface, such as wood and cork. Objects with greater density than water are heavier and sink, such as iron and stones. Floating and sinking also depend on molecular packing in materials — solids with tight packing are usually denser. In the activity from the chapter, wood floated but iron nail sank, showing this difference. Thus, density is the main reason why some materials float on water while others sink.

H. HOTS questions :

1. Why are the handles of cooking utensils made from bakelite or wood?

Ans. The handles of cooking utensils are made from bakelite or wood because they are bad conductors of heat. They do not allow heat to pass through, so the handle remains cool and prevents burns while holding hot utensils.

2. Why is water called a universal solvent?

Ans. Water is called a universal solvent because it can dissolve more substances than any other liquid, such as salt, sugar, gases and minerals. This property makes water useful for digestion, cleaning, chemical reactions and transporting nutrients.

3. Why does ice float on water?

Ans. Ice floats on water because its density is lower than liquid water. When water freezes, its molecules spread out and occupy more space, making it lighter than water, so it stays on the surface.

6 Adolescence - Understanding Growth and Development

A. Multiple Choice Questions :

1. Adolescence typically begins at which age range?

Ans. (b) 10-12 years

2. Which gland is known as the "master gland" that controls puberty?

Ans. (b) Pituitary gland

3. The first menstrual period in girls is called:

Ans. (c) Menarche

4. Which nutrient is especially important for bone development during adolescence?

Ans. (b) Calcium

5. What is the term for the rapid increase in height during adolescence?

Ans. (b) Growth spurt

6. Which of the following is a secondary sexual characteristic in boys?

Ans. (c) Facial hair growth

B. Fill in the blanks :

1. The period of transition from childhood to adulthood is called **adolescence.**
2. Chemical messengers that regulate bodily functions are called **hormones.**
3. Girls should change sanitary pads every **4–6** hours.
4. The endocrine gland located in the brain that controls growth is **pituitary gland.**
5. Eating too much junk food can lead to **nutrient** deficiencies.
6. Mood swings during adolescence are often due to **hormonal** changes.

C. State whether the following statements are True or False :

1. Adolescence ends at 25 years of age. **False**
2. Boys experience growth spurts earlier than girls. **False**
3. Personal hygiene becomes less important during adolescence. **False**
4. Hormones are produced by endocrine glands. **True**
5. Peer pressure always has negative effects. **False**
6. Calcium is important for bone development. **True**

D. Match the Following :

	Column A	**Column B**
1.	Menarche	**(b) First menstrual period**
2.	Adam's apple	**(a) Deepening of voice in boys**
3.	Testosterone	**(c) Male hormone**
4.	Hygiene	**(d) Practice of cleanliness**
5.	Growth spurt	**(e) Rapid increase in height**

E. Answer in One or Two Sentences :

1. What is adolescence?

Ans. Adolescence is the period between childhood and adulthood marked by physical, emotional & social changes.

2. Name two physical changes that occur in boys during puberty.

Ans. Boys develop facial hair and their voice becomes deeper during puberty.

3. Why is nutrition important during adolescence?

Ans. Nutrition is important because the body needs extra energy, protein, vitamins, and

minerals for rapid growth and development.

4. What is the role of hormones in adolescence?

Ans. Hormones control body changes such as height growth, development of reproductive organs, and secondary sexual characteristics.

5. Why should sanitary pads be disposed of properly?

Ans. Sanitary pads should be disposed properly to prevent infections, maintain hygiene, and keep the environment clean.

6. How can peer pressure be handled positively?

Ans. Peer pressure can be handled positively by choosing good friends, saying "no" confidently, and following healthy habits.

F. Short Answer Type Questions :

1. Explain any three physical changes common in adolescents.

Ans. **1. Increase in height (Growth spurt):** During adolescence, there is a rapid increase in height due to the growth of long bones in the body.

2. Change in voice: The voice becomes deeper in boys because the voice box (larynx) enlarges, while in girls the change is mild.

3. Development of body hair: Hair starts growing in the armpits and pubic region in both boys and girls, and facial hair appears in boys.

2. Differentiate between primary and secondary sexual characteristics with examples.

Ans.

	Primary Sexual Characteristics	**Secondary Sexual Characteristics**
1.	These are organs directly involved in reproduction.	These are physical features that distinguish males and females.
2.	They are present from birth but mature at puberty.	They develop mainly during puberty.
3.	They perform reproductive functions.	They do not take part directly inreproduction.
4.	**Examples:** testes in boys, ovaries in girls.	**Examples:** facial hair in boys, breast development in girls.
5.	Essential for producing sperm or eggs.	Indicate physical maturity of the body.

3. Why is personal hygiene important during adolescence? Give three reasons.

Ans. **1. Prevents body odour and infections:** During adolescence, sweat and oil glands become more active. Proper hygiene helps prevent bad body odour and skin infections.

2. Controls acne and skin problems: Regular bathing and cleaning remove excess oil and dirt, which helps reduce acne and other skin problems.

3. Maintains overall health and confidence: Good personal hygiene keeps the body clean, prevents diseases, and improves self-confidence and social acceptance.

4. How do hormones influence growth and development during adolescence?

Ans. Hormones are chemical messengers that control growth and development. Growth

hormone increases height and muscle development. Sex hormones like testosterone and estrogen help in the development of reproductive organs. Hormones also cause emotional and physical changes during puberty.

5. Suggest three ways to maintain good mental health during adolescence.

Ans. **1. Share feelings and seek support:** Talking to parents, teachers, or friends helps reduce stress and emotional burden.

2. Maintain a healthy lifestyle: Regular exercise, proper sleep, and a balanced diet help keep the mind fresh and calm.

3. Maintain a healthy lifestyle: Regular exercise, proper sleep, and a balanced diet help keep the mind fresh and calm.

6. What are the benefits of regular physical activity for adolescents?

Ans. Regular physical activity strengthens bones and muscles. It improves heart health and keeps body weight under control. Exercise reduces stress and improves mood. It also builds confidence and encourages teamwork.

G. Long Answer Type Questions :

1. Describe the process of puberty and the role of hormones in detail.

Ans. **1. Beginning of puberty:** Puberty begins when the pituitary gland in the brain releases special hormones that activate other endocrine glands.

2. Role of pituitary hormones: The pituitary gland releases hormones that stimulate the testes in boys and ovaries in girls to produce sex hormones.

3. Hormones in boys: Testosterone is produced in boys, which causes facial hair growth, deepening of voice, muscle development, and sperm production.

4. Hormones in girls: Estrogen and progesterone are produced in girls, leading to breast development, widening of hips, and the start of menstruation.

5. Growth spurt: Hormones cause a rapid increase in height and weight known as a growth spurt during adolescence.

6. Other physical changes: Hormones increase sweat and oil gland activity, which may cause body odour and acne.

7. Emotional changes: Hormonal changes also affect emotions and behaviour, leading to mood swings during adolescence.

2. Explain the importance of a balanced diet during adolescence. Include examples of essential nutrients and their sources.

Ans. **1. Supports rapid physical growth:** During adolescence, the body grows fast in height and weight. A balanced diet provides energy and nutrients needed for this growth. **Example:** Carbohydrates from rice, wheat, bread give energy.

2. Helps in strong bones and teeth: Calcium and vitamin D are essential for bone development. **Example:** Milk, curd, cheese (calcium) and sunlight, eggs (vitamin D)

3. Builds muscles and body tissues: Proteins help in building muscles and repairing body tissues. **Example:** Pulses, eggs, milk, fish, nuts.

4. Boosts immunity and prevents diseases: Vitamins and minerals protect the

body from infections. **Example:** Fruits and vegetables like oranges (vitamin C), spinach (iron).

5. Maintains proper blood formation: Iron is important to prevent anaemia, especially in adolescent girls. **Example:** Green leafy vegetables, dates, jaggery.

6. Keeps mind active and improves concentration: Healthy fats and vitamins help brain development and mental health. **Example:** Nuts, seeds, vegetable oils.

Conclusion: A balanced diet containing carbohydrates, proteins, fats, vitamins, minerals, fibre and water is essential during adolescence for healthy body, strong bones, sharp mind and disease prevention.

3. Write a note on the emotional and social changes during adolescence. How can adolescents cope with these changes?

Ans. **1.** Adolescents often experience mood swings due to hormonal changes.
2. They may feel confused, sensitive, or anxious and seek independence.
3. Importance of friends increases and peer pressure becomes stronger.
4. Relationships with family may change due to a desire for freedom.
5. Adolescents can cope by sharing feelings with parents, teachers, or trusted adults.
6. Regular exercise, hobbies, and proper sleep help manage emotions.
7. Positive thinking and avoiding negative peer pressure support mental well-being.

4. Discuss the significance of menstrual hygiene and the government schemes supporting it.

Ans. Menstrual hygiene is important to keep the body clean and prevent infections. Girls should use clean sanitary pads and change them every 4–6 hours. Proper disposal of pads keeps the environment clean. Maintaining hygiene helps girls stay healthy and confident. The Government of India supports menstrual health through schemes like the Menstrual Hygiene Scheme. The Rashtriya Kishor Swasthya Karyakram (RKSK) also spreads awareness about adolescent health. These schemes promote education and well-being of girls.

5. How can adolescents protect themselves from negative peer pressure and harmful substances?

Ans. Adolescents should learn to say "No" confidently when pressured to do wrong things. Choosing friends with positive values helps avoid harmful habits. Awareness about the dangers of tobacco, alcohol, and drugs is important. Engaging in sports, music, or hobbies keeps the mind occupied. Seeking guidance from parents, teachers, or counsellors is helpful. Strong self-confidence helps adolescents make healthy decisions.

6. Explain the importance of digital safety and suggest measures adolescents can take to stay safe online.

Ans. **1.** Digital safety is important to protect personal information and mental health.
2. Adolescents should not share personal details like address or phone number online.

3. Strong passwords and privacy settings should be used on social media.
4. Cyberbullying should be reported to parents, teachers, or authorities.
5. Adolescents should think before posting photos or comments online.
6. Screen time should be limited, especially before bedtime.
7. Safe internet use helps prevent online risks and ensures security.

7 Heat Transfer In Nature

A. Multiple Choice Questions :

1. The process by which heat is transferred in solids without the actual movement of particles is called:
   (b) Conduction
2. Which of the following is the best conductor of heat?
   (c) Aluminium
3. A sea breeze blows during the:
   (a) Day, from sea to land
4. The mode of heat transfer that does not require any medium is:
   (c) Radiation only
5. In a vessel of water being heated, the hot water rises because it:
   (b) Becomes lighter
6. The unit used to measure heat energy is:
   (b) Joule (J)

B. Fill in the Blanks :

1. Heat always flows from a **hotter** object to a **colder** object.
2. The handle of a cooking pan is made of plastic or wood because they are good **insulators.**
3. The process of water changing into water vapour is called **evaporation.**
4. **Convection** currents are responsible for the heating of water in a pot.
5. Dark-coloured clothes are preferred in winter as they are good **absorbers** of heat.
6. The upper level of underground water is known as the **water table.**

C. State whether the following statements are True or False :

1. Temperature is measured in joules. **False**
2. Convection can occur in solids. **False**
3. Land breeze blows from the land towards the sea at night. **True**
4. A thermometer measures the heat energy of an object. **False**
5. Light, shiny surfaces are good absorbers of radiant heat. **False**
6. Rainwater harvesting helps in recharging groundwater. **True**

D. Match the Following

	Column A	Column B
1.	Conduction	**(c) Transfer of heat in solids**
2.	Sea Breeze	**(b) Daytime phenomenon**
3.	Radiation	**(a) Transfer of heat by waves**
4.	Insulator	**(d) Wool**
5.	Water Cycle	**(e) Continuous movement of water**

E. Answer in One or Two Sentences :

1. Why are gaps left between railway tracks?

Ans. Gaps are left between railway tracks to allow expansion due to heat and prevent bending or breaking of tracks.

2. What is the main difference between heat and temperature?

Ans. Heat is the energy that flows from a hotter object to a colder object, while temperature is the measure of hotness of an object.

3. Why is the heating element of an electric kettle placed at the bottom?

Ans. The heating element of an electric kettle is placed at the bottom so that convection currents can heat the water effectively.

4. How does a thermos flask keep a liquid hot?

Ans. A thermos flask keeps a liquid hot by reducing heat loss through conduction, convection, and radiation.

5. Name the process by which plants release water vapour into the air.

Ans. The process by which plants release water vapour into the air is called transpiration.

6. Why do we feel warm when we stand in the sun?

Ans. We feel warm when we stand in the sun because heat reaches us from the Sun by radiation.

F. Short Answer Type Questions :

1. Explain with an example why metals are generally good conductors of heat.

Ans. Metals are good conductors of heat because they contain free electrons that move easily through the metal. These free electrons transfer heat energy quickly from one part of the metal to another. Due to this, heat spreads fast in metals. That is why metals are used for making cooking utensils. **For example**, a metal spoon becomes hot when placed in hot tea.

2. Describe the process of condensation in the water cycle.

Ans. Condensation is the process in which water vapour changes into liquid water. When water vapour rises high in the atmosphere, it reaches cooler air and loses heat. As a result, the vapour turns into tiny water droplets. These droplets collect together to form clouds. Condensation is an important step in the water cycle.

3. Differentiate between a conductor and an insulator, giving two examples of each.

Ans.

Conductor	**Insulator**
A conductor allows heat to pass through it easily.	An insulator does not allow heat to pass through it easily.
It has free electrons.	It has tightly bound particles.

Examples: Copper, Aluminium **Examples:** Wood, Plastic

4. How does a room heater warm up the entire room? Name the process.

Ans. A room heater warms the air near it first. This warm air becomes lighter and rises upward. Cooler air from other parts of the room moves towards the heater to take its place. This movement of warm and cool air continues until the entire room becomes warm. This process is called convection.

5. Why is it advisable to wear light-coloured clothes in summer?

Ans. Light-coloured clothes reflect most of the heat from sunlight instead of absorbing it. Because of this, less heat reaches our body. As a result, our body remains cooler in hot weather. That is why light-coloured clothes are preferred during summer.

6. What is infiltration and why is it important?

Ans. Infiltration is the process by which rainwater seeps into the soil. This water goes underground and helps in recharging groundwater. It maintains the water table and provides water to wells and plants. Infiltration is important for maintaining a continuous supply of fresh water.

G. Long Answer Type Questions :

1. Explain the three modes of heat transfer with a suitable daily-life example for each.

Ans. **1. Conduction:** Conduction is the transfer of heat through a solid without the actual movement of its particles. Heat moves from the hotter part to the colder part by particle vibration.

Example: A metal spoon becomes hot when kept in a cup of hot tea.

2. Convection: Convection is the transfer of heat in liquids and gases by the actual movement of heated particles. Hot fluid rises and cooler fluid sinks, forming convection currents.

Example: Water circulates and gets heated when boiled in a pot.

3. Radiation: Radiation is the transfer of heat through electromagnetic waves and does not require any medium. Heat can travel through empty space by radiation.

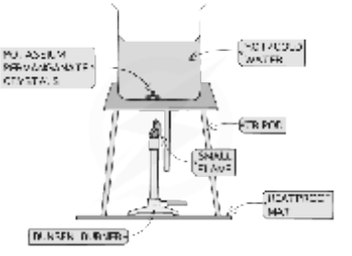
Example: We feel warmth from the Sun or a fire without touching it.

2. Describe an activity to show convection currents in water. Draw a labelled diagram of the setup.

Ans. **1.** Take a glass flask and fill it with cold water.

2. Place the flask on a tripod stand.

3. Add a few crystals of potassium permanganate into the water.



4. Heat the flask gently from the bottom using a burner.

5. Purple coloured streaks are seen rising upward from the bottom.

6. After reaching the top, the coloured water moves down along the sides.

7. This shows that hot water rises and cold water sinks, forming convection currents.

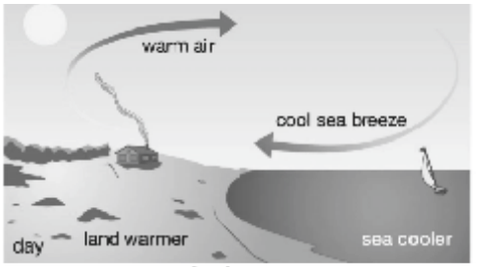
Diagram: The labelled diagram should show a flask containing water, potassium

permanganate crystals at the bottom, a burner below the flask, upward movement of hot water, and downward movement of cold water.

3. Explain the formation of sea breeze and land breeze with the help of diagrams.

Ans. **1. Sea Breeze**

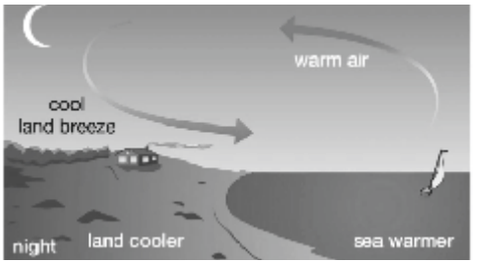
1. Sea breeze occurs during the daytime.
2. Land heats up faster than the sea.
3. Air above the land becomes warm and rises.
4. Cooler air from the sea moves towards the land.
5. This movement of air is called sea breeze.
6. It brings cool air to coastal areas during the day.



Sea breeze

2. Land Breeze

1. Land breeze occurs during the night.
2. Land cools faster than the sea.
3. Air above the sea remains warmer and rises.
4. Cooler air from the land moves towards the sea.
5. This movement of air is called land breeze.
6. It blows from land to sea at night.



Land breeze

4. What is the greenhouse effect? How did John Tyndall contribute to its understanding?

Ans. The greenhouse effect is the process by which certain gases in the Earth's atmosphere trap heat and keep the planet warm. These gases allow sunlight to enter but prevent heat from escaping back into space. John Tyndall discovered that gases like water vapour and carbon dioxide absorb heat radiation. His experiments helped scientists understand how Earth's atmosphere maintains its temperature. This discovery laid the foundation for climate science and global warming studies.

5. Describe the various stages of the water cycle. Why is it essential for life on Earth?

Ans. The water cycle includes evaporation, condensation, precipitation, and infiltration. Heat from the Sun causes water to evaporate and rise as vapour. This vapour cools and condenses to form clouds. When clouds become heavy, water falls as rain or snow, called precipitation. Some water seeps into the ground as infiltration. The water cycle is essential because it supplies fresh water, supports plant growth, and maintains life on Earth.

6. What is groundwater depletion? Suggest three methods for the conservation of groundwater.

Ans. Groundwater depletion is the condition in which underground water is used faster than it can be naturally replenished. Due to excessive pumping for domestic, agricultural, and industrial use, the water table goes down. This leads to drying of wells and shortage of water**.**

Methods for conservation of groundwater:

1. Rainwater harvesting should be practiced to collect and store rainwater and recharge groundwater.

2. Planting more trees increases infiltration of water into the soil.

3. Reducing wastage of water in homes and fields helps conserve groundwater for future use.

H. **During summer, a school stores its drinking water in three different containers placed in the same room.**

One made of shiny metal.

One made of black printed metal and

One made of eartheen dry.

After a few hours, students notice that the water in the dry pet is the coolest, the water in the shiny metal container is midly warm, and the water in the black container is the warmest. why does this happen? Explain the reason in detail using the concepts of heart absorption, reflection conduction and evaporation.

Ans. **1. Shiny metal container:** Shiny surfaces are good reflectors of heat and poor absorbers. Most of the heat falling on the shiny metal container is reflected back. Although metal conducts heat, less heat is absorbed due to reflection. Therefore, the water inside becomes only mildly warm.

2. Black printed metal container: Black coloured surfaces are good absorbers of heat. The black metal container absorbs maximum heat from the surroundings. Being a metal, it also transfers this heat quickly to the water inside by conduction. As a result, the water in the black container becomes the warmest.

3. Earthen pot (dry pot): The earthen pot has tiny pores on its surface. Water slowly seeps through these pores and evaporates. Evaporation requires heat, which is taken from the water inside, causing cooling. Also, earthen pots are poor conductors of heat. Hence, the water in the earthen pot remains the coolest.

Conclusion:

- Shiny metal - reflection of heat - mildly warm water
- Black metal - maximum absorption - warmest water
- Earthen pot - evaporation + poor conduction - coolest water

Choose the BEST exploration from the options below:

Options

(a) The shiny reflects most of the heart, the black metal obsolesc most of the heat, and the clay pot cools the water because water slowly evaporates though its tiny poies removing heat.

(b) Clay pots cool the water because they are heavier, black containers warm water because they are dark, and shiny metal stays cool because it cooks bright.

(c) All containers heart the water equally, but students only feel the clay pot as cooler because its outer surface is rough.

(d) Black metal and shiny metal heat water the same way, but clay pots beep water cool because clay does not allow heat to enter at all.

Ans. (a) The shiny reflects most of the heart, the black metal obsolesc most of the heat, and the clay pot cools the water because water slowly evaporates though its tiny poies removing heat.

8 Measurement of Time and Motion

A. Multiple Choice Questions :

1. Electric cell is used in

Ans. (c) quartz watch

2. The mean position of the bob

Ans. (a) at A

3. Which measuring device was not used in ancient time?

Ans. (b) Quartz watch

4. An instrument which shows the distance travelled by the vehicle is called

Ans. (b) odometer

5. The SI unit of speed is

Ans. (a) m/s

6. While plotting a graph, the independent quantity is shown on

Ans. (a) X-axis

7. An object moving in a straight line is said to have uniform motion if its speed remains

Ans. (a) constant

8. The speed of a moving car is 20m/s. Calculate its speed in km/h.

Ans. (d) 72

B. Fill in the blanks :

1. The time taken by the bob of a pendulum to complete one oscillation is called **time period.**
2. The formula of **speed** is distance travelled divided by time taken.
3. While plotting a graph, we show the **dependent** quantity on Y-axis.
4. If the distance–time graph is a curved line, it indicates that the object is moving with **non-uniform** speed.

C. State whether the following statements are True or False :

1. The position of bob at rest is its mean position. **True**
2. The motion of pendulum was first studied by Aristotle. **False**
3. Stop watch can measure one-tenth of a second. **True**
4. The standard unit of measuring time is second. **True**

D. Match the columns :

	Column A	**Column B**
1.	Clock and watch	**(c) time**
2.	Ancient clock	**(a) sand clock**
3.	Simple pendulum	**(b) bob**
4.	Ten years	**(e) one decade**
5.	Longer time	**(d) slow speed**

E. Answer in one or two sentences :

1. Name a natural event which was used for measuring time in olden days.

Ans. Sunrise and sunset were used as natural events to measure time in olden days.

2. Name the unit which is used to express the speed of fast–moving objects.

Ans. The speed of fast–moving objects is expressed in kilometre per hour (km/h).

3. What is an odometer?

Ans. An odometer is an instrument that shows the distance travelled by a vehicle.

F. Very short answer type questions :

1. When is an object said to be at rest? Give two examples.

Ans. An object is said to be at rest when it does not change its position with respect to its surroundings. **Examples:** Table, blackboard.

2. Define speed. Write the formula used to calculate speed.

Ans. Speed is the distance travelled by an object in unit time. **Formula:** Speed = Distance ÷ Time

3. Write the standard unit of speed.

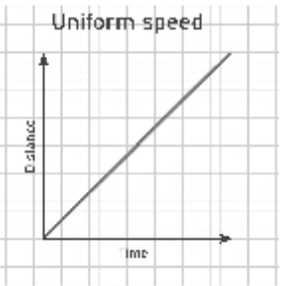
Ans. The standard unit of speed is metre per second (m/s).

G. Short answer type questions :

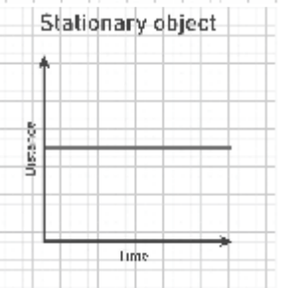
1. What is a simple pendulum? What type of motion is illustrated by the bob of a simple pendulum?

Ans. A simple pendulum consists of a small metal ball called bob suspended by a long thread from a rigid support. When the bob is displaced and released, it moves to and fro about its mean position. This motion repeats itself at equal intervals of time. Therefore, the motion of the bob of a simple pendulum is called periodic motion.

2. Draw the distance-time graph :
   (a) for an object moving with a constant speed.
   (b) for a stationary object.

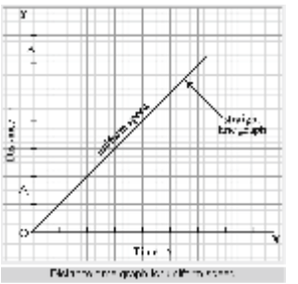


Ans. **(a) For an object moving with constant speed:**
The distance–time graph is a straight sloping line.
This shows that the object covers equal distances in equal intervals of time.



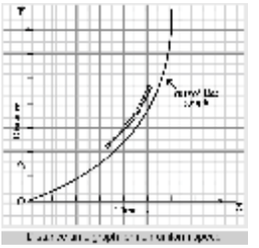
(b) For a stationary object:
The distance–time graph is a horizontal straight line.
This shows that the distance does not change with time.

3. In a distance-time graph,
   (a) What type of motion does a straight line represent?
   (b) What type of motion does a curved line represent?



Ans. **(a) Straight line represents:**
A straight line represents uniform motion, where speed remains constant.

(b) Curved line represents:



A curved line represents non-uniform motion, where speed keeps changing.

H. Long answer type questions :

1. Monica takes 20 minutes from her house to reach her school on a bicycle. If the bicycle has a speed of 3 m/s, calculate the distance between her house and the school in kilometre.

Ans. Monica takes 20 minutes to reach her school by bicycle. The speed of the bicycle is given as 3 m/s. First, we convert time into seconds.
20 minutes = 20 × 60 = 1200 seconds.
We use the formula: Distance = Speed × Time.
Distance = 3 × 1200 = 3600 metres.
Now, convert metres into kilometres. 3600 m = **3.6 km.**
Hence, the distance between Monica's house and school is 3.6 km.

2. A car moves with a speed of 20 km/h for 15 minutes and then with a speed of 60 km/h for next 15 minutes. Calculate the total distance covered by the car.

Ans. The car moves with a speed of 20 km/h for the first 15 minutes.
15 minutes = 1/4 hour, so distance = 20 × 1/4 = 5 km.
Next, the car moves with a speed of 60 km/h for the next 15 minutes.
Again, time = 1/4 hour, so distance = 60 × 1/4 = 15 km.
Now, we add both distances. Total distance = 5 km + 15 km = **20 km.**
Therefore, the total distance covered by the car is 20 km.

3. The distance between two stations is 300 km. A train takes 5 hours to cover this distance. Calculate the speed of the train.

Ans. The distance between the two stations is given as 300 km.
The time taken by the train is 5 hours.
We use the formula: Speed = Distance ÷ Time.
Speed = 300 ÷ 5.Speed = **60 km/h.**
Thus, the speed of the train is 60 kilometres per hour.

4. Define the following terms related to simple pendulum :
   (a) length of the pendulum
   (b) oscillation of the pendulum
   (c) amplitude of the pendulum
   (d) time period of the pendulum

Ans. **(a) Length of the pendulum:** The length of a simple pendulum is the distance from the point of suspension to the centre of the bob. It includes the length of the string and the radius of the bob. The length of the pendulum plays an important role in its motion. A longer pendulum takes more time to complete one oscillation. If the length changes, the time period of the pendulum also changes.
(b) Oscillation of the pendulum: An oscillation of a pendulum is one complete to-and-fro movement of the bob. It starts from one extreme position. The bob moves

through the mean position to the other extreme position. Then it comes back to the starting extreme position. This complete motion is called one oscillation.

(c) Amplitude of the pendulum: Amplitude is the maximum displacement of the bob from its mean position. It is measured on either side of the mean position. Amplitude remains the same on both sides.It depends on how far the bob is pulled before releasing. A larger amplitude means the bob moves farther from the mean position.

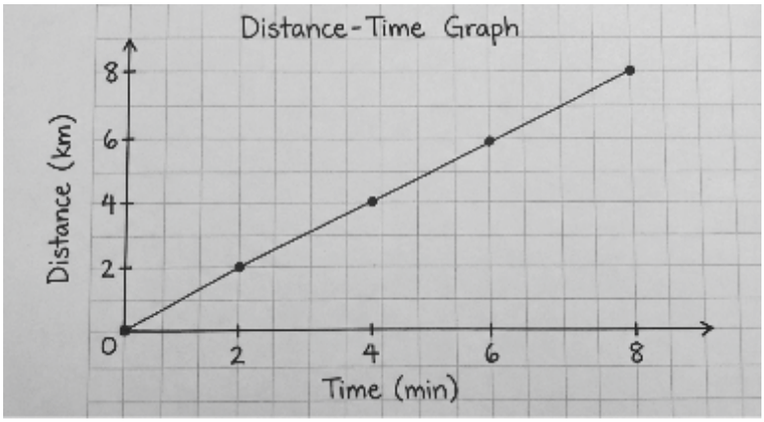
(d) Time period of the pendulum: The time period of a pendulum is the time taken to complete one oscillation. It is measured in seconds. The time period depends on the length of the pendulum. A longer pendulum has a longer time period. For a given length, the time period remains constant.

5. The distance travelled by a car at various times is shown below :

Distance (km)	0	2	4	6	8
time (min)	0	2	4	6	8

Draw a distance-time graph for this car.

Ans.



9 Life Processes in Animals

A. Multiple Choice Questions :

1. The major part of digestion of food takes place in the:

Ans. (d) small intestine

2. Water from undigested food is absorbed mainly in the:

Ans. (d) large intestine

3. The lining of the stomach is protected by:

Ans. (c) mucus

4. The total number of milk teeth in a human being is:

Ans. (a) 20

5. The juice secreted by the glands in the stomach is called:

Ans. (a) gastric juice

6. The concentration of oxygen is:

Ans. (a) more in inhaled air

7. After heavy exercise, cramping of muscles takes place due to the accumulation of:

Ans. (c) lactic acid

8. Which of the following has dual respiration mechanism?

Ans. (a) frogs

9. Respiration in fishes takes place through:

Ans. (b) gills

B. Fill in the blanks :

1. The inner wall of the alimentary canal shows wavy movements called **peristalsis.**
2. Digestion of food starts in the mouth and gets completed in the **small intestine.**
3. The **liver** is the largest gland present in the human body.
4. In insects, respiration occurs through small openings called **spiracles** and in fishes it occurs through **gills.**
5. **Aerobic** respiration releases more energy than **anaerobic** respiration.

C. State whether the following statements are True or False :

1. The ruminants bring back swallowed grass into their mouth and chew it for sometime. **True**
2. The removal of faeces through the anus is called egestion. **True**
3. Digestion of starch starts in the mouth. **True**
4. Bile juice is stored in the gallbladder. **True**
5. The rectum is the last part of the human alimentary canal. **False**
6. Frogs respire by diffusion as well as through their lungs. **True**

D. Match the following :

	Column A	**Column B**
1.	Liver	**(a) Bile juice secretion**
2.	Rectum	**(b) Release of faeces**
3.	Buffalo	**(c) Omasum**
4.	Small intestine	**(d) Digestion is completed**
5.	Villi	**(e) Absorption**
6.	Salivary gland	**(f) Gastric juice/HCla**

E. Answer in One or Two Sentences:

1. Name the part of the digestive tract because of which grazing animals are called ruminants.

Ans. Grazing animals are called ruminants because they have a rumen, which helps in storing and re-chewing food.

2. What is the hardest substance in the human body?

Ans. Enamel is the hardest substance in the human body.

3. Name two organisms that live on liquid food only.

Ans. Mosquito and butterfly live on liquid food only.

4. What is respiration?

Ans. Respiration is the process by which energy is released from food using oxygen in living organisms.

F. Short answer type questions:

1. What is salivary gland?

Ans. Salivary glands are glands present in the mouth that secrete saliva. Saliva helps in moistening the food and makes it easy to swallow. It also contains an enzyme called amylase. This enzyme helps in the digestion of starch into sugar.

2. What are villi? Where are they located and what is their function?

Ans. Villi are tiny finger-like projections present on the inner wall of the small intestine. They increase the surface area for absorption. Villi contain blood vessels. They help in absorbing digested nutrients into the bloodstream.

3. Why do we respire?

Ans. We respire to release energy from the food we eat. This energy is needed for growth, movement, repair, and daily activities. Respiration supplies oxygen to the cells. It also helps in removing carbon dioxide from the body.

4. In which part of the lungs does the exchange of gases take place?

Ans. The exchange of gases takes place in the alveoli. Alveoli are tiny air sacs in the lungs. They are surrounded by blood capillaries. Oxygen enters the blood from alveoli. Carbon dioxide moves out from blood into alveoli.

5. What are the respiratory organs of frogs?

Ans. Frogs have two respiratory organs. They breathe through lungs when on land. They respire through moist skin in water. Skin respiration occurs by diffusion. Thus frogs show dual respiration.

G. Long answer type questions:

1. Describe in brief the various steps involved in nutrition.

Ans. Nutrition in animals takes place through five main steps. First is ingestion, in which food is taken into the body. Second is digestion, where complex food is broken into simpler substances. Third is absorption, in which digested food enters the blood. Fourth is assimilation, where absorbed nutrients are used for energy, growth and repair. The last step is egestion, in which undigested waste is removed from the body.

2. Describe briefly the organs of the digestive system.

Ans. The human digestive system consists of mouth, oesophagus, stomach, small intestine and large intestine. Digestion starts in the mouth with the help of saliva. Food moves through the oesophagus to the stomach where gastric juice acts on it. Complete digestion and absorption take place in the small intestine. The large intestine absorbs water and minerals. Waste food is removed through the rectum and anus.

3. Explain the process of digestion in ruminants.

Ruminants like cows and buffaloes swallow grass quickly without chewing it properly. The food first enters the rumen, where it is partially digested and called cud. The cud is brought back to the mouth and chewed again. After re-chewing, food passes into omasum and then abomasum. Here digestion is completed by

digestive juices. Finally, nutrients are absorbed in the small intestine.

4. What is meant by aerobic and anaerobic respiration? Illustrate by giving reactions involved in each process.

Ans. **Aerobic respiration:** Is the process in which food (glucose) is broken down in the presence of oxygen to release energy. In this process, glucose is completely oxidised into carbon dioxide and water and a large amount of energy is produced.

Reaction (Aerobic): Glucose + Oxygen → Carbon dioxide + Water + Energy

Anaerobic respiration: Is the process in which food is broken down in the absence of oxygen. In this process, glucose is only partially broken down and less energy is released. In human muscles it forms lactic acid, while in yeast it forms alcohol and carbon dioxide.

Reaction (Anaerobic): Glucose → Lactic acid / Alcohol + Carbon dioxide + Energy

5. Describe the respiratory organs in human beings.

Ans. The human respiratory system includes nostrils, nasal cavity, trachea, bronchi and lungs. Air enters the body through the nostrils, where dust and germs are filtered. The air then passes through the trachea and bronchi into the lungs. Inside the lungs are tiny air sacs called alveoli, which are surrounded by blood capillaries. The exchange of oxygen and carbon dioxide takes place in the alveoli. Oxygen enters the blood, while carbon dioxide is removed from the body during exhalation.

6. Describe respiration in an earthworm.

Ans. Earthworms respire through their moist skin. Their skin is thin and richly supplied with blood capillaries. Oxygen from the air diffuses through the moist skin into the blood. At the same time, carbon dioxide diffuses out of the blood through the skin. Thus, respiration in earthworms occurs by diffusion through the skin.

7. Differentiate between respiration and breathing.

Ans.

	Respiration	**Breathing**
1.	Respiration is a biochemical process.	Breathing is a physical process.
2.	It involves breakdown of food to release energy.	It involves inhalation and exhalation of air.
3.	It occurs inside the cells.	It occurs outside the cells.
4.	Enzymes are involved in respiration.	No enzymes are involved in breathing.
5.	Energy is produced during respiration.	No energy is produced during breathing.
6.	Oxygen is used to break down food into carbon dioxide, water and energy.	Oxygen is taken in and carbon dioxide is given out.
7.	It takes place in all living cells of the body.	It takes place in respiratory organs like lungs.

10 Life Processes in Plants

A. Multiple Choice Questions :

1. Photosynthesis mainly takes place in the :

Ans. (c) leaves

2. The gas released during photosynthesis is :

Ans. (b) oxygen

3. The green pigment present in leaves is :

Ans. (b) chlorophyll

4. Food prepared by plants is transported through :

\Ans. (b) phloem

5. Water is absorbed by plants through their :

Ans. (c) root hairs

6. Loss of water in the form of vapour from leaves is called :

Ans. (c) transpiration

7. The upward movement of water and minerals in plants is known as :

Ans. (b) ascent of sap

8. The rate of photosynthesis increases with :

Ans. (c) increase in light intensity

9. The transportation of water and minerals occurs through :

Ans. (c) xylem

B. Fill in the blanks :

1. Plants take in carbon dioxide from the air through **stomata.**
2. **Chlorophyll** is needed by plants to absorb sunlight for preparing food.
3. Water moves upward in plants through **xylem.**
4. The loss of water vapour from leaves is called **transpiration.**

C. State whether the following statements are True or False :

1. Photosynthesis requires sunlight, carbon dioxide, water and chlorophyll. **True**
2. Root hairs help plants absorb water by increasing the surface area of the roots. **True**
3. Xylem transports the prepared food from leaves to all other parts of the plant. **False**
4. Transpiration is the process by which plants lose water vapour through their leaves. **True**
5. Phloem carries water and minerals upward from the roots to the leaves. **False**

D. **Match the Following :**

	Column A	**Column B**
1.	Xylem	**(d) Carries water and minerals**
2.	Stomata	**(b) Opening for gaseous exchange**
3.	Transpiration	**(a) Loss of water vapour**
4.	Chlorophyll	**(c) Uses sunlight for food making**
5.	Phloem	**(e) Carries prepared food**

E. **Answer in One or Two Sentences :**

1. What is photosynthesis?

Ans. Photosynthesis is the process by which green plants prepare their own food using carbon dioxide, water and sunlight in the presence of chlorophyll.

2. What role do root hairs play in plants?

Ans. Root hairs help plants absorb water and minerals from the soil by increasing the surface area of the roots.

3. What is meant by transpiration?

Ans. Transpiration is the process by which plants lose excess water in the form of water vapour through their leaves.

4. Which tissue carries food prepared in the leaves to other parts of the plant?

Ans. Phloem is the tissue that carries food prepared in the leaves to other parts of the plant.

F. Short Answer Type Questions :

1. How do plants obtain the raw materials required for photosynthesis? Explain briefly.

Ans. Plants obtain carbon dioxide from the air through tiny pores called stomata present on the leaves. Water and minerals are absorbed from the soil by the roots with the help of root hairs. Chlorophyll present in green leaves traps sunlight. All these raw materials together help plants carry out photosynthesis.

2. Describe the movement of water and minerals from the roots to the leaves.

Ans. Water and minerals are absorbed by root hairs from the soil. They move upward through a conducting tissue called xylem present in roots, stem and leaves. This upward movement of water and minerals is known as ascent of sap. Transpiration pull and root pressure help in this movement.

3. Explain how transpiration helps in the life of a plant.

Ans. Transpiration helps in cooling the plant by removing excess heat. It creates a suction pull which helps water and minerals move upward from the roots to the leaves. It also helps in maintaining water balance in the plant and prevents overheating.

4. What are the factors that affect the rate of photosynthesis?

Ans. The rate of photosynthesis depends on light intensity, temperature, availability of carbon dioxide and water. Increase in light intensity increases the rate up to a certain limit. Very low temperature or lack of water and carbon dioxide reduces the rate of photosynthesis.

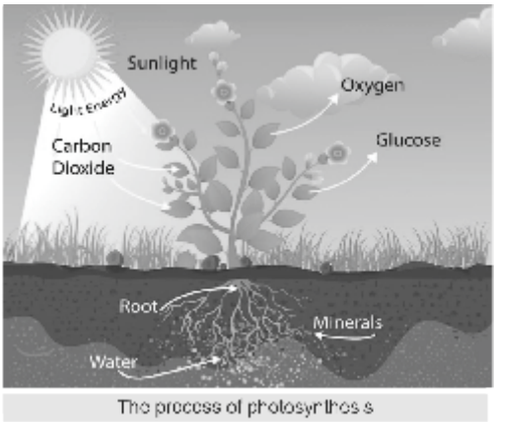
G. Long answer type questions

1. Describe the complete process of photosynthesis in detail, mentioning all the essential requirements.

Ans. **1.** Green plants use carbon dioxide from the air, water and minerals from the soil, sunlight, and chlorophyll to make food.

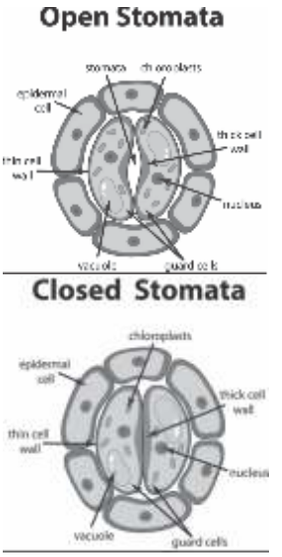
2. Chlorophyll in the green parts of plants absorbs sunlight and uses this energy to convert carbon dioxide and water into glucose, with oxygen released as a by-product.

3. The overall reaction can be written as: carbon dioxide + water → glucose + oxygen, in the presence of sunlight and chlorophyll, and the glucose is converted to starch and transported or



The process of photosynthesis

stored in different plant parts.



2. Explain the structure and function of stomata and describe their importance in plants.

Ans. **1.** Stomata are tiny openings mainly on the lower surface of leaves, each surrounded by two bean-shaped guard cells that control opening and closing.

2. Through stomata, plants take in carbon dioxide and release oxygen and water vapour, so they are essential for gas exchange during photosynthesis and for transpiration.

3. By regulating stomatal opening, plants balance water loss with carbon dioxide intake, which is vital for survival in different environmental conditions.

3. What is translocation? Describe how food prepared in the leaves is transported to other parts of the plant.

Ans. **Definition:** Translocation is the process of transport of food prepared in leaves to all other parts of the plant.

Transport Process: Food made during photosynthesis (mainly glucose/sugars) enters the phloem tissue in leaves. Phloem consists of sieve tubes placed one above the other, forming long conducting channels. These sieve tubes carry food to stems, roots, flowers, fruits and seeds in both upward and downward directions. This ensures all plant parts receive energy for growth and storage.

4. Discuss the upward movement of water in plants and explain why this movement is essential for plant survival.

Ans. **Process of Upward Movement:** Root hairs absorb water and minerals from soil by osmosis. Water moves from root hairs into root xylem through root tissues. Xylem vessels form continuous tubes from roots through stem to leaves. Root pressure pushes water upward; transpiration pull from leaves creates suction.

Importance for Plant Survival: Water is essential raw material for photosynthesis in leaves. Carries dissolved minerals needed for plant growth and functions. Maintains turgidity in cells, keeping plant upright and preventing wilting. Enables cooling through transpiration during hot conditions.

Ans. **What is Transpiration:** Transpiration is the loss of excess water from plants in the form of water vapour mainly through stomata on leaves. It occurs by evaporation from moist cell surfaces inside leaves to the drier air outside.

How it Works: Water reaches leaves through xylem from roots, evaporates from mesophyll cells into sub-stomatal spaces. Water vapour then diffuses out through open stomata during daytime.

Environmental Factors Affecting Transpiration: Day/Night Stomata open during day (high transpiration), closed at night (low transpiration). Temperature Higher temperature increases evaporation rate, so transpiration increases. Wind Blowing wind removes water vapour quickly from leaf surface, increasing transpiration.

Humidity High humidity (moist air) slows transpiration; low humidity (dry air) speeds it up.

6. Explain the advantages of root hairs and describe how they help plants survive in soil.

Ans. **Main Advantages:** Greatly increase the surface area of roots for maximum absorption of water and minerals. Reach into tiny spaces between soil particles where water is present. Provide close contact with thin film of water around soil particles. Thin unicellular walls allow rapid diffusion of water by osmosis.

How They Help Plants Survive: Enable absorption even from soil with low water content. Transport essential minerals needed for plant growth and functions. Maintain water balance preventing wilting in dry conditions. Support continuous supply to leaves for photosynthesis.

7. Describe the importance of photosynthesis for plants as well as for other living organisms.

Ans. **For Plants:** Plants make their own food (glucose) which provides energy for growth, repair and reproduction. Glucose is stored as starch in leaves, stems and roots for use when sunlight is not available. Without photosynthesis, plants cannot survive as they depend completely on this process for food.

For Other Living Organisms: All animals get food directly (herbivores) or indirectly (carnivores) from plants made by photosynthesis. Oxygen released during photosynthesis is essential for respiration in all animals and plants. Maintains balance of oxygen and carbon dioxide in atmosphere, making life possible on Earth.

11 Light : Reflection

A. Multiple Choice Questions :

1. Which of the following materials will create the sharpest shadow?

Ans. (c) A wooden plank

2. What is the main reason we are unable to see a candle flame through a bent pipe?

Ans. (c) Light travels in a straight line.

3. The phenomenon where the left and right sides of an object appear swapped in a mirror is called:

Ans. (b) Lateral inversion

4. What type of image is formed on the screen of a pinhole camera?

Ans. (d) Real and inverted

5. Which property of light is used by a periscope?

Ans. (d) Both (a) and (b)

6. When an opaque object is moved closer to the source of light, the size of its shadow:

Ans. (b) Becomes larger

B. Fill in the Blanks :

1. The bouncing back of light from a smooth, shiny surface is called **reflection.**
2. in a plane mirror, the left side of the object appears on the right side of the image. This property is known as **lateral** inversion.
3. A pinhole camera forms an **inverted** image.
4. A **translucent** material, like frosted glass, allows some light to pass through but scatters it.
5. A shadow is formed when light is blocked by a/an **opaque** object.
6. A periscope uses **plane** mirrors placed at an angle.
7. The image formed by 3 plane mirror cannot be obtained on a screen, so it is called a **virtual** image.
8. If you move an object closer to a light source, its shadow becomes **larger.**

C. Match the Following :

	Column A	Column B
1.	Periscope	**(e) Device that uses reflection to see over obstacles**
2.	Kaleidoscope	**(d) Forms beautiful patterns using multiple mirrors**
3.	Reflection	**(c) Bouncing back of light from a surface**
4.	Translucent Material	**(b) Scatters light, making objects look blurry**
5.	Opaque Material	**(a) Completely blocks light from passing through**

C. State whether the following statements are True or False :

1. A candle is a natural source of light. **False**
2. Light can bend around corners. **False**
3. A shadow has only one part, the umbra. **False**
4. The image in a plane mirror is the same size as the object. **True**
5. A translucent object allows you to see objects clearly through it. **False**
6. The angle of incidence of light is always greater than the angle of reflection. **False**

E. Answer in One orTwo Sentences

1. What is the difference between a transparent and a translucent material?

Ans. Transparent materials allow light to pass through completely and objects can be seen clearly, while translucent materials allow only some light to pass and objects appear blurred.

2. Name the two distinct parts of a shadow. S.What is lateral inversion.

Ans. The two parts of a shadow are umbra and penumbra. Lateral inversion is the phenomenon in which the left side of an object appears as the right side in a mirror image.

3. State one property of an image formed by a plane mirror.

Ans. The image formed by a plane mirror is virtual and erect.

4. How does a kaleidoscope create patterns? F.

Ans. A kaleidoscope creates patterns due to multiple reflections of light between plane mirrors.

F. Short Answer Type Questions :

1. Differentiate between transparent, translucent, and opaque materials with two

examples of each!

Ans. **Differentiate between Transparent, Translucent and Opaque Materials**

	Transparent Materials	Translucent Materials	Opaque Materials
1.	Allow light to pass through completely	Allow only some light to pass through	Do not allow light to pass through
2.	Objects can be seen clearly	Objects appear blurred	Objects cannot be seen
3.	Form very faint shadows	Form partial / light shadows	Form dark and sharp shadows
4.	Used in windows and spectacles	Used in lamp shades, bathroom glass	Used in doors, walls
5.	**Examples:** Clear glass, water	**Examples:** Frosted glass, butter paper	**Examples:** Wood, metal

2. Explain with a reason why the shadow of an object is longer in the morning and shorter at noon.

Ans. In the morning, the Sun is low in the sky and its rays fall on objects at a slanting angle. Because of this slanting angle, the shadow formed is long. As the day progresses, the Sun rises higher in the sky. At noon, the Sun is almost overhead and its rays fall nearly vertically. Therefore, the shadow of the object becomes the shortest at noon.

3. List any three properties of an image formed by a plane mirror.

Ans. The image formed by a plane mirror is virtual and cannot be obtained on a screen.

1. It is erect (upright) in position.

2. The image is of the same size as the object.

3. It shows lateral inversion, in which left and right sides are reversed.

4. Describe the simple activity with three cardboards that proves light travels in a straight line.

Ans. Take three cardboard sheets and make a small hole at the centre of each. Place them vertically in a straight line and keep a lighted candle behind the first cardboard. When all the holes are in the same straight line, the candle flame can be seen through them. If any one cardboard is moved slightly, the flame cannot be seen. This activity proves that light travels in a straight line.

5. What happens when you tilt a mirror that is reflecting sunlight onto a wall? What property of light does this demonstrate

Ans. When a mirror reflecting sunlight onto a wall is tilted, the bright spot of light on the wall also changes its position. This happens because the direction of the reflected ray changes when the mirror is tilted. The incident light ray strikes the mirror at a different angle. As a result, the reflected light moves in another direction. This demonstrates the reflection of light and follows the laws of reflection.

G. Long Answer Type Questions :

1 . Describe with a neat, labelled diagram how a shadow is formed by an opaque object.

Ans. A shadow is formed when an opaque object blocks the path of light. Light travels in

a straight line and cannot pass through opaque objects. When light from a source falls on an opaque object, it is stopped. As a result, a dark region is formed on the surface behind the object. This dark region is called a shadow. A shadow has two parts: umbra (dark region) and penumbra (lighter region). A source of light, an opaque object and a screen are necessary to form a shadow.

2. Explain the construction and working of a pinhole camera. Why is the image formed always inverted?

Ans. A pinhole camera is a simple camera without a lens. It is made using a light-tight box with a small pinhole on one side and a screen on the opposite side. Light from an object passes through the tiny hole. The rays of light cross each other at the pinhole. An image is formed on the screen inside the box. The image formed is real, smaller and inverted. The image is inverted because light rays travel in straight lines and cross at the pinhole.

3. What is periscope? How does it work?

Ans. A periscope is an optical device used to see over obstacles. It works on the principle of reflection of light. It consists of two plane mirrors placed at an angle of 45° inside a tube. Light from the object strikes the first mirror and gets reflected. The reflected light then strikes the second mirror. After reflection from the second mirror, light reaches the observer's eyes. Thus, objects not in the direct line of sight can be seen.

4. State the laws of reflection. Explain the activity with a mirror that demonstrates how light reflects.

Ans. **Laws of Reflection:**

1. The angle of incidence is always equal to the angle of reflection.

2. The incident ray, the reflected ray, and the normal at the point of incidence all lie in the same plane.

Activity (Mirror Demonstration): Fix a plane mirror on a stand and draw a normal at a point on its surface. Direct a narrow beam of light (or torch ray) towards the mirror along a straight line. Observe the reflected ray and measure both angles with a protractor. You will find that the angle of incidence equals the angle of reflection, proving the laws of reflection.

5. What are the different types of materials based on how they interact with light? Explain each with a suitable diagram or table.

Ans.

	Type of Material	Explanation	Examples / Shadow
1.	Transparent	These materials allow almost all light to pass through them. Objects can be seen clearly through transparent materials.	Glass, water / very faint shadow
2.	Translucent	These materials allow only some light to pass through and scatter it in	Frosted glass, butter paper / partial shadow

		different directions. Objects appear blurred.	
3.	Opaque	These materials do not allow light to pass through at all and block it completely.	Wood, metal / dark, sharp shadow

12 Our Cosmic Neighbours — Earth, Moon, and the Sun

A. Multiple Choice Questions :

1. Earth rotates from:

Ans. (b) West to East

2. One complete rotation of Earth takes about:

Ans. (b) 24 hours

3. The shape of Earth is best described as:

Ans. (c) Oblate spheroid

4. The Moon takes about how many days to complete one revolution around Earth?

Ans. (a) 29.5 days

5. Which event occurs when Earth's shadow falls on the Moon?

Ans. (b) Lunar eclipse

6. The Sun is directly overhead at the Tropic of Cancer during:

Ans. (b) Summer solstice

B. Fill in the blanks :

1. Earth completes one rotation in **24** hours.
2. The longest day in the Northern Hemisphere occurs around **21 June.**
3. The Moon shows phases because it **reflects** sunlight.
4. A year with 366 days is called a **leap year.**
5. The Pole Star appears fixed because it is above the **North** Pole.
6. The darker central part of a shadow during an eclipse is called **umbra.**

C. State whether the following statements are True or False :

1. Earth's revolution causes day and night. **False**
2. The Moon produces its own light. **False**
3. Equinoxes are the times when day and night are nearly equal. **False**
4. Earth is perfectly spherical in shape. **True**
5. A lunar eclipse can only occur on a Full Moon day. **True**
6. Aryabhata explained that Earth rotates on its axis. **True**

D. Match the following :

	Column A	**Column B**
1.	Rotation	**(c) Day and Night**
2.	Revolution	**(a) 365 days 6 hours**
3.	Phases of the Moon	**(b) 29.5 days**

4. Solar Eclipse **(d) Moon between Earth and Sun**

5. Lunar Eclipse **(e) Earth between Sun and Moon**

E. Answer in One or Two Sentences :

1. Why is Earth called the Blue Planet?

Ans. Earth is called the Blue Planet because about three-fourths of its surface is covered with water.

2. What is meant by the term "leap year"?

Ans. A leap year is a year with 366 days added to adjust Earth's revolution period.

3. Name the two main motions of Earth.

Ans. The two main motions of Earth are rotation and revolution.

4. Why do we always see the same face of the Moon?

Ans. We always see the same face of the Moon because it takes the same time to rotate on its axis as it takes to revolve around the Earth.

F. Short Answer Type Questions :

1. Explain why we experience different seasons on Earth.

Ans. We experience different seasons because Earth's axis is tilted at about 23.5°. As Earth revolves around the Sun, different parts of Earth receive different amounts of sunlight. The hemisphere tilted towards the Sun has summer, while the other has winter. Seasons are caused by Earth's tilt, not by its distance from the Sun.

2. What is the difference between a solar and lunar eclipse?

Ans.

	Solar Eclipse	**Lunar Eclipse**
1.	Occurs when the Moon comes between the Sun and the Earth.	Occurs when the Earth comes between the Sun and the Moon.
2.	The Moon's shadow falls on the Earth.	The Earth's shadow falls on the Moon.
3.	Happens on a New Moon day.	Happens on a Full Moon day.
4.	Visible from a small area of the Earth.	Visible from a large part of the Earth.
5.	Not safe to view with naked eyes.	Safe to view with naked eyes.

3. How do time zones arise on Earth?

Ans. Earth rotates from west to east, so different places face the Sun at different times. To maintain uniform time, Earth is divided into 24 time zones. Each time zone covers about 15° of longitude. This system helps in maintaining standard time around the world.

4. Describe the phases of the Moon in order.

Ans. The phases of the Moon occur due to its revolution around the Earth. The order is: New Moon, Waxing Crescent, First Quarter, Waxing Gibbous, Full Moon. Then the phases continue as Waning Gibbous, Last Quarter and Waning Crescent. This complete cycle takes about 29.5 days.

5. Write two contributions of Aryabhata to astronomy.

Ans. Aryabhata explained that Earth rotates on its axis, causing day and night. He calculated the length of the year with great accuracy. He also explained methods to predict solar and lunar eclipses. His work greatly influenced ancient Indian

astronomy.

G. Long Answer Type Questions

1. Explain Earth's rotation in detail and describe its effects.

Ans. Earth rotates on its axis from west to east once in about 24 hours. This rotation causes the regular occurrence of day and night. The side of Earth facing the Sun experiences day, while the opposite side has night. Rotation also causes the apparent movement of the Sun, Moon, and stars across the sky. It is responsible for differences in local time at different longitudes. Because of rotation, Earth is slightly bulged at the equator and flattened at the poles.

2. Describe Earth's revolution and explain how it causes seasons.

Ans. Earth revolves around the Sun in an elliptical path in about 365¼ days. Its axis is tilted at an angle of about 23.5°. Due to this tilt, different parts of Earth receive varying amounts of sunlight during the year. When a hemisphere is tilted towards the Sun, it experiences summer. When it is tilted away, it experiences winter. Thus, Earth's revolution along with its tilted axis causes seasons.

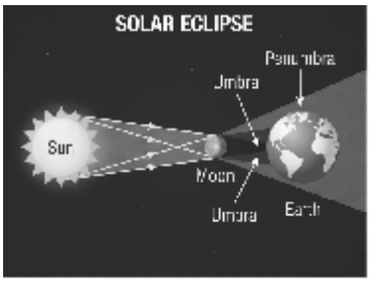
3. What are solstices and equinoxes? How are they different?

Ans.	**Solstices**	**Equinoxes**
1.	Solstices are the days when day and night are most unequal.	Equinoxes are the days when day and night are nearly equal.
2.	They occur because Earth's axis is tilted most towards or away from the Sun.	They occur when Earth's axis is neither tilted towards nor away from the Sun.
3.	Summer solstice occurs around 21 June (longest day).	Vernal equinox occurs around 21 March.
4.	Winter solstice occurs around 22 December (shortest day).	Autumnal equinox occurs around 23 September.
5.	Solstices mark extreme seasons (peak summer or winter).	Equinoxes mark change of seasons.
6.	Day length changes are maximum on solstices.	Day and night are almost equal everywhere on equinoxes.

4. Describe the surface features of the Moon and explain why life is not possible there.

Ans. The Moon has mountains, deep craters, and flat plains called maria. Its surface is covered with dust and rocks formed by meteor impacts. The Moon has no atmosphere or liquid water. Temperatures on the Moon are extremely hot during the day and very cold at night. Due to the absence of air, water, and suitable temperature, life cannot exist there. There is also no protection from harmful solar radiation.

5. Explain the conditions required for solar and lunar eclipses with diagrams.



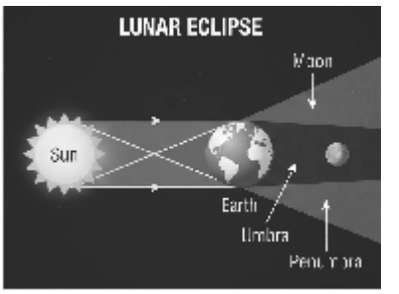
Ans. **Solar Eclipse:**

1. Occurs when the Moon comes between the Sun and the Earth.

2. Happens only on a New Moon day.
3. The Moon's shadow falls on the Earth.
4. Sun, Moon, and Earth must be in a straight line.
5. Seen only from a small area of the Earth.
6. Not safe to view with naked eyes.

Lunar Eclipse:

1. Occurs when the Earth comes between the Sun and the Moon.
2. Happens only on a Full Moon day.
3. The Earth's shadow falls on the Moon.
4. Sun, Earth, and Moon must be in a straight line.
5. Seen from a large part of the Earth.
6. Safe to view with naked eyes.



2 The Invisible Living would:Beyond Our Naked Eye

A. Multiple Choice Questions :

1. It is responsible for converting milk into curd.

Ans. (b) Lactobacillus

2. It is an antibiotic :

Ans. (b) Streptomycin

3. The bread or idli dough rises because of :

Ans. (b) Growth of yeast cells

4. Which of the following is used to make bread soft and flufy ?

Ans. (a) Yeast

B. Fill in the blanks :

1. Polio is caused by **virus.**
2. Milk contains a sugar called **lactose.**
3. Alcohol is produced with the help of **yeast.**
4. Chlorea is caused by **bacteria.**
5. Female **Aedes mosquito** acts as carrier of dengu virus.

C. State whether the following statements are True or False :

1. Malaria is caused by bacteria. **False**
2. Milk is preserved by pasteurisation. **True**
3. Yeast is used in production of alcohol. **True**
4. Polio is caused by Virus. **True**
5. The process of conversion of sugar into alcohol is known as pasteurisation. **False**

D. Match the Following :

	Column 'A'	**Column 'B'**
1.	Yeast	**c. Baking of bread**
2.	Bacteria	**d. Causing Cholera**
3.	Rhizobium	**a. Fixing Nitrogen**
4.	A virus	**e. Causing aids**
5.	Lacto bacillus	**b. Setting of curd**

E. Very Short Answer Questions :

1. What are microorganisms?

Ans. Microorganisms are very tiny living organisms that cannot be seen with naked eyes.

2. Name the instrument used to see very small living organisms.

Ans. Microscope is used to see very small living organisms.

3. Can microorganisms be seen with naked eyes?

Ans. No, microorganisms cannot be seen with naked eyes.

4. Name one group of microorganism.

Ans. Bacteria is one group of microorganisms.

5. Write one example of a useful microorganism.

Ans. Lactobacillus is a useful microorganism.

6. Where do microorganisms commonly live?

Ans. Microorganisms live in air, water, soil and inside living bodies.

7. What is the study of microorganisms called?

Ans. The study of microorganisms is called microbiology.

F. Short Answer Type Questions :

1. State the function of nucleus.

Ans. The nucleus is the control centre of the cell. It controls all the activities of the cell. It stores genetic material (DNA). It helps in cell growth and reproduction.

2. Compare a plant cell and an animal cell.

Ans. A plant cell has a cell wall and chloroplasts, but an animal cell does not. Plant cells have a large central vacuole. Animal cells usually have small or no vacuoles. Both cells have nucleus, cytoplasm and cell membrane.

3. Explain the variation in size that a cell undeyoes.

Ans. Cells vary greatly in size depending on their function. Some cells like bacteria are very small and microscopic. Human nerve cells are very long. Size of cells may range from micrometres to several centimetres.

4. Define nitrogen cycle.

Ans. The nitrogen cycle is the movement of nitrogen between air, soil, plants and animals. Nitrogen is fixed by bacteria and blue-green algae. Plants absorb nitrogen compounds from soil. It maintains the balance of nitrogen in nature.

5. Name the bacteria which promotes the formation of curd.

Ans. Lactobacillus is the bacteria responsible for curd formation. It converts lactose into lactic acid. This makes milk acidic. As a result, milk turns into curd.

6. Name two methods of food preservation.

Ans. Drying is used to remove moisture and prevent microbial growth. Refrigeration slows down the growth of microbes. Boiling and salting are also common methods. These methods help in preventing food spoilage.

7. Which organism causes the foot and mouth disease in cattle ?

Ans. Foot and mouth disease in cattle is caused by a virus. It is a contagious disease. It spreads through contact. It affects the mouth and feet of animals.

8. Name the protozoan which causes malaria.

Ans. Malaria is caused by a protozoan called Plasmodium. It is transmitted by female Anopheles mosquito. The parasite enters the blood. It causes fever and chills.

G. Long Answer Types Question :

1. What are microbes and how do they enter our body ?

Ans. Microbes are microscopic living organisms such as bacteria, viruses, fungi and protozoa that cannot be seen with naked eyes. They enter our body through the air we breathe, the water we drink and the food we eat. Some microbes enter through

cuts and wounds on the skin, while others are carried by insects like mosquitoes and houseflies. These microbes may cause diseases when they multiply inside the body.

2. What are the different groups of microbes ?

Ans. Microbes are divided into five main groups: bacteria, fungi, algae, protozoa and viruses. Bacteria are single-celled organisms found everywhere. Fungi include yeast and mould. Algae are plant-like microbes found in water. Protozoa are single-celled animals like amoeba. Viruses are the smallest microbes and can reproduce only inside a living host.

3. Explain pasteurisation.

Ans. Pasteurisation is a method of preserving milk by killing harmful microorganisms. In this process, milk is heated to about 70°C for 20–30 seconds and then cooled suddenly. This prevents the growth of microbes without boiling the milk. Pasteurisation makes milk safe for drinking and increases its shelf life.

4. What are the conditions required for microbial growth ?

Ans. Microorganisms grow best in warm, moist and airy conditions. They also need suitable food to grow and multiply. Moisture is especially important for their growth. That is why food spoils quickly in warm and humid weather. Removing moisture or lowering temperature slows down microbial growth.

5. What is fermentation and what are its use ?

Ans. Fermentation is the process in which microorganisms convert sugar into alcohol or acid. Yeast converts sugar into alcohol, while bacteria convert sugar into acid. Fermentation is used in making curd, bread, idli, dosa, alcohol and vinegar. It also improves the taste and texture of food.

6. How are microbes helpful in increasing the soil fertility ?

Ans. Some bacteria and blue-green algae fix nitrogen from the atmosphere and convert it into compounds that plants can use. This increases the nitrogen content of the soil. These microbes are called biological nitrogen fixers. By enriching the soil with nutrients, microbes improve soil fertility and help plants grow better.

7. What is the need of preservation of food ?

Ans. Food preservation is needed to prevent spoilage caused by microorganisms. Spoiled food becomes unsafe to eat and can cause food poisoning. Preservation helps in increasing the shelf life of food and keeps it safe for longer time. It also helps in reducing wastage of food.

8. Explain nitrogen cycle.

Ans. Nitrogen is present in large amount in the atmosphere. Plants cannot use atmospheric nitrogen directly. Certain bacteria and blue-green algae fix nitrogen in the soil. Plants absorb nitrogen compounds through their roots. Animals get nitrogen by eating plants. Decomposers return nitrogen to the soil and atmosphere, completing the cycle.

3 Health : The Ultimate Treasure

A. Multiple Choice Questions :

1. Which of the following is a non-communicable disease?

Ans. (c) Diabetes

2. Which of the following diseases is spread by mosquitoes?

Ans. (b) Dengue

3. Which of the following is a preventive measure for communicable disease?

Ans. (c) Maintaining personal hygiene

4. The first vaccine was developed against:

Ans. (c) Smallpox

B. Fill in the blanks :

1. Health is one of the greatest **treasures** of life.
2. According to WHO, health is a state of complete physical, **mental** and social well-being.
3. Spending too much time on digital devices can affect both our body and **mind.**
4. **Communicable** diseases are caused by pathogens and can spread from one person to another.
5. Vaccines help build **immunity** in the body to fight diseases.

C. State whether the following statements are True or False :

1. Symptoms are sign visible to others. **False**
2. Non-communicable diseases can spread from one person to another. **False**
3. Washing hands regularly helps prevent communicable diseases. **True**
4. Ayurveda suggests adapting lifestyle according to seasons. **True**
5. Antibiotics work against viral infections. **False**

D. Match the following :

	Column 'A'	**Column 'B'**
1.	Polio	**c. Virus**
2.	Ascariasis	**a. Worms**
3.	Obesity	**b. Lifestyle disease**
4.	Malaria	**d. Protozoa**
5.	Tuberculosis	**e. Bacteria**

E. Very Short Type Questions:

1. What is pathogen?

Ans. A pathogen is a disease-causing microorganism such as bacteria, virus, fungi or protozoa.

2. Name two communicable diseases.

Ans. Dengue and Cholera are communicable diseases.

3. What does Ayurveda teach about healt?

Ans. Ayurveda teaches maintaining health through balanced diet, cleanliness and a healthy lifestyle.

4. Why is sleep important for health?

Ans. Sleep gives rest to the body and mind and helps us stay active and healthy.

5. What is antibiotic resistance?

Ans. Antibiotic resistance is the ability of bacteria to stop responding to antibiotics.

F. Short Answer Type Questions:

1. What are the three main aspects of health according to WHO?

Ans. According to WHO, health has three main aspects—physical, mental, and social well-being. Physical health means a healthy body free from disease. Mental health refers to a calm and positive mind. Social health means maintaining good relationships with others.

2. Name two examples of non-communicable diseases.

Ans. Non-communicable diseases do not spread from one person to another. They are usually related to lifestyle or genetic factors. **Examples:** Diabetes and cancer. Such diseases often need long-term treatment and care.

3. How do vaccines help our body?

Ans. Vaccines help our body by training the immune system to recognize harmful germs. They build immunity and protect us from serious diseases. Vaccines also reduce the spread of infections in the community.

4. What is meant by antibiotic resistance?

Ans. Antibiotic resistance means that bacteria become strong and stop responding to antibiotics. This happens due to misuse or overuse of antibiotics. As a result, infections become harder to treat.

5. List two ways communicable diseases can spread.

Ans. Communicable diseases can spread through air when an infected person coughs or sneezes. They can also spread through contaminated food or water. Direct contact with an infected person is another common way of spread.

G. Long Answer Type Questions:

1. Explain the difference between communicable and non-communicable disease with examples.

Ans.

	Communicable Diseases	**Non-communicable Diseases**
1.	These diseases spread from one person to another.	These diseases do not spread from person to person.
2.	They are caused by pathogens like bacteria, viruses, protozoa, or worms.	They are mainly related to lifestyle, nutrition, or genetic factors.
3.	They can spread through air, water, food, contact, or insects.	They do not spread through contact, air, or water.
4.	These diseases are often short-term but can be serious.	These diseases are usually long-term and need regular care.
5.	**Examples:** Dengue, Cholera, Tuberculosis.	**Examples:** Diabetes, Cancer, Asthma.

2. Describe the role of vaccines in disease prevention.

Ans. Vaccines play an important role in preventing diseases. They help the immune system recognize and fight harmful germs. Vaccines are made from weakened or dead germs or parts of germs. They protect people from serious diseases like polio, measles, and tetanus. Vaccination also reduces the spread of infections in the community. Thus, vaccines save millions of lives every year.

3. How does Ayurveda suggest maintaining health?

Ans. Ayurveda suggests maintaining health by following a balanced and natural lifestyle. It emphasizes eating nutritious food and keeping the body clean. Ayurveda advises regular exercise, yoga, and meditation for physical and mental well-being. It also suggests adapting lifestyle according to seasons. Natural herbs and remedies are used to prevent illness. Thus, Ayurveda focuses on overall body, mind, and social health.

4 Electricity : Magnetic and Heating Effects

A. Multiple Choice Questions :

1. The scientist who discovered the magnetic effect of electric current was:

Ans. (b) Hans Christian Oersted

2. The strength of an electromagnet can be increased by:

Ans. (b) Increasing the number of turns of the coil

3. Which wire will heat up more for the same current and length?

Ans. (d) Thin nichrome wire

4. In a Voltaic cell, the liquid that helps conduct electricity is called:

Ans. (b) Electrolyte

B. Fill in the blanks:

1. The region around a magnet where its magnetic effect can be felt is called a **magnetic field.**
2. A current carrying coil that behaves like a magnet is called an **electromagnet.**
3. The warming of a conductor when current flows through it is called the effect of electric current **heating.**
4. The zinc container in a dry cell acts as the **negative** terminal.
5. The lemon juice in a lemon cell acts as an **electrolyte.**

C. State whether the following statements are True or False :

1. A coil becomes an electromagnet even when no current flows through it. **False**
2. Nichrome is commonly used as a heating element because it offers high resistance. **True**
3. Increasing the number of turns in an electromagnet coll increases its strength. **True**
4. A rechargeable battery can be used only once. **False**
5. Hans Christian Oersted discovered that a moving magnet can produce

electricity. **False**

D. Match the following :

	Column 'A'	Column 'B'
1.	Electric current	**Flow of electric charge**
2.	Magnetic effect	**Electric motor**
3.	Heating effect	**Produce heat**
4.	Electromagnet	**Temporary magnet**
5.	Fuse	**Safety device**

E. Very Short Answer Type Questions:

1. What is meant by magnetic effect of electric current?

Ans. When electric current flows through a conductor, it produces a magnetic field around it. This phenomenon is called the magnetic effect of electric current.

2. Narne one device where an electromagnet is used.

Ans. An electromagnet is used in an electric bell to produce sound.

3. What is the purpose of the electrolyte in a cell?

Ans. The electrolyte helps in the flow of electric current by allowing chemical reactions to take place inside the cell.

4. What is the function of a heating element in appliances?

Ans. The heating element converts electrical energy into heat energy. This heat is used in appliances like electric irons, heaters, and kettles.

F. Short Answer Questions:

1. How can we increase the strength of an electromagnet?

Ans. The strength of an electromagnet can be increased by increasing the number of turns of the coil. Using a stronger electric current also increases its strength. Placing a soft iron core inside the coil further strengthens the electromagnet. Increasing any of these factors makes the magnetic field stronger.

2. What is the principle behind the working of electric iron?

Ans. An electric iron works on the heating effect of electric current. When electric current flows through the heating element, it produces heat due to resistance. This heat is transferred to the soleplate of the iron. The heat helps in removing wrinkles from clothes.

3. How does a dry cell differ from a Voltaic cell?

Ans. A dry cell uses a paste-like electrolyte, while a Voltaic cell uses a liquid electrolyte. Dry cells are small, light, and easy to carry, whereas Voltaic cells are bulky and not portable. Dry cells are commonly used in daily appliances, but Voltaic cells are mainly used for experiments.

G. Long answer questions:

1. Describe an activity to demonstrate the magnetic effect of electric current using a compass.

Ans. Take a straight copper wire, a battery, a switch, and a magnetic compass. Place the

wire horizontally above the compass needle. When the switch is off, the compass needle points in the north–south direction. Now switch on the current and observe the compass needle. The needle deflects from its original position. Switch off the current and the needle returns to its original position. This shows that electric current produces a magnetic field around the wire.

2. What is an electromagnet? How is it made? List any two of its uses.

Ans. An electromagnet is a temporary magnet that works only when electric current flows through it. It is made by winding insulated copper wire around a soft iron nail or rod. The ends of the wire are connected to a battery to allow current to flow. When current passes, the iron core becomes magnetised. When the current is switched off, it loses magnetism. Uses: Electric bell, cranes for lifting heavy iron objects.

3. Explain the heating effect of electric current with an activity.

Ans. Take a thin nichrome wire, a battery, and a switch. Connect the nichrome wire in a circuit with the battery. When the switch is turned on, electric current flows through the wire. The wire becomes hot after some time. This shows that electric current produces heat when it passes through a conductor. This phenomenon is called the heating effect of electric current. It is used in appliances like electric irons and heaters.

5 Exploring Forces

A. Multiple Choice Questions :

1. The S.I. unit of force is :

Ans. (c) Newton

2. Ball beaings are used to :

Ans. (b) Decrease friction

3. Tyres have treads to :

Ans. (a) Increase Friction

4. Force of friction does not depend on :

Ans. (b) Speed of the body

5. Friction helps to :

Ans. (d) All of these

B. State whether the following statements are True or False :

1. Force can chang the shape of an object. **True**
2. Force cannot stop a moving body. **False**
3. Rough surface offers less friction than smooth surface. **False**
4. Ball bearings are used to increase friction. **False**
5. Friction has both advantages and disadvantages. **True**
6. Gravitational force is an example of contact force. **False**

C. Fill in the blanks :

1. A push or pull on an object is called **force.**
2. Magnetic force is an example of **non-contact** force.
3. A force can change the **state** of motion.
4. Like poles of magnet **repel** each other.
5. An objects falls on earth due to **gravitational** force.
6. The gravitational force of moon is about **one-sixth** that of earth.
7. Muscular force is an example of **contact** force.
8. Rolling friction is **less** than sliding friction.

D. Match the following :

	Column 'A'	**Column 'B'**
1.	Force	**Push or pull**
2.	Friction	**Opposes motion**
3.	Gravitational force	**Pulling force of the Earth**
4.	Balanced forces	**Do not change motion**
5.	Magnetic force	**Force acting without contact**

E. Very Short Answer Questions :

1. What is the SI unit of force?

Ans. The SI unit of force is Newton (N). It is named after scientist Isaac Newton.

2. Name one contact force.

Ans. Muscular force is a contact force. It acts only when there is physical contact with an object.

3. What causes friction between two surfaces?

Ans. Friction is caused due to the roughness of the surfaces in contact. The irregularities of surfaces oppose motion.

4. Define gravity in one line.

Ans. Gravity is the force by which the Earth attracts objects towards itself.

5. Give one example of a non-contat force.

Ans. Magnetic force is a non-contact force.It acts from a distance without touching the object.

F. Short Answer Questions :

1. What is meant by a force.

Ans. Force means a push or a pull acting on an object.It can change the state of rest or motion of an object. A force can also change the speed and direction of motion. Sometimes, it also changes the shape of an object.

2. How does a force change the shape of an object?

Ans. When a force is applied on an object, its shape may change. For example, stretching a rubber band changes its shape. Pressing or rolling dough changes its size and shape. Thus, force can deform objects.

3. Name any two effects of force.

Ans. Force can change the state of motion of an object. It can increase or decrease the

speed of a moving object. Force can also change the direction of motion. Sometimes, it changes the shape of an object.

4. What is contact force? Give one example.

Ans. A contact force is a force that acts only when two objects touch each other. It requires physical contact between objects. **Examples:** of contact force are muscular force and frictional force. Muscular force is used while lifting or pushing objects.

5. Why is friction called a contact force?

Ans. Friction acts only when two surfaces are in contact with each other. It opposes the motion of an object. If the surfaces are not touching, friction does not act. Therefore, friction is called a contact force.

6. How does muscular force help in daily activities?

Ans. Muscular force helps us to walk, run, lift and push objects. We use it while opening doors or carrying bags. Animals also use muscular force to pull carts and loads. Thus, muscular force is very important in daily life.

7. Why does a moving object slow down on its own?

Ans. A moving object slows down due to frictional force. Friction acts opposite to the direction of motion. Air resistance and surface friction reduce the speed. Finally, the object comes to rest.

G. Long Answer Type Questions :

1. Define force with the help of example.

Ans. Force is defined as a push or a pull acting on an object. It can change the state of rest or motion of an object. A force can increase or decrease the speed of a moving object.It can also change the direction of motion.Force may change the shape or size of an object. **For example**, pushing a stationary ball makes it move. Stretching a rubber band changes its shape.

2. What are the various effects of force ?

Ans. Force can influence an object in several distinct ways as outlined below:

1. Change in State of Motion: A force can make a stationary object move (like pushing a ball) or stop a moving object (like applying brakes to a cycle).

2. Change in Speed: If the force is applied in the direction of motion, the speed increases; if applied in the opposite direction, the speed decreases.

3. Change in Shape and Size: Applying force can alter the physical form of an object, such as rolling dough to make a chapati or stretching a rubber band.

3. What is the difference between contact and non contact force ?

Ans.

	Contact Force	**Non-Contact Force**
1.	Contact force works only when objects touch each other.	Non-contact force works without touching the object.
2.	Physical contact is necessary.	Physical contact is not necessary.
3.	It acts through direct interaction.	It acts from a distance.
4.	It cannot act if objects are far apart.	It can act even when objects are far apart.
5.	**Examples:** Friction, Muscular force.	**Examples:** Gravitational, Magnetic force.

6. Mostly used in daily physical activities. Acts naturally in nature.

4. Explain electrostatic force.

Ans. Electrostatic force is the force exerted by a charged body on another charged or uncharged body. This force comes into play even when the bodies are not in physical contact, making it a type of non-contact force. An example of this is when a plastic scale rubbed against hair attracts small pieces of paper or a suspended plastic rod.

5. Write two advantages and two disadvantage of friction.

Ans. Friction is often described as a "necessary evil" because it has both beneficial and harmful effects.

Advantages of friction:

1. It allows us to perform essential daily tasks like walking, sitting, and writing without slipping.

2. It enables us to hold objects in our hands and tie knots in ropes.

Disadvantages of friction:

1. It causes wear and tear in the moving parts of machinery and automobiles, reducing their life and efficiency.

2. It produces heat in moving parts, which leads to a significant waste of energy and fuel.

6. Write two methods of increasing friction.

Ans. Sometimes increasing friction is necessary for safety and functionality:

1. Treading: Tyres of vehicles are designed with treads to increase the grip and friction between the tyre and the road to prevent slipping.

2. Surface Roughness: Making a surface rougher, such as by spreading sand on a slippery road or designing shoe soles with special patterns, increases friction.

7. What is meant by sliding friction.

Ans. Sliding friction is the force of friction that acts when one object slides over the surface of another object. It comes into action only when the two surfaces are in direct contact.This friction always acts opposite to the direction of motion. Sliding friction is greater than rolling friction. More force is required to slide an object on a surface.

6 Pressure, Winds, Storms and Cyclones

A. Multiple Choice Questions :

1. Air moves from a region of:

Ans. (b) high pressure to low pressure

2. Which gas is the major component of air?

Ans. (b) Nitrogen

3. Unit of pressure is :

Ans. (c) Both (a) and (b)

4. Pressure is equal to :

Ans. (b) Force ÷ Area

5. Liquids exert pressure on :

Ans. (c) Both (a) and (b)

6. Dams are made :

Ans. (c) Thicker at the bottom

B. Fill in the blanks :

1. **Pressure** is defined as the force action on a unit area of a surface.
2. Gases exert pressure on the **walls** of their container.
3. Air always flows from a region of **high pressure** to a region of **low pressure.**
4. Strong winds during storms are often accompanied by **thunder** and **lightning.**
5. **Lightning** can cause serious injuries or even death to humans and animals.

C. State whether the following statements are True or False :

1. The unit of pressure is Pascal. **True**
2. Force is defined as pressure per unit area. **False**
3. The atmospheric pressure increases as we go high. **False**
4. Pressure is same at different heights. **False**

D. Very Short Answer Type Questions :

1. What is the SI unit of pressure?

Ans. The SI unit of pressure is Pascal (Pa). It is equal to one newton per square metre (N/m^2).

2. Which gas is present in the highest proportion in air?

Ans. Nitrogen is present in the highest proportion in air. It forms about 78% of the atmosphere.

3. What is the calm central part of a cyclone called?

Ans. The calm central part of a cyclone is called the eye. It has very low pressure and light winds.

4. Name the device that protects buildings from lightning.

Ans. A lightning conductor is used to protect buildings from lightning. It safely transfers electric charge to the ground.

5. In which direction does air move from high pressure to low pressure, or low pressure to high pressure?

Ans. Air always moves from a region of high pressure to low pressure. This movement of air is called wind.

E. Short Answer Type Questions :

1. Why does air rush out when the mouth of an inflated balloon is left open?

Ans. Air inside an inflated balloon is under high pressure. When the mouth of the balloon is opened, the pressure inside becomes greater than the pressure outside. So, air moves from the region of high pressure to low pressure. That is why air rushes out of the balloon.

2. Explain why sea breeze blows during the daytime.

Ans. During the daytime, land gets heated faster than sea water. Warm air over the land rises and creates a low-pressure area. Cool air over the sea moves towards the land to fill this space. This movement of air from sea to land is called sea breeze.

3. What are storm surges?

Ans. Storm surges are abnormal rises in sea water level during cyclones. Strong winds push sea water towards the shore. This causes flooding in coastal areas. Storm surges can damage houses, crops, and lives.

4. Name any two safety measures to be taken during a thunderstorm.

Ans. We should avoid standing under tall trees during a thunderstorm. We should stay inside buildings or closed vehicles. Do not use umbrellas with metal rods. These measures help protect us from lightning.

5. Why is it difficult to ride a bicycle against the wind?

Ans. When we ride a bicycle against the wind, the wind pushes in the opposite direction. This creates resistance to motion. More force is required to move forward. Therefore, riding a bicycle against the wind becomes difficult.

F. Give reason for the following :

1. A cutting knife has sharp edge.

Ans. A sharp edge has a very small area of contact. When force is applied, more pressure is produced, which makes cutting easy.

2. Skis have large area of contact with snow.

Ans. Large area of contact reduces the pressure on snow. This prevents the skis from sinking into the snow.

3. Foundation of walls are broad.

Ans. Broad foundations increase the area of contact with the ground. This reduces pressure and prevents buildings from sinking.

4. Porters place a round piece of cloth on their heads to carry heavy loads.

Ans. The cloth increases the area of contact between the load and the head. This reduces pressure and makes it easier to carry the load.

5. Dams are made stronger and thicker at the bottom than at the top.

Ans. Water pressure increases with depth. So, the bottom of the dam experiences more pressure and must be stronger.

E. **Long Answer Type Questions :**

1. Define the term pressure.

Ans. Pressure is defined as the force acting on a unit area of a surface. It is calculated using the formula Pressure = Force / Area, where force is measured in Newtons (N) and area in square meters (m^2), giving pressure in Pascals (Pa). For example, a sharp nail penetrates easily because it applies the same force over a smaller area, increasing pressure.

2. Why does a balloon bursts if we blow too much air in it.

Ans. When air is blown into a balloon, the air inside exerts pressure on the balloon's walls due to gas particles colliding. Blowing too much air increases the number of

particles, raising internal pressure beyond the elastic limit of the rubber. Eventually, the balloon bursts as it cannot withstand this high pressure.

3. Give an activity to show that pressure is equal at equal depths.

Ans. Take a plastic container and drill five holes at the same depth, then fill it with water. Streams of water from all holes fall at the same distance from the container. This demonstrates that liquid pressure is equal at equal depths, regardless of direction.

4. Explain the principle of a barometer with the help of a diagram.

Ans. A barometer measures atmospheric pressure using a mercury-filled glass tube inverted in a dish of mercury. Atmospheric pressure supports a column of mercury, whose height indicates pressure (e.g., 76 cm at sea level). Higher pressure pushes mercury higher; lower pressure allows it to fall. (Diagram: Tube closed at top, open end in mercury dish, vacuum above column.)

5. Explain the working of a vacuum cleaner.

Ans. A vacuum cleaner works on the principle of air pressure difference. When switched on, the motor creates a low-pressure area inside the cleaner. The air outside has higher pressure. So, air rushes inside carrying dust and dirt. Dust particles are trapped in the dust bag. Clean air is released back into the room.

6. If a girl of mass 50 kg is standing on pencil heds of area of cross-section of 2cm2. Find the pressure exerted by her on the ground.

Ans. Mass of the girl = 50 kg

Force = mass × gravity = $50 \times 10 = 500$ N

Area = $2\ cm^2 = 2 \times 10^{-4}\ m^2$

Pressure = Force ÷ Area

Pressure = $500 \div (2 \times 10^{-4})$

Pressure = 2.5×10^6 Pa

Pressure exerted by the girl on the ground = 2.5×10^6 Pascal

7. If a force of 40N is applied over an area of 40m2. Find the pressure.

Ans. Force = 40 N

Area = $40\ m^2$

Pressure = Force ÷ Area

Pressure = $40 \div 40$

Pressure = 1 Pa

Thus, the pressure exerted is 1 Pascal.

7 Particulate Nature of Matter

A. Multiple Choice Questions :

1. What is the smallest unit of a substance that retains its properties?

Ans. (b) Constituent particles

2. Which state of matter has particles that vibrate in fixed positions?

Ans. (a) Solid

3. What happens to the particles of a solid when heated to its melting point?

Ans. (a) They move away from fixed positions

4. Which of the following is true about gases?

Ans. (c) Their particles move freely in all directions

B. Fill in the blanks :

1. Matter is made up of **constituent** particles.
2. The distance between particles is called **interparticle** spacing.
3. Particles in a gas move **freely** in all directions.
4. The temperature at which a liquid boils is called the **boiling** point.
5. Sugar dissolves in water because its particles spread out in the **interparticle** spaces.

C. State whether the following statements are True or False :

1. Liquids have a fixed Volume but no fixed shape. **True**
2. Particels of solids can only vibrate in fixed positions. **True**
3. Gases have strong interparticle attractions. **False**
4. Evaporation happens only at the boiling point. **False**
5. Thermal energy increases particle movement. **True**

D. Very Short Answer Type Questions:

1. What is meant by constituent particles?

Ans. Constituent particles are the smallest units of a substance that retain its properties. All matter is made up of these tiny particles.

2. How are particles arranged in a solid?

Ans. In a solid, particles are very closely packed. They vibrate at fixed positions and do not move freely.

3. Why do liquids take the shape of their container?

Ans. Because the particles of liquids can move freely within a limited space. So, liquids have no fixed shape but a fixed volume.

4. What is interparticle attraction?

Ans. Interparticle attraction is the force of attraction between particles of matter. It holds the particles together.

5. Give an example of a physical change.

Ans. Melting of ice into water is a physical change. Only the state changes, not the substance itself.

E. Short Answer Type Questions:

1. Explain how the particles of matter behave in solids, liquids, and gases.

Ans. The behavior of particles depends on the strength of interparticle attraction and the spacing between them:

1. Solids: Particles are tightly packed and held by strong attractive forces. They cannot move from place to place and only vibrate in fixed positions.

2. Liquids: Particles are less tightly packed than in solids, with weaker attractive forces. They can move freely but only within a limited space.

3. Gases: Particles are very far apart with negligible attraction. They move freely in all directions and fill the entire space available to them.

2. What role does thermal energy play in changing the state of matter?

Ans. Thermal energy increases the movement of particles. When heat is supplied, particles gain energy and overcome attractive forces. This causes a change of state from solid to liquid and liquid to gas. Cooling removes thermal energy and reverses the process.

3. Describe an activity to show the movement of particles in a liquid?

Ans. Take a glass of water and add a crystal of potassium permanganate. The purple colour spreads throughout the water without stirring. This shows that particles of liquid are in continuous motion. Faster spreading occurs in warm water.

4. Why do gases not have a fixed shape or volume?

Ans. Gas particles are far apart and have very weak attraction. They move freely in all directions. Therefore, gases spread to fill the entire container. So, gases have neither fixed shape nor fixed volume.

5. How does sugar dissolve in water? Explain using the particular model.

Ans. When sugar is added to water, it breaks into tiny particles. These particles spread into the spaces between water particles. This shows the presence of interparticle spaces in liquids. Thus, sugar dissolves due to the particulate nature of matter.

F. **Long Answer Type Questions:**

1. Describe the particulate nature of matter and explain how the arrangement and movement of particles differ in solids, liquids, and gases.

Ans. **Particulate Nature of Matter:** Matter consists of tiny constituent particles held together by interparticle attractive forces, with their spacing, arrangement, and movement determining the physical state. These particles exist in solids, liquids, and gases, exhibiting distinct behaviors based on thermal energy and force strength.

Arrangement and Movement Differences

1. Solids: Particles are closely packed in a regular pattern with minimum interparticle spacing and maximum attractive forces. They only vibrate in fixed positions, giving solids a definite shape and volume.

2. Liquids: Particles are loosely packed with more spacing than solids and weaker forces, arranged irregularly. They slide past each other within a limited space, allowing flow while maintaining fixed volume but no fixed shape.

3. Gases: Particles are far apart with maximum spacing and negligible forces. They move freely and rapidly in all directions, filling any container completely, hence no fixed shape or volume.

2. Explain with examples how heating affects the particles of a solid and leads to a change in state.

Ans. When a solid is heated, its particles gain thermal energy. They start vibrating faster and move away from their fixed positions. The attractive forces between particles become weaker. At the melting point, the solid changes into a liquid. For example, ice melts into water on heating. Further heating can change liquid into gas.

3. Compare and contrast the properties of solids, liquids, and gases based on particle movement, spacing. and forces of attraction.

Ans. In solids, particles are closely packed with strong attraction and only vibrate. In liquids, particles have more space, weaker attraction, and limited movement. In gases, particles are far apart with negligible attraction. Gas particles move freely in all directions. Thus, solids have fixed shape and volume, liquids have fixed volume,while gases have neither fixed shape nor volume.

4. Discuss the process of diffusion with the help of an experiment involving potassium permanganate.

Ans. Take a glass of water and add a crystal of potassium permanganate. Without stirring, the purple colour slowly spreads throughout the water. This spreading shows that particles move from a region of high concentration to low concentration. This process is called diffusion. It proves that particles of matter are continuously moving. Diffusion happens faster in hot water.

5. Explain how the particulate nature of matter helps in the cleaning process using soap.

Ans. Soap is made of tiny particles called soap molecules. One end of the soap particle sticks to oil or dirt, while the other end mixes with water. Soap breaks large oil patches into small droplets. These droplets get surrounded by soap particles. The dirt is then washed away with water. Thus, cleaning occurs due to the particulate nature of matter.

8 Nature of Matter - Elements Compounds and Mixtures

A. Multiple Choice Questions :

1. Air is an example of a:

Ans. (b) mixture

2. Stainless steel is an alloy made of:

Ans. (b) iron, nickel, chromium, carbon

3. Which of these is a pure substance?

Ans. (b) Sugar

4. Hydrogen burns with:

Ans. (b) a pop sound

5. The green colour of the Statue of Liberty is due to:

Ans. (b) oxidation of copper

B. State whether the following statements are True or False :

1. Elements can be broken down into simpler substance. **False**
2. Air is a uniform mixture. **True**
3. Hydrogen burns with a pop sound. **True**
4. All compounds can be separated by filtration. **False**
5. Alloys are examples of copounds. **False**

C. Fill in the blanks :

1. A mixture of two or more metals is called an **alloy.**
2. A pure substance is made up of only one kind of **particle.**
3. The gas that makes up about 78% of air is **nitrogen.**
4. Bronze is made of copper and **tin.**
5. Water is a **compound** of hydrogen and oxygen.

D. Very Short Answer Type Questions:

1. Define matter.

Ans. Matter is anything that has mass and occupies space. All living and non-living things around us are made of matter.

2. Give one example each of uniform and non-uniform mixture.

Ans. A uniform mixture is salt dissolved in water. A non-uniform mixture is sand and water.

3. Name the two elements in common salt.

Ans. The two elements present in common salt are sodium and chlorine.

4. What is adulteration?

Ans. Adulteration is the mixing of unwanted or harmful substances with food or other materials to increase profit or quantity.

5. Write the formula of water.

Ans. The chemical formula of water is H_2O.

E. **Short Answer Type Questions:**

1. Differentiate between an element and a compound.

Ans.	**Element**	**Compound**
1.	An element is a pure substance made of only one kind of atom.	A compound is a pure substance formed by the chemical combination of two or more elements.
2.	It cannot be broken down into simpler substances.	It can be broken down into elements by chemical methods.
3.	It has only one type of particle.	It has different types of particles combined in a fixed ratio.
4.	Properties of an element are unique to it.	Properties of a compound are different from the elements forming it.
5.	**Example:** Iron, oxygen	**Example:** Water, common salt

2. Why is stainless steel preferred over pure Iron?

Ans. Stainless steel is stronger and more durable than pure iron. It does not rust easily because it contains chromium, which forms a protective layer. It is corrosion-resistant and easy to clean. Therefore, stainless steel is preferred for making utensils and tools.

3. Write two differences between mixtures and compounds.

Ans.	**Mixture**	**Compound**
1.	The components of a mixture retain their	The elements in a compound lose their

	individual properties.	individual properties and form new properties.
2.	A mixture can be separated by physical methods like filtration or evaporation.	A compound cannot be separated by physical methods and needs chemical methods.

4. Explain with an example why properties of compounds differ from their elements.

Ans. When elements combine chemically, they form a new substance with different properties. For example, sodium is a highly reactive metal and chlorine is a poisonous gas. When they combine, they form sodium chloride (common salt), which is safe and edible. This shows compounds have properties different from their elements.

5. What is the importance of air in our life?

Ans. Air provides oxygen for breathing, which is essential for life. It supplies carbon dioxide for photosynthesis in plants. Nitrogen in air helps in plant growth. Air also supports burning and regulates weather.

F. Long Answer Type Questions:

1. Explain with activities the difference between a mixture and a compound (iron + sulphur experiment).

Ans.	**Mixture (Iron + Sulphur)**	**Compound (Iron Sulphide)**
1.	Iron filings and sulphur powder are mixed without heating.	The mixture is heated strongly to form iron sulphide.
2.	Components retain their original properties.	A new substance with new properties is formed.
3.	Iron can be separated using a magnet.	Iron cannot be separated by a magnet.
4.	Colour is non-uniform (yellow sulphur and grey iron).	Colour is uniform black throughout.
5.	Can be separated by physical methods.	Cannot be separated by physical methods.
6.	Shows properties of both iron and sulphur.	Does not show properties of iron or sulphur.

2. Describe the electrolysis of water experiment. What does it prove about water?

Ans. In the electrolysis of water, electric current is passed through water containing a little acid. Water decomposes into two gases which are collected in separate test tubes. Hydrogen gas is collected at the cathode and burns with a pop sound. Oxygen gas is collected at the anode and supports burning. The volume of hydrogen is double that of oxygen. This proves that water is a compound made of hydrogen and oxygen in a fixed ratio.

3. Discusss the uses of alloys with suitable examples.

Ans. Alloys are mixtures of metals made to improve strength and resistance. Stainless steel is used for utensils and surgical tools because it does not rust. Brass is used for making musical instruments and decorative items. Bronze is used to make statues and medals. Alloys are harder and more durable than pure metals. Hence, they are widely used in

daily life and industries.

4. What are minerals? Explain their importance in daily life with examples.

Ans. Minerals are naturally occurring substances found in the Earth's crust. They are obtained by mining and are used as raw materials for many useful products in our daily life.

Importance of minerals in daily life (with examples):

1. Iron is used to make tools, machines, bridges, and vehicles.

2. Copper is used for making electric wires and utensils.

3. Coal is used as a fuel to produce electricity in power plants.

4. Limestone is used in making cement and buildings.

5. Gold and silver are used to make jewellery and coins.

Thus, minerals are very important because they help in construction, electricity production, transportation, and making useful items for daily use.

5. How are elements, compounds, and mixtures used in technology and art?

Ans. Elements like iron, aluminium, and copper are used in machines and buildings. Compounds are used in medicines, fuels, and fertilizers. Mixtures like alloys are used to make strong materials for tools and vehicles. In art, metals and alloys are used to make statues and decorative items. Dhokra art uses metals like brass and bronze. Hence, elements, compounds, and mixtures play an important role in technology and art.

9 The Amazing World of Solutes, Solvents and Solutions

A. Multiple Choice Questions :

1. Which of the following is a solute in ORS?

Ans. (b) Salt

2. A solution in which more solute can still dissolve is called:

Ans. (c) unsaturated solution

3. What happens to the solubility of sugar in water when temperature increases?

Ans. (b) Increases

4. Which of the following is a uniform mixture?

Ans. (b) Sugar dissolved in water

5. The curved surface of liquid in a measuring cylinder is called:

Ans. (b) meniscus

B. Fill in the blanks :

1. Solute + Solvent = **Solution.**
2. A solution in which no more solute dissolves is called **Saturated solution.**
3. The density of a substance is defined as **Mass** divided by **Volume.**
4. Ice floats on water because it is **less dense** than water.
5. Water dissolves more solids at **higher** temperature.

C. State whether the following statements are True or False :

1. Non-uniform mixtures have envely distributed components. **False**

2. Air is an example of a gaseous solution. **True**
3. Relative density has a unit. **False**
4. Hot air rises because it is denser than cold air. **False**
5. Salt becomes more soluble in water as temperature increases. **True**

D. Very Short Answer Type Questions:

1. Define solution.

Ans. A solution is a uniform mixture in which a solute dissolves completely in a solvent. Its components are evenly distributed and cannot be seen separately.

2. Name two solutes that dissolve in water.

Ans. Salt and sugar are two common solutes that dissolve easily in water.

3. What is the difference between saturated and unsaturated solutions?

Ans. A saturated solution cannot dissolve any more solute at a given temperature. An unsaturated solution can still dissolve more solute.

4. How does temperature affect solubility?

Ans. Increase in temperature generally increases the solubility of solids in water. Therefore, solids dissolve faster in hot water.

5. Give an example of a uniform mixture and a non-unifrom mixture.

Ans. Sugar dissolved in water is a uniform mixture. Sand in water is a non-uniform mixture.

E. Short Answer Type Questions:

1. Explain why sugar dissolves fater in hot water than in cold water.

Ans. In hot water, water molecules have more energy and move faster. They collide more frequently with sugar particles. This breaks the sugar particles quickly and helps them dissolve faster. Therefore, sugar dissolves faster in hot water than in cold water.

2. How can you determine the density of a liquid?

Ans. First, measure the mass of the liquid using a weighing balance. Then measure its volume using a measuring cylinder. Divide mass by volume using the formula: Density = Mass ÷ Volume. The result gives the density of the liquid.

3. Describe an activity to find the solubility of salt in water.

Ans. Take a glass of water and add one spoon of salt, then stir well. Keep adding salt spoon by spoon while stirring each time. After some time, salt stops dissolving and settles at the bottom. This shows the solubility limit of salt in water.

4. Why does cold water hold more oxygen than warm water?

Ans. The solubility of gases decreases as temperature increases. Cold water can dissolve more oxygen than warm water. This helps aquatic plants and animals to survive. Warm water holds less oxygen.

5. What is concentration? Give an example of a concentrated solution.

Ans. Concentration is the amount of solute present in a fixed amount of solvent. A solution with more solute and less solvent is concentrated. For example, adding more salt in less water makes a concentrated solution.

F. Long Answer Type Questions:

1. Describe the differene between uniform and non-uniform mixtures with examples.

Ans.

	Uniform Mixture	**Non-Uniform Mixture**
1.	Components are evenly distributed throughout the mixture.	Components are unevenly distributed in the mixture.
2.	The mixture has the same appearance in all parts.	The mixture does not look the same in all parts.
3.	Individual components cannot be seen separately.	Components can be seen separately.
4.	Such mixtures are also called solutions.	Such mixtures are not called solutions.
5.	Physical properties are the same throughout.	Physical properties vary from place to place.
6.	Particles are very small and well mixed.	Particles are larger and not well mixed.
7.	Separation of components is difficult.	Separation of components is easy.
8.	**Example:** Sugar dissolved in water.	**Example:** Sand mixed with water.

2. Explain the factors affecting solubility with examples.

Ans. Solubility depends on the nature of solute and solvent. Some substances dissolve easily in water, while others do not.Temperature is an important factor affecting solubility. Generally, solubility of solids increases with rise in temperature. For example, more sugar dissolves in hot water than in cold water. For gases, solubility decreases with increase in temperature. Thus, solubility varies with substance and conditions.

3. Discuss the concept of density and relative density with practical examples.

Ans. Density is defined as the mass per unit volume of a substance.It is calculated using the formula Density = Mass ÷ Volume. Density helps us know how heavy a substance is for its size. For example, iron feels heavier than wood because iron has higher density. Relative density is the ratio of density of a substance to density of water. It has no unit because it is a ratio. For example, aluminium has a relative density of 2.7, so it is denser than water.

4. Explain the process of measuring volume for liquids and solids, including irregular objects.

Ans. The volume of liquids is measured using a measuring cylinder. Liquids are read at the bottom of the meniscus for colourless liquids. The volume of solids with regular shape is found using mathematical formulas. For example, volume of a cuboid = length × breadth × height. Irregular solids like stones are measured by the water displacement method. The rise in water level gives the volume of the object. Thus, volume of all objects can be measured accurately.

5. How does temperature affect both the solubility of solids and gases? Give example.

Salt and Sugar Mixtures: Prepare solution with different amounts of salt and sugar; identify dilute and concentrated solution.

Floating Egg Experiment: Measure volume of irregular objects using water displacement method.

Temperature and Solubility: Dissolve sugar in cold and hot water; observe

dirrerences in dissolving speed.

Density Art: Use liquids like oil, water, honey and syrup to create colourful layers in a transparent glass; relate to density differences.

Ans. Temperature affects the solubility of solids and gases in opposite ways: as temperature increases, the solubility of most solids increases, but the solubility of gases decreases. For example, more sugar can be dissolved in hot water than in cold water, while cold water holds more dissolved oxygen than warm water.

1. Salt and Sugar Mixtures: A dilute solution is formed when a small amount of salt or sugar is added to a large amount of water, whereas a concentrated solution contains a much larger amount of solute in the same volume of water.

2. Floating Egg & Water Displacement: To measure the volume of an irregular object like a stone, it is lowered into a measuring cylinder filled with water; the increase in the water level (final volume minus initial volume) equals the object's volume.

3. Temperature and Solubility: Sugar dissolves much faster in hot water because higher temperatures cause water molecules to move more rapidly, allowing them to break down the sugar crystals more quickly than in cold water.

4. Density Art: Liquids of different densities, such as honey (most dense), syrup, water, and oil (least dense), can be layered in a glass without mixing, with the densest liquid settling at the bottom and the least dense floating on top.

10 Light

A. Multiple Choice Questions :

1. The image formed by a plane mirror is always _____.

Ans. (d) all of these

2. Diffused reflection will not take place through _____.

Ans. (d) marble

3. The colour which bends the least when white light passes through a prism _____.

Ans. (a) red

B. Fill in the blanks :

1. The ray of light which falls on the reflecting surface is called the **incident ray.**
2. Measure of the angle of incidence and angle of **reflection** are equal.
3. Image size and the object size are the **same** in plane mirror.

C. State whether the following statements are True or False :

1. Light always travels in a straight line. **True**
2. A plane mirror forms a real image. **False**
3. Convex lens converges light rays. **True**
4. Myopia is corrected using a convex lens. **False**
5. The image formed on the retina is inverted. **True**

C. Match the following.

	Column A		Column B
1.	Cornea	**(b)**	**external covering of eyes**
2.	Myopia	**(d)**	**corrected through lens**
3.	Refraction	**(e)**	**bending of pen in water**
4.	Normal	**(c)**	**imaginary line perpendicular to mirror**
5.	Kaleidoscope	**(a)**	**shows multiple reflections**

D. Answer the following long questions:

1. If an object is placed at distance of 5 cm in front of a plane mirror, how far would it form its image?

Ans. A plane mirror always forms the image at the same distance behind the mirror as the object is in front of it. So, if the object is placed 5 cm in front of the mirror, the image will be formed 5 cm behind the mirror. The image formed is virtual and erect in nature. The size of the image is equal to the size of the object. This property of a plane mirror is known as the law of reflection. Hence, the image distance is equal to the object distance.

2. How many images of a coin will be formed if it is placed between two parallel mirrors separated by a distance of 10 cm?

Ans. When two plane mirrors are placed parallel to each other, multiple reflections take place. The image formed in one mirror acts as an object for the other mirror. This process continues again and again. As a result, an infinite number of images are formed. The distance between the mirrors does not affect the number of images. Therefore, the coin will form infinite images between the two mirrors.

3. What is a blind spot?

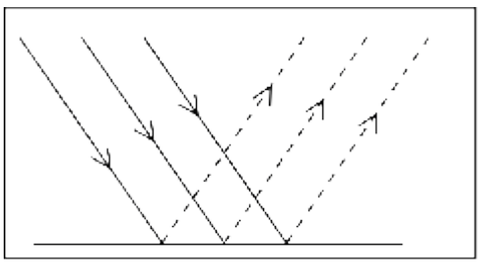
Ans. Blind spot is a point on the retina of the eye where the optic nerve leaves the eye. This point does not have light-sensitive cells like rods and cones. Hence, no image is formed at this point. We are usually not aware of the blind spot because both eyes work together. The brain fills the missing information from the other eye. Therefore, the blind spot does not affect our normal vision.

E. Answer the following long Questions :

1. Differentiate between regular and irregular reflection with the help of a diagram.

Ans. **1. Regular Reflection:**

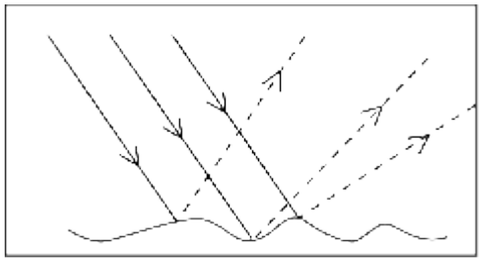
1. Regular reflection occurs when light falls on a smooth and polished surface.
2. The surface reflects light rays in a uniform manner.
3. The reflected rays remain parallel to each other.
4. A clear and sharp image is formed.
5. All incident rays follow the same angle of reflection.
6. The direction of reflected light is well defined.
7. Regular reflection follows the laws of reflection properly.
8. Example: Plane mirror, new stainless steel utensils.



Regular reflection

2. Irregular (Diffused) Reflection:

1. Irregular reflection occurs when light falls on a rough or uneven surface.
2. The surface reflects light rays in different directions.
3. The reflected rays are not parallel to each other.
4. A blurred or no clear image is formed.
5. Each reflected ray follows the law of reflection but in a different direction.
6. The direction of reflected light is not fixed.
7. Irregular reflection causes scattering of light.
8. Example: Wall, paper, old stainless steel utensils.



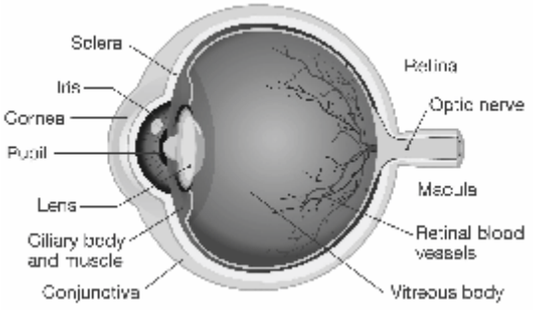
Diffused reflection

2. Show that the incident ray, the reflected ray and the normal at the point of incidence lie in the same plane.

Ans. When a ray of light falls on a plane mirror, it gets reflected from the surface. At the point where the ray strikes the mirror, a normal is drawn perpendicular to the surface. Experiments show that the incident ray, reflected ray and the normal all lie on the same flat surface. If the paper on which the rays are drawn is bent, the reflected ray disappears. This proves that all three rays must lie in one plane. This statement forms one of the laws of reflection. Hence, the incident ray, reflected ray and normal lie in the same plane.

3. Draw a labelled diagram of the eye.

Ans. **1.** The human eye is an important sense organ that helps us to see objects clearly.
2. Light enters the eye through the cornea, which is the transparent front part of the eye.
3. The iris controls the size of the pupil according to the amount of light.
4. The pupil allows light to enter inside the eye.
5. The eye lens focuses the incoming light rays.
6. A real and inverted image is formed on the retina.
7. The optic nerve carries visual signals from the retina to the brain.
8. All these parts work together to provide clear vision.



11 Keeping Time with the Skies

A. Multiple Choice Questions :

1. The time taken by the Moon to complete one cycle of phases is about:

Ans. (b) 29.5 days ?

2. Which phase of the Moon occurs when it is closest to the Sun in the sky?

Ans. (c) New Moon?

3. The Indian National Calendar starts on:

Ans. (b) March 22

4. The waning phase of the Moon in Indian tradition is called:

Ans. (b) Krishna Paksha

5. ISRO's Aditya L1 mission is for studying:

Ans. (b) The Sun

B. Fill in the blanks :

1. The Moon takes about **29.5 days** to complete all its phases.
2. A **waxing Moon** is best observed around sunset.
3. **Leap years** are added to keep the solar calendar aligned with seasons.
4. The **Indian National Calendar** begins on March 22 in a normal year.
5. **Space debris** can be created by defunct satellites and rocket parts.

B. State whether the following statements are True or False :

1. The phases of the Moon are caused by Earth's shadow. **False**
2. A lunar year is shorter than a solar year. **True**
3. Lunar eclipses occur only on a full Moon day. **True**
4. The Moon produces its own light. **False**
5. Artificial satellites can be seen moving in the night sky. **True**

C. Very Short Answer Type Questions:

1. What is the time taken by the Moon to complete its phases?

Ans. The Moon takes about 29.5 days to complete one full cycle of phases. This period is called a lunar month.

2. What is Krishna Paksha?

Ans. Krishna Paksha is the waning phase of the Moon. During this phase, the visible bright part of the Moon gradually decreases after the Full Moon.

3. Which Iridian scientist chaired the Calendar Reform Committee?

Ans. Meghnad Saha chaired the Calendar Reform Committee. He played an important role in developing India's modern calendar system.

4. What does ISRO's AstroSat study?

Ans. AstroSat studies stars, galaxies, and other celestial objects. It helps scientists understand high-energy processes in space.

5. Name one application of artificial satellites.

Ans. Artificial satellites are used for weather forecasting. They help predict rainfall, cyclones, and other weather conditions.

D. Short Answer Type Questions:

1. Explain why the Moon's appearance changes over a month.

Ans. The Moon does not produce its own light; it reflects sunlight. As the Moon revolves around the Earth, the position of the Moon with respect to the Sun keeps changing. Because of this, different portions of the illuminated part of the Moon are visible from Earth. These changing views are called the phases of the Moon.

2. Differentiate between waxing and waning phases.

Ans.	Waxing Phase	Waning Phase
1.	The bright portion of the Moon increases day by day.	The bright portion of the Moon decreases day by day.
2.	It starts after the New Moon.	It starts after the Full Moon.
3.	The Moon appears brighter each day.	The Moon appears less bright each day.
4.	In Indian tradition, it is called Shukla Paksha.	In Indian tradition, it is called Krishna Paksha.
5.	Best observed around sunset.	Best observed around sunrise.

3. Why are leap years added to the solar calendar?

Ans. The Earth takes about 365¼ days to revolve around the Sun. A normal calendar year has only 365 days. The extra quarter day adds up to one full day in four years. To adjust this difference and keep the calendar aligned with seasons, a leap year is added every four years.

4. What is Adhika Maasa?

Ans. Adhika Maasa is an extra month added in the Indian luni-solar calendar. It is added every 2–3 years to adjust the difference between the lunar year and the solar year. This helps in keeping the months aligned with the seasons.

5. Mention two differences between lunar and solar calendars.

Ans.	Lunar Calendar	Solar Calendar
1.	Based on the phases of the Moon.	Based on the revolution of the Earth around the Sun.
2.	A year has about 354 days.	A year has about 365 days.
3.	Months are about 29–30 days long.	Months have 30 or 31 days (February has 28/29).
4.	Seasons do not remain fixed with months.	Seasons remain fixed with months.
5.	**Example:** Islamic calendar.	**Example:** Gregorian calendar.

F. Long Answer Type Questions:

1. Describe the phases of the Moon and their causes.

Ans. The Moon does not produce its own light and shines by reflecting sunlight. As the Moon revolves around the Earth, its position relative to the Sun keeps changing. Because of this, different portions of the illuminated half of the Moon are visible from Earth. These changing appearances are called phases of the Moon. The main phases include New Moon, Crescent, Half Moon, Gibbous, and Full Moon. The complete cycle of phases takes about 29.5 days. The phases are not caused by Earth's shadow.

2. Explain how ancient civilisations used astronomical observations to develop calendars.

Ans. Ancient civilisations closely observed the movements of the Sun, Moon, and stars. The daily rising and setting of the Sun helped them define a day. The regular change in the Moon's phases was used to measure a month. The cycle of seasons, caused by the Earth's revolution around the Sun, helped define a year. Using these natural cycles,

people developed lunar, solar, and luni-solar calendars. These calendars helped them plan agriculture, festivals, and daily life.

3. Compare lunar, solar, and luni-solar calendars with examples.

Ans. A lunar calendar is based on the phases of the Moon and has about 354 days in a year. A solar calendar is based on Earth's revolution around the Sun and has about 365 days. A luni-solar calendar uses lunar months but adds adjustments to stay aligned with seasons. Each type of calendar helps measure time in a different way. **Example:** Islamic calendar (lunar), Gregorian calendar (solar), Hindu calendar (luni-solar).

4. Discuss the uses of artificial satellites and give examples of ISRO missions.

Ans. Artificial satellites are man-made objects placed in orbit around the Earth. They are used for communication, weather forecasting, navigation, disaster management, and Earth observation. Satellites help in television broadcasting, GPS services, and cyclone warnings. ISRO has launched many satellites for different purposes. **Example:** INSAT for communication, NAVIC for navigation, and Aditya-L1 for studying the Sun.

5. Explain why lunar eclipses are rare and not part of regular Moon phases.

Ans. A lunar eclipse occurs only when the Earth comes exactly between the Sun and the Moon on a full Moon day. The Moon's orbit is tilted with respect to the Earth's orbit around the Sun. Due to this tilt, the Sun, Earth, and Moon do not align every month. Therefore, eclipses do not occur regularly. Lunar eclipses are rare events and are not responsible for the Moon's phases.

12 How Nature Works in Harmony

A. Multiple Choice Questions :

1. Forest animals such as elephants and tigers enter villages mainly because

Ans. (c) Their habitats shrink due to deforestation

2. Which of the following is an abiotic component?

Ans. (b) Sunlight

3. In an ecosystem, producers are mainly:

Ans. (b) Plants

4. Decompasers such as fungi and bacteria help ecosystems by:

Ans. (b) Breaking down dead matter

5. Mangrove roots in the Sundarbans mainly help by:

Ans. (b) Absorbing force of cyclones and reducing flooding

B. State whether the following statements are True or False :

1. Overharvesting of Indian bullfrogs increased crop pests. **True**
2. Competition among organisms always destroys ecosystems. **False**
3. Soil, water, air, and temperature are abiotic factors. **True**
4. Human-made ecosystems can support biodiersity if managed well. **True**
5. Coral reefs collapse when corals die. **True**

C. Fill in the blanks :

1. A place that offers food, water, shelter, and climate suitable for life is called a **habitat.**
2. The non-living parts of a habitat, such as sunlight, air, water and soil, are called **abiotic** components.
3. When several food chains, connect, they form a **food web.**
4. Organisms that break down waste and dead matter are known as **decomposers.**
5. The Sundarbans is the largest **mangrove** forest in the world.

D. Short Answer Type Questions:

1. Explain the role of decomposers in an ecosystem.

Ans. Decomposers such as bacteria and fungi break down dead plants, animals, and waste materials into simpler substances. This process is called decomposition. It returns essential nutrients to the soil, which helps plants grow. Decomposers also prevent the accumulation of waste in the environment. Thus, they play an important role in recycling matter in an ecosystem.

2. What is the difference between a population and a community?

Ans.	**Population**	**Community**
1.	A population is a group of organisms of the same species.	A community is a group of different populations.
2.	Members of a population live in a specific area at a given time.	Different populations live together in the same area.
3.	It includes only one type of organism.	It includes many types of organisms.
4.	**Example:** All fish living in a pond.	**Example:** Fish, frogs, plants, and insects in a pond.
5.	A population forms part of a community.	A community is formed by many populations.

3. How do human activities like overfishing affect ecosystems?

Ans. Overfishing reduces the number of fish in water bodies and disturbs the food chain. When fish populations decline, insects and other organisms may increase in number. This imbalance affects birds, plants, and humans dependent on aquatic ecosystems. Over time, it leads to loss of biodiversity and ecosystem instability.

4. Describe one example of mutualism in nature.

Ans. Mutualism is a relationship in which both organisms benefit from each other. An example of mutualism is the relationship between bees and flowering plants. Bees collect nectar from flowers for food, while at the same time helping in pollination. This process helps plants produce seeds, and both organisms benefit from the interaction.

E. **Long Answer Type Questions:**

1. Explain how feeding relationships form a food chain and a food web in an ecosystem.

Ans. In an ecosystem, feeding relationships show how energy passes from one organism to

another. A food chain begins with producers like green plants, which make their own food. Herbivores eat plants, and carnivores eat herbivores. However, in nature, organisms have more than one food source. When many food chains are connected with each other, they form a food web. Food webs make ecosystems more stable and balanced.

2. Describe the effects of human interventions, such as excessive pesticide use, on ecosystems.

Ans. Excessive use of pesticides kills harmful insects as well as useful organisms like bees and earthworms. It reduces soil fertility and pollination. Pesticides pollute water bodies and harm aquatic life. Over time, pests become resistant to chemicals. These effects disturb the natural balance of ecosystems and also affect human health.

3. Discuss the importance of abiotic components in sustaining life in an ecosystem.

Ans. Abiotic components such as air, water, sunlight, soil, and temperature are essential for life. Plants need sunlight, water, and soil nutrients to make food. Animals depend on air and water for survival. Abiotic factors also control climate and habitat conditions. Without these non-living components, living organisms cannot survive. Thus, abiotic components play a vital role in sustaining ecosystems.

4. Explain how sustainable farming practices help maintain soil fertility and ecosystem balance.

Ans. Sustainable farming practices avoid the excessive use of chemical fertilizers and pesticides. They use organic manure, compost, and natural methods of pest control. Crop rotation and intercropping improve soil nutrients. These practices protect helpful insects and soil organisms. As a result, soil fertility is maintained and ecosystem balance is preserved.

13 Our Home - Earth, a Unique Life-Sustaining Planet

A. Multiple Choice Questions :

1. Which of the following makes Earth a unique planet?

Ans. (b) Presence of air and water

2. The Earts's crust is compared to the skin of a/an:

Ans. (b) Apple

3. The greenhouse effect on Venus is mainly due to:

Ans. (c) Carbon dioxide

4. The suitable distance of the Earth from the Sun is called the:

Ans. (c) Habitable zone

5. Which of the following gases forms a protective ozone layer in the atmosphere?

Ans. (c) Oxygen

B. Fill in the blanks :

1. Earth is the only known planet in the solar system where **life** exists.

2. The outermost layer of the Earth where life exists is called the **crust.**
3. Venus is the hottest planet because of the **greenhouse** effect.
4. The **habitable** zone is the distance from the Sun where water can exist in liquid form.
5. The layer of gases surrounding Earth is called the **atmosphere.**

C. State whether the following statements are True or False :

1. Earth's magnetic field protects it from harmful cosmic rays. **True**
2. All planets in the solar system have a thick atmosphere. **False**
3. Liquid water is essential for life as we know it. **True**
4. Soil provides nutrients necessary for plant growth. **True**

D. Very Short Answer Type Questions:

1. Name the planet called the Blue Planet.

Ans. Earth is called the Blue Planet because a large part of its surface is covered with water, which appears blue when seen from space.

2. Why is Venus hotter than Mercury?

Ans. Venus has a very thick atmosphere rich in carbon dioxide. This causes a strong greenhouse effect that traps heat, making Venus hotter than Mercury.

3. What is the function of the ozone layer?

Ans. The ozone layer protects living organisms by blocking harmful ultraviolet (UV) rays from the Sun.

4. Give one example of asexual reproduction in plants.

Ans. Potato is an example of asexual reproduction. New plants grow from the eyes of the potato by vegetative propagation.

E. Short Answer Type Questions:

1. Explain why Earth is the only planet known to support life.

Ans. Earth is at the right distance from the Sun, which allows water to exist in liquid form. It has a suitable atmosphere containing oxygen and carbon dioxide. Earth's size helps it retain this atmosphere. Its magnetic field protects life from harmful solar radiation.

2. How does Earth's magnetic field protect living beings?

Ans. Earth's magnetic field acts as a protective shield against harmful cosmic rays and solar winds. It deflects charged particles coming from the Sun. This prevents damage to living cells. Thus, it helps in maintaining life on Earth.

3. What is the greenhouse effect, and how does it help Earth?

Ans. The greenhouse effect is the process by which gases like carbon dioxide trap heat in Earth's atmosphere. It prevents heat from escaping into space. This keeps Earth warm enough for liquid water to exist. Hence, it helps in sustaining life.

4. Describe the difference between sexual and asexual reproduction.

Ans.	**Sexual Reproduction**	**Asexual Reproduction**
1.	Two parents are involved.	Only one parent is involved.
2.	Male and female gametes take part.	Gametes are not involved.

3.	Offspring show variation.	Offspring are identical to the parent.
4.	Leads to diversity in species.	Does not produce diversity.
5.	**Example:** Humans, birds.	**Example:** Potato, amoeba.

F. Long Answer Type Questions:

1. Discuss the factors that make Earth suitable for life, including position, size, atmosphere, and magnetic field.

Ans. **1.** Earth is located at the right distance from the Sun, called the habitable zone, which allows water to remain in liquid form.

2. Earth's suitable size helps it retain an atmosphere and maintain proper gravity.

3. The atmosphere contains oxygen for respiration and carbon dioxide for photosynthesis.

4. The greenhouse effect keeps Earth warm by trapping heat and maintaining a stable temperature.

5. Earth has abundant liquid water, which is essential for all life processes.

6. The magnetic field protects Earth from harmful solar winds and cosmic radiation.

7. All these factors together create ideal conditions for the existence and survival of life on Earth.

2. Explain the importance of the hydrosphere, geosphere, and biosphere in sustaining life on Earth.

Ans. **1.** Hydrosphere provides water needed for drinking, photosynthesis, digestion, and temperature regulation in living beings.

2. It includes oceans, rivers, lakes, and groundwater that support aquatic life and agriculture.

3. Geosphere provides land, soil, minerals, and nutrients essential for plant growth and human activities.

4. Soil from the geosphere supports crops and forms the base of terrestrial ecosystems.

5. Biosphere includes all living organisms such as plants, animals, and microorganisms.

6. Plants produce food and oxygen, animals maintain food chains, and decomposers recycle nutrients.

7. All three spheres work together in balance to sustain life on Earth.

3. How does reproduction contribute to both continuity and variation of life on Earth?

Ans. Reproduction ensures the continuity of life by producing new individuals of the same species. Asexual reproduction produces identical offspring, maintaining stability. Sexual reproduction creates variation by mixing genes from two parents. These variations help organisms adapt to changing environments. Over time, this leads to evolution and survival of species.

4. Describe the impacts of climate change and pollution on Earth's ecosystems and living beings.

Ans. Climate change causes rising temperatures, melting glaciers, and sea-level rise. It leads

to extreme weather events like floods and droughts. Pollution contaminates air, water, and soil, harming plants, animals, and humans. Loss of habitats results in biodiversity decline. Together, climate change and pollution disturb the balance of Earth's ecosystems.