



**Teacher's Help Book
(1-5)**

FUSION SCIENCE

Values and Life Skills Focused



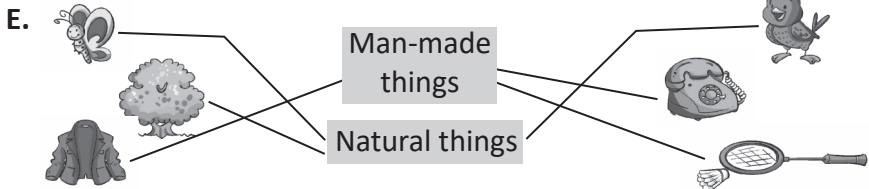
Book-1 2
Book-210
Book-321
Book-434
Book-566

Science-1

1 Chapter

Things Around Us

- A. 1. (a); 2. (b); 3. (a); 4. (a); 5. (a)
B. 1. air; 2. Non-living; 3. living; 4. eat, drink; 5. man-made
C. 1. F; 2. T; 3. T; 4. F; 5. T
D. 1. Animal Trees
2. Pencil Eraser
3. Water Air
4. Toys Furniture



- F. 1. We are surrounded by air, water, clouds, soil, rocks, etc. These are natural things.
2. Some things are made by humans such as table, chair, book, fan, T.V., etc. These are man-made things.
3. Living things can breathe, move, eat, drink, grow, reproduce (give birth to young ones) and feel.
4. They cannot have babies.
5. Plants and trees do not move as they are fixed to the ground.

Everyday Science

Living things		Non-living things	
spider	bird	helicopter	bicycle
cat	child	car	wind
snail	horse	fan	wheel

2 Chapter

Big Plants Small Plants

- A. 1. (b); 2. (a); 3. (b); 4. (a); 5. (a)
B. 1. Roots; 2. strong; 3. Stem; 4. water, thorns; 5. different

- C.** 1. F; 2. F; 3. T; 4. T; 5. T
- D.** 1. Cactus grows in a desert.
2. Lotus is a water plant.
3. Climbers and creepers have weak stems.
4. A plant needs air, water and sunlight to grow.
5. A strong and thick stem is called trunk.
6. Big, strong and tall plants are called trees.

Everyday Science

Do yourself.



Plants give us Food

- A.** 1. (b); 2. (b); 3. (a); 4. (a); 5. (a)
- B.** 1. leaves; 2. Pulses; 3. Cereals; 4. Lady finger; 5. seeds
- C.** 1. F; 2. F; 3. T; 4. T; 5. T
- D.** 1. Carrot, Radish
2. Wheat, Maize, Rice, Coffee, Coco
3. Pulses are rich sources of proteins.
4. We get sugar from sugarcane plant. It is made from juice of sugarcane.
5. Guava, Mango, Banana, Grapes, Pineapple

Everyday Science

Do yourself.



So Many Animals!

- A.** 1. (a); 2. (b); 3. (b); 4. (a); 5. (b)
- B.** 1. nests; 2. Penguin; 3. wings; 4. water; 5. wool
- C.** 1. F; 2. T; 3. T; 4. F; 5. T
- D.** 1. Penguin can not fly.
2. Dog and horse live on land.
3. Tortoise can swim in water and walk on land too.
4. There are some animals that live on trees too. Examples are monkey, squirrel, bats, etc.
5. Fish and whale are water animals.

Everyday Science

- ❖ Visit a zoo and observe the animals. Now, name the following animals :

Three big animals

Elephant, Giraffe, Chimpanzee



Three small animals

Monkey, Rabbit, Dog

5

Chapter

Foods and Homes of Animals

- A. 1. (a); 2. (b); 3. (a); 4. (b); 5. (b)
B. 1. nests; 2. anthills; 3. insect; 4. grains; 5. do not
C. 1. T; 2. T; 3. T; 4. F; 5. F
D. 1.  2. 
E. 1. Fish, Frog, Dolphins, Sea snakes.
2. Pigeon, Squirrel, Hen.
3. Lion lives in den.
4. Monkey, Ape, Squirrel.
5. Goat, Horse, Cow, Buffalo.

Everyday Science

- ❖ Names of some animals are given below. Find out their favourite food and fill in the table :

Animal	Favourite food
Dog	Bones
Elephant	Sugarcane
Parrot	Chillies
Cow	Grass
Cat	Milk
Horse	Grams

6

Chapter

Human Body

- A. 1. (a); 2. (b); 3. (a); 4. (b); 5. (b)
B. 1. two; 2. living; 3. head; 4. Hand; 5. Skin
C. 1. F; 2. F; 3. F; 4. T; 5. T
D. 1. Eyes; 2. Leg; 3. Hands; 4. Tongue

Everyday Science

- ❖ Food from plants and animals must be stored in your refrigerator. Look for them and write their names in the given table.

Food from Animals

Egg
Milk
Meat
Honey

Food from Plants

Pulse
Rice
Vegetables
Fruits



Chapter

House to Live In and Clothes to Wear

- A. 1. (b); 2. (a); 3. (a); 4. (a); 5. (b)
B. 1. doors, windows; 2. umbrella; 3. clean; 4. Woolen; 5. Nylon
C. 1. F; 2. F; 3. F; 4. F; 5. T
D. 1. We wear clothes to protect ourselves against the weather such as strong sunlight, extreme cloud, heat or rain.
2. Cotton clothes, Woollen Clothes
3. House protects us from bad weathers, thieves and wild animals.
4. Store preparation and cook food.
5. We should the sunlight and fresh air enter into the house because it prevents germs to grow.
E. Do yourself.

Everyday Science

Do yourself.



Chapter

Safety First!

- A. 1. (b); 2. (a); 3. (a); 4. (b); 5. (b)
B. 1. sharp; 2. queue; 3. electric things; 4. play; 5. share
C. 1. F; 2. F; 3. T; 4. F; 5. T
D. 1. • We should not run in the classroom.
• If you or someone else gets hurt, inform your teacher immediately.
2. • Do not play with sharp objects. You may hurt yourself.

- Do not open the door to anyone you do not know. Call an elder person when you see a stranger at the door.
- E. 1. Traffic lights; 2. Zebra Crossing; 3. Footpath
- F. 1. We should keep ourselves safe at every place. So, we should follow the safety rules.
2. Do not put your finger into electric sockets. Do not try to operate electrical gadgets on your own.
3. Zebra crossing is used to cross the road.
4. Matchstick, Electric Wires
5. • Use the zebra crossing to cross the road.
- While crossing the road, look to the left, then to the right and again to the left; then cross the road if there is no traffic.
 - Do not run on the road.
 - Do not get in or out of a moving bus.
 - Always follow traffic lights while riding a bicycle.

Everyday Science

- ❖ Find out some safety rules to be followed at the following places. Discuss the same in your class.

A mall

- Do not run on stairs and escalator.

A park

- Do not run fast.
- Do not talk strangers.

In the playground

- Always play safe.
- Wear proper clothes

10 Chapter

Good and Healthy Habits!

- A. 1. (a); 2. (b); 3. (a); 4. (a); 5. (b)
- B. 1. body; 2. fresh; 3. dustbin; 4. dirty; 5. eight
- C. 1. T; 2. F; 3. F; 4. F; 5. F

D.



E. Do yourself.

- F.**
1. Trim and clean your finger nails regularly because it plays an important role for our body to keep us fit.
 2. Do your hair with a clean comb and wash them properly.
 3. • The house and its surroundings must be clean always.
 - We should not litter garbage around the house.
 - We should not spit here and there.
 - Use dustbin at public places to throw garbage.
 4. Eight hours sleep is needed for a kid.
 5. Six-eight glass of water is needed for our body in a day.

Everyday Science

❖ **What do you use to :**

- | | |
|-------------------|----------------|
| • cut nails | Nailcutter |
| • brush teeth | Tooth Brush |
| • set your hair | Comb |
| • take bath | Bucket and Mug |
| • wipe off body | Towel |
| • clean your nose | Handkerchief |

11 Chapter 

Air

- A.** 1. (b); 2. (a); 3. (b); 4. (b); 5. (a)
B. 1. air; 2. tasks; 3. touch; 4. burning; 5. storm
C. 1. F; 2. T; 3. T; 4. T; 5. T
D. 1. Fish breathe with the help of gills.
2. All living things need air to breathe.
3. Wind is air that is moving.
4. Wind helps to move the blades of a windmill.
5. 1. Flute, 2. Mouth organ.

Everyday Science

Do yourself.

12 Chapter 

Water

- A.** 1. (a); 2. (b); 3. (a); 4. (b); 5. (a)
B. 1. sick; 2. drink; 3. dirty; 4. waste; 5. Rain

- C. 1. T; 2. T; 3. F; 4. F; 5. T
- D. 1. We should drink 7-8 glass of water everyday.
 2. We should not drink water from rivers and lakes because it make us sick.
 3. We store water in our house in different containers. A large amount of water is stored in big water tanks. Buckets, jars, pots and bottles are also used to store water.
 4. We use water for cooking our food in kitchen.
 5. We use water for watering the plants.

Experimental Learning



Do not throw the wastes in the water sources.

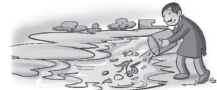


Do not waster water while bathing.

Do not left running water.



Do not throw the wastes in pond and river.



Everyday Science

❖ Give the answer of following by unjumbling the jumbled word :

An animal that lives in water	OTOCSUP	OCTOPUS
Fish breathe in water with the help of	LLISG	GILLS
One use of water	KNIRDGNI	DRINKING
A plant that grows in water	USLOT	LOTUS

13 Chapter

Weather

- A. 1. (a); 2. (a); 3. (b); 4. (a); 5. (a)
- B. 1. cold; 2. raincoat; 3. rainy; 4. changing; 5. strongly
- C. 1. F; 2. F; 3. F; 4. T; 5. T
- D. 1. Rainy season does rain a lot.
 2. Cold seasons does snow fall.
 3. In cold season, we use a room heater.
 4. We like to eat ice-creams, cold drinks etc. on a hot day.
 5. Rainy days, windy days, cold days

Everyday Science

Do yourself.



Know the Plants

- A.** 1. (a); 2. (b); 3. (a); 4. (a); 5. (b)
- B.** 1. flower; 2. food; 3. chlorophyll; 4. oxygen; 5. fleshy
- C.** 1. T; 2. T; 3. F; 4. T; 5. T
- D.** 1. Seeds are found inside a fruit. Each seed further becomes a new plant.
2. Sunlight, air, water and chlorophyll are needed for photosynthesis.
3. Plants release oxygen during photosynthesis. They also provide us food. We use both of these to survive.
4. The process of making food by the plants is called photosynthesis.
5. Plants take in Carbon-dioxide gas from air for photosynthesis.

Everyday Science

Do yourself.



Plants : Our True Friends

- A.** 1. (a); 2. (a); 3. (b); 4. (b); 5. (b)
- B.** 1. carbon dioxide; 2. fibre; 3. paper; 4. roots; 5. healthy
- C.** 1. F; 2. T; 3. F; 4. F; 5. T
- D.** 1. Plants are important part of nature. They are very useful to us. We depend on them for many things. They give us oxygen to breathe. We get food, clothes and many other things from plants.
2. We get wood from the stems of plants. Firewood from plants is used as fuel for cooking and warming homes in winters.
3. Sunflower, Olive, Mustard, Coconut, Peanut.
4. They are used to add colour and flavour to our food. Spices make our food tasty.
5. We get coffee from beans or seeds of cocoa plants.

Everyday Science

- ❖ Some fruits name are hidden in following grid. Spot and circle them. The pictures are there to help you :

S	I	K	C	L	T	Q	S	L	S	D	K	O	O
M	L	A	P	P	L	E	H	A	M	R	A	R	R
A	O	R	K	R	A	R	I	V	A	S	L	A	A
N	V	T	S	T	R	U	B	A	N	A	N	A	N
G	E	I	T	S	Z	D	A	G	A	S	A	S	G
O	Y	K	R	O	A	R	M	U	A	H	K	T	E
H	O	P	I	N	E	A	P	P	L	E	I	H	K
J	U	L	I	J	T	T	V	L	K	T	W	S	O
M	E	L	O	N	R	S	E	E	B	S	I	H	I

3

Chapter

Domestic Animals

- A. 1. (b); 2. (b); 3. (a); 4. (b); 5. (b)
 B. 1. healthy; 2. curd, ice-cream; 3. silk; 4. farm animals; 5. soil
 C. 1. T; 2. F; 3. F; 4. F; 5. T
 D. 1. Animals, we tame for food and work are called domestic animals.
 2. Animals tamed by us are called domestic animals. We keep them in our houses or in farms.
 3. We get honey from bee.
 4. Horses, donkeys and mules carry our loads. They carry our loads in mountains too. They also carry passengers in regions where vehicle cannot go. Such animals are also called beasts of burden.
 5. Dungs of cows and buffaloes are used to make manure for agriculture. Oxen are used to plough field.

Experiential Learning

- ❖ Solve the crossword with the help of the given clues :



Everyday Science

❖ Give two examples from each of the following.

1. cow, horse; 2. dog, cat; 3. cow, goat; 4. hen, goat; 5. horse, donkey

❖ State one use of each of the following :

1. Cow gives us milk.
2. Horses carry our loads.
3. We get honey from bee.
4. Dogs are pet animals.
5. Cats are pet animals.

4 Chapter

Animals Habitat and Food

- A. 1. (b); 2. (a); 3. (a); 4. (a); 5. (b)
- B. 1. water, land; 2. Weaver bird; 3. animals; 4. web; 5. Elephant, giraffe
- C. 1. T; 2. T; 3. F; 4. T; 5. F
- D. 1. Different animals live in different conditions. The place where someone lives is called its habitat.
2. Lion, Tiger
 3. Some animals eat the flesh of other smaller animals and are called carnivorous animals.
 4. Some animals eat both plants and animals. They are called omnivorous animals. Bears, foxes, etc. are omnivorous animals.
 5. Many animals live in water. They are called water animals or aquatic animals. Such animals are octopus, crabs, dolphins, sharks, whales and many other types of fish.

Experiential Learning

❖ Write the names of the following animals. Take help from the pictures :

1. Lion; 2. Fox; 3. Giraffe; 4. Sea horse; 5. Humming bird

❖ Animals live and move in groups. There are some special names for various animal groups. Write the names of the animals and find the name of the group :



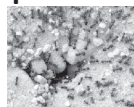
A Pack of wolves.



A school of fish.



A herd of elephants.



A colony of ants.



A flock of pigeons.

Everyday Science

- ❖ Many wild animals are killed by human beings for sports, food and medicine. Now their number has become so less that they might soon not be found on earth. They are called endangered animals. They are kept safe in National Parks.

Name of three such animals are given below. Find them after arranging the letters.

ADPAN

PANDA

ECOSRRNIHO

RHINOCEROS

REGTI

TIGER

5

Chapter

Human Body : Bones & Muscles

- A. 1. (b); 2. (a); 3. (b); 4. (a); 5. (a)
- B. 1. 206; 2. skin; 3. Skipping, swimming; 4. food, exercise; 5. Heart
- C. 1. F; 2. T; 3. T; 4. F; 5. T
- D. 1. Our body has a frame-like structure called skeleton.
2. Joint allows us to bend, twist or kick such as elbows and knees.
3. Posture is the position in which we hold our body and limbs while sitting, standing or doing something else.
4. Hands, legs, head, finger toes, etc. are external body parts. Heart, liver, kidney, bones, brain, etc. are internal body parts.
5. The outer covering of bones is called the periosteum. The inner covering of bones is called the endosteum.

Experiential Learning

- ❖ Write the answers to the given clues. Find them in cross-word :

1. Heart
2. Lungs
3. Brain
4. Stomach
5. Muscle

H	S	E	A	E	R	N	R	H	L
E	D	R	N	K	A	Z	I	A	U
A	K	S T O M A C H						N	
R	N	Y	A	R	D	R	A	Y	G
T	U	A	I	E	Z	A	E	V	S
A	M U S C L E						R	A	Z
R	Z	V	E	H	B R A I N				

Everyday Science

- ❖ Write the form of exercise by observing the given pictures :



running



jumping



football



swimming



walking

- ❖ Give the name :

1. Mouth; 2. Posture; 3. Joint; 4. Periosteum

Extra Curricular

- ❖ Circle the names of human body parts in the given grid :
(There are 15 organ's name in the grid)

A	K	I	D	N	E	Y	O	P	N	T	A	Y
W	B	Y	V	U	U	I	H	G	S	H	M	B
W	X	C	T	V	H	E	A	D	R	A	R	M
X	L	M	K	L	E	G	S	F	Q	N	X	Z
S	Y	D	J	U	V	W	E	O	S	D	L	S
K	E	N	Y	N	U	D	Z	A	R	S	L	T
I	A	B	F	G	T	X	Y	P	B	V	W	O
N	G	O	P	S	M	E	L	C	O	K	M	M
A	B	C	Z	N	S	Y	U	K	K	J	C	A
Z	H	Q	R	L	H	E	A	R	T	N	I	C
I	T	E	E	T	H	T	J	M	O	U	T	H
C	K	N	D	O	O	S	P	J	D	E	X	H
O	M	B	O	N	E	S	I	E	H	G	F	W
Q	E	P	J	E	Y	E	S	R	D	F	G	S
T	L	F	U	G	R	R	Q	N	O	S	E	V

- A. 1. (b); 2. (b); 3. (b); 4. (b); 5. (b)
 B. 1. chew; 2. calcium; 3. healthy, strong; 4. Wheat; 5. nutrients

- C. 1. T; 2. T; 3. F; 4. F; 5. F
- D. 1. Useful substances present in our food are called nutrients. They are essential for us to live, grow and stay healthy.
2. Food is divided into three food groups, on the basis of nutrients they have. They are Body building food, Energy giving food and Protective food.
3. These are the foods that give energy to work to our body. Some such examples are wheat, maize, rice, potato, banana and sugar.
4. Mostly we eat our meals three times in a day. These meals are called breakfast, lunch and dinner.
5. • Wash hands before and after every meal.
• Eat slowly and chew the food well.
• Eat clean and fresh food.

Everyday Science

- ❖ **Give three examples of each :**
1. wheat, maize, rice; 2. fish, meat, eggs; 3. fruits, vegetables, dry-fruits
- ❖ **Name three essential food items for each of the following that you should eat :**
1. juice, bread, poha; 2. dal, roti, rice; 3. vegetables, roti, salad



7 Chapter

Air

- A. 1. (a); 2. (b); 3. (a); 4. (b); 5. (a)
- B. 1. clean, fresh; 2. smoke; 3. seeds; 4. air; 5. force
- C. 1. F; 2. T; 3. T; 4. F; 5. F
- D. 1. Air is all around us. We can feel it when it moves.
2. When wind moves at high speed with thunder, it is called storm.
3. Air contains dust, water vapour, smoke and germs.
4. Wind helps to maintain temperature over a landmass.
5. All living beings need clean and fresh air to breathe. So we must try to keep it clean.

Everyday Science

- ❖ **Which is heavier, an empty or deflated balloon or a balloon filled with air? Give reasons :**

A balloon filled with air is heavier than an empty balloon because in empty balloon, there is no air. Air occupies space and has weight. Hence, the balloon filled with air is heavier.

- ❖ **Write one example or activity which you see in your everyday life for each one of the following (other than given in this chapter).**

1. A blown up balloon,
Water bubbles.
2. Moving air blows everything.
The air coming from the back help in flying kite.
3. Air changes the direction of kites.
It ranges breezes to natural hazards.
4. Movement of plant.
Movements of smoke.
5. Balloon filled with air.
Tires of vehicles.



Water

- A. 1. (b); 2. (b); 3. (a); 4. (b); 5. (a)
- B. 1. live; 2. electricity; 3. water; 4. clean; 5. odourless
- C. 1. F; 2. F; 3. T; 4. T; 5. F
- D. 1. Water is one of the natural resources available on earth. Human beings, animals and plants need water to live and survive. It is essential for our body to make our digestive system function well.
2. Properties of water are given below :
- Water always flows from the higher level to the lower level.
 - Water takes the shape of the container in which it is kept.
 - Water is a colourless, tasteless and odourless liquid. It has no colour, taste or smell.

3. Rain is the main source of water on earth.
4. There are some different methods to clean water for drinking :
 - Boiling is the most common way to get germ-free water. The heat kills the germs and water becomes clean to drink.
 - Water filters are machines that filter water to make it clean for drinking.
 - Always keep drinking water in vessels covered with lids.
5. We should not waste water as it is in limited quantity on earth. We should save water.

Everyday Science

❖ Circle the odd one out :

- | | | | |
|--------------|------------|-----------|------------|
| 1. Bathing | cleaning | cooking | running |
| 2. River | lake | stream | well |
| 3. Tube well | pond | lake | river |
| 4. Solid | liquid | rock | gas |
| 5. Odourless | visionless | tasteless | colourless |



9

Chapter

Weather

- A. 1. (b); 2. (a); 3. (b); 4. (a); 5. (b)
- B. 1. rain; 2. north; 3. summer; 4. speed; 5. Wind-vane
- C. 1. T; 2. F; 3. F; 4. T; 5. T
- D. 1. (a) Weather of a place depends upon several factors. Some such factors are as follows :
(b) Direction fo Wind, Speed of Wind.
2. As we know, the four main directions are east, west, north and south. The wind coming from these four different directions respectively are known as east wind, west wind, north wind and south wind.
3. When the sunlight falls on the water of water bodies, it is heated and begins to change to steam or vapour. This vapour rises up in the sky to form clouds. When these clouds become heavy with water droplets, the water begins to fall on earth in the form of rain.

4. It is hot weather when people use coolers and fan.
5. The weather is cool when people wear sweaters and caps.

Everyday Science

❖ **On which day will you use the following things?**

1. Rainy seasons; 2. Winter; 3. Summer; 4. Rainy seasons

❖ **Name the season :**

1. Rainy season; 2. Winter season; 3. Winter season;
4. Summer season

10 Chapter

Water Cycle

1. (a); 2. (b); 3. (a); 4. (a); 5. (b)
1. Ice; 2. water; 3. water bodies; 4. melts; 5. gaseous
1. F; 2. F; 3. T; 4. T; 5. T
1. The water cycle is the uninterrupted rotation of water from the earth to clouds and back to the earth.
 2. Steam is the gaseous form of water.
 3. Three-fourth part of the earth is covered with water. Water is found at different places.
 4. The sun provides what almost everything on Earth needs to go energy or heat.
 5. The water of oceans, lakes, rivers, etc. get heated due to the sunshine and changes into vapour by the process of evaporation. This vapour rises up in the sky.

Everyday Science

Do yourself.

11 Chapter

The Sun, The Light and The Shadows

1. (a); 2. (b); 3. (b); 4. (a); 5. (a)
1. energy, light; 2. east; 3. noon; 4. bigger; 5. smaller
1. T; 2. F; 3. T; 4. T; 5. F
1. Light is a form of energy. Sunlight is the main source of energy which enables us to see during the day. At night,

Paper — pulp of wood

Silk saree — silk

Glass — sand

4. Paper is made from the pulp of trees. Newspapers, books, notebooks and paper bags are made of paper.
5.
 - Wool is obtained from the hair of sheep.
 - We get silk from silkworms.

Everyday Science

❖ **Name five things which are made of :**

Plastic

Wood

Glass

Cloth

toys

table

window

cotton

bottles

chair

cup

fibre

pencil box

door

glass

silk

Bucket

window

plate

nylon

mug

decorative things

bowl

wool

13

Chapter

Rocks and Minerals

- A. 1. (a); 2. (b); 3. (a); 4. (b); 5. (a)
- B. 1. surface; 2. hard; 3. gemstone; 4. Marble; 5. Slate
- C. 1. F; 2. F; 3. T; 4. T; 5. T
- D. 1. The outer layer of the earth is made up of rocks. We can see them almost everywhere.
2. Rocks are made up of minerals.
3. Coal, Chalk
4. Diamond is the hardest mineral. It is used for making jewellery and it is very precious. It is used to cut glasses.
5. Slate can be cut into slices.

Everyday Science

❖ **Names of some forts are given. Try to know from which rocks they are made up of. Write in given space :**

The Jhansi Fort

Stone, Lime and Lead

The Red Fort, Delhi

Red sandstone

The Red Fort, Agra

Red sandstone

The Gwalior Fort

Sandstone and lime mortar

The City Palace, Jaipur

Red and Pink Sandstone

Hawa Mahal, Jaipur

Pink, sandstone

Eating Habits of Animals

- A.** 1. (a); 2. (b); 3. (c); 4. (b); 5. (b)
- B.** 1. chewing teeth; 2. nectar; 3. carnivores; 4. scavengers;
5. Earthworms
- C.** 1. F; 2. T; 3. T; 4. T; 5. T
- D.** 1. They have sharp and broad front teeth called incisors which help them to bite leaves, grass, etc. To break down plant materials into small pieces, they have flat teeth at the back called molars.
2. Carnivores– eat only flesh of other animals.
3. Some herbivores first swallow their food without chewing it. This food is now called cud. Later, the cud is brought back to mouth and chewed again. This is called chewing the cud or rumination.
- Rabbits, rats and squirrels have a set of very long and flat front teeth. They bite and repeatedly chew nuts, fruits and seeds with the help of these teeth. This is called gnawing the food.
4. A food chain starts with the primary source of energy, the Sun. Then comes green plants such as grass, that make their own food by photosynthesis. These are called primary producers or autotrophs.
- Next in the chain are organisms that eat the autotrophs such as the deer that eats grass. These are called herbivores or primary consumers. Then there comes next, an animal that eats a herbivore. They are called secondary consumers. Such as : A lion eats a deer.
5. A frog throws its sticky tongue out of its mouth and wraps it around the prey. Then the tongue snaps back and gulps the food down its throat.
- E.** 1. Tiger is the carnivore in the chain.
2. (a) false; (b) false; (c) true

Everyday Science

- ❖ Names of some animals are given in the table. Complete the table with the information.

	Body part which help animals to feed themselves	herbivore/ carnivore/ omnivore
Cow	Rumen	Herbivore
Owl	Sharp, hooked bills	Carnivore
Frog	Tongue	Carnivore
Elephant	Tusks	Herbivore
Tiger	Sharp teeth	Carnivore
Honeybee	Proboscis	Omnivores

2



House and Clothing

- A. 1. (c); 2. (c); 3. (c); 4. (b); 5. (b)
- B. 1. sunlight; 2. insects; 3. drainage system; 4. Natural fibres; 5. man-made
- C. 1. T; 2. F; 3. T; 4. F; 5. T
- D. 1. To sweep and mop the floors of the house everyday is a very important thing. It does not allow disease causing germs to grow inside the house.
2. There should be open space in every house. Too much of furniture and unnecessary things stop the fresh air to pass through the house. Clean and fresh air is needed to stay healthy. There should be enough windows and ventilators to let in the fresh air and open space to pass this air through the house.
3. The area around our house should be kept neat and clean. The cleanliness of surroundings is also as much important as inside. Stagnant water, dirt and garbage may cause growth of germs.
4. Clothes are made up of fabrics or textiles. Fibres are the basis of fabrics.

5. Fibres are the basis of fabrics or textiles.

- We wear cotton clothes in summer to keep our body cool.
- We wear woollen clothes in winter to keep our body warm.
- Nylon and polyester are man-made fibres. They are stronger than natural fibres.
- Polyester is used to make raincoats as it dries quickly.

- E. 1. Proper ventilation, 2. Many plants around it,
3. Open spaces like verandeh, 4. far from noise,
5. Well-designed interior, 6. Good space utilization

Everyday Science

Do yourself.



Soil

- A. 1. (a); 2. (c); 3. (c); 4. (a); 5. (a)
- B. 1. soil; 2. humus; 3. subsoil; 4. moisture; 5. bedrock
- C. 1. T; 2. F; 3. F; 4. T; 5. T
- D. 1. The uppermost layer of our earth's surface is soil.
2. Soil is formed over a very long period of time. The process of soil formation is continuously going on. The soil is formed due to weathering of rocks and minerals.
3. Soil is a formation of rock particles, pebbles, clay and sand. Humus is also present in soil.
The decaying plant and animal matter is called humus. It makes the soil rich in minerals.
4. Soil has 5 different layers. These layers are called horizons.
- The top layer, i.e. horizon 'O' is made up of organic litter like dead leaves and branches.
 - The second layer, i.e. topsoil or horizon 'A' is made up of humus and small particles of minerals.
 - The third layer is subsoil or horizon 'B'. It consists of clay, iron and some minerals.
 - The fourth layer, i.e. horizon 'C' is made up of minerals only. This is also known as bedrock.

- The fifth layer, i.e. horizon R is completely made up of bedrock.
5. • Soil provides water and minerals to plants for their growth. So it is used for agriculture. It is the main source of nutrients for plants.
- Soil supports the root to hold the plants straight.
 - Soil is the habitat of many tiny creatures like snails, earthworms and woodlice.
 - Soil is the base of all construction projects such as roads, buildings and dams.
 - Soil prevents floods by absorbing rainwater.
- E. 1. Humus is formed by the decaying plant and animal matter. It makes the soil more porous, which allows more water and air to penetrate through the soil. Therefore, humus increases the fertility of the soil.
2. Soil conservation is proven to increase the quality and quantity of crop yields over the long term because it keeps topsoil in its place and preserves the long term productivity of the soil.

Everyday Science

Do yourself.



Matter

- A. 1. (b); 2. (a); 3. (c); 4. (a); 5. (c)
- B. 1. matter; 2. solid; 3. liquid; 4. gas; 5. mixture
- C. 1. T; 2. F; 3. F; 4. T; 5. T
- D. 1. Anything that has mass and occupies space is called matter.
2. Solid, Liquid, Gas are the three states of matter.
3. The matter changes its forms through following processes :
- Freezing
 - Melting
 - Vaporization
 - Condensation
4. **Solids** : Anything that has a fixed shape and size is called solid.

Liquids : Things that have a fixed size but do not have a fixed shape and can flow easily are called liquids.

Gases : The matter that has no fixed shape or size is called gas such as water vapour.

5. Vaporization is the process of change of liquid into gas on heating. Such as, water turns into vapour on heating.

Condensation is the process of change of gas into liquid on cooling. Such as, the drops of water inside of a lid that is covered on a pot of boiling water.

- E.
- Such as, water turns into ice cubes on keeping in a freezer.
 - Ice melts on heating and turns into water.
 - Water turns into vapour on heating.
 - The drops of water inside of a lid that is covered on a pot of boiling water.

Everyday Science

❖ **Make a list of the things you see in your surroundings. Write them in the proper boxes.**

Solid	Liquid	Gas
Rubber	Water	Vapour
Ice	Juice	Smoke
Wood	Soup	Oxygen
Fruits	Oil	Air
Vegetables	Tea	
Chair	Coffee	
Fan	Milk	

5

Chapter

Living and Non-living Things

- A. 1. (c); 2. (c); 3. (b); 4. (c); 5. (b)
- B. 1. move; 2. opens; 3. air holes; 4. breathe; 5. transpiration
- C. 1. T; 2. F; 3. F; 4. T; 5. T
- D. 1. All animals, human beings, insects, plants, trees are living things. Bacteria are also living things which can be seen only by a microscope.

2. The difference between living and non-living things are as follows :

	Living Things	Non-living Things
Breathe	They need air to breathe.	They do not breathe.
Grow	They grow as time passes.	They do not grow.
Reproduce	Living things give birth to young ones.	They do not reproduce.
Move	They can go from one place to another.	They do not move.
Food	All living things need food to grow.	They do not need food.
Feel and respond	They feel and respond to different conditions.	They do not feel or respond to anything.
Excrete	They excrete.	They do not excrete.

3. Human beings and animals have some special internal organs to separate waste and throw it out of the body like kidneys, lungs, skin. Sweating is also excretion. Excretion of waste in plants is called transpiration.
4. Plants breathe through tiny pores on their leaves called stomata.
5. All the living thing are different in looks, size, colour, weight, etc. But some features are same in every living thing. Features of living things are given below.

Movement

Living things move from one place to another.

Eating Food

All living things eat food to live and grow.

Breathing

Human beings, animals and plants breathe to stay alive.

Reproduction

Living things give birth to their babies. This process is called reproduction.

Growth

A plant grows to become a big tree. The babies of animals and human beings grow and become adults.

Everyday Science

Do yourself.



Parts of a Plant

- A.** 1. (c); 2. (b); 3. (a); 4. (c); 5. (c)
- B.** 1. plants; 2. Carrot, beetroot; 3. onion, grass; 4. Stomata; 5. Stem
- C.** 1. T; 2. F; 3. F; 4. T; 5. T
- D.** 1. The root is the base of the plant. It fixes plant in soil firmly. It takes nutrients and water contained in soil. These nutrients are essential for the healthy growth of a plant.
2. The taproot system has small roots coming out of a thick root. These thin and small roots further branch out. Carrots, beans, mustard and hibiscus are the examples of taproot.
3. In some plants, we find a bunch of thin and bush-like roots. It is called fibrous root system. Wheat, grass, onions are its examples.
4. Leaves are the most important part of a green plant as they make the food for whole plant. Therefore, we also call leaves 'the food factory' of plants. Leaves have tiny spores on its surface to allow water and air to come in and go out. Leaves absorb sunlight.
5. Seeds are the basis of reproduction in plants. So they are important parts of plants. The seed grows into a sapling and then becomes an adult plant. This process is called germination. Seeds germinate in favourable conditions when they get air, water, heat and sunlight and grow into adult plants.

Everyday Science

Do yourself.

- A. 1. (b); 2. (b); 3. (c); 4. (b); 5. (c)
- B. 1. Beaks; 2. flesh eating; 3. Ducks; 4. talons; 5. Penguin
- C. 1. T; 2. F; 3. F; 4. T; 5. F
- D. 1. Birds do not have teeth. They catch their prey or eat their food with the help of their beak.
2. Different birds have different types of feet and claws that help them in running, climbing, hunting, walking and swimming. Claws and feet also help to attack their enemies.
3. Birds have feathers that help them keep warm. Feathers are light-weight and strong structure made of a protein, keratin. The size and shape of wings of birds depend upon their ability to fly, migrate, hover, dive and soar. Wings are just like arms of humans. Wings and feathers help them in flight.
4. Different birds build different kinds of nests. They build nests to lay eggs in it. When the eggs hatch out, they take care of their young ones in the nests. After learning how to fly, baby birds leave the nest.
5. After laying eggs, the birds keep them warm by sitting on it to develop chick inside the egg.
- Most birds share their parenting duties. The parents take turns sitting on the eggs. One parent sits on the eggs and other goes in search of food. When the eggs hatch out, the babies still need the safety and protection from heat, cold and enemies.

Everyday Science

❖ **Name the following :**

1. woodpeckers; 2. Preening; 3. body feathers; 4. molting;
5. up stroke movement

- A. 1. (a); 2. (c); 3. (c); 4. (c); 5. (b)
- B. 1. Muscular; 2. small intestine; 3. spinal cord; 4. Joints; 5. blood

C. 1. F; 2. T; 3. T; 4. T; 5. T

- D. 1. The skeletal system is a framework of bones which give shape and support to the body. It also protects internal organs. It provides a system of muscles that allow body movements.
2. Our body has to break down the digested food to get energy. This process takes place inside the cells and requires oxygen. Basically, the system of breathing is called respiratory system.
3. The circulatory system includes the heart, blood and blood vessels.
4. Our digestive system performs digestion of food. Digestion is the process of changing the food into simpler form so that it can be easily absorbed by our body. Digestion starts when we take in food through our mouth. Here it mixes with saliva and gets soft.
5. The main function of the nervous system is to control all other systems of the body. it controls action like speaking, seeing, hearing, walking, learning, etc. The brain is the main organ of nervous system.
- E. 1. Food must be chewed so it can be swallowed easily and, when it arrives into the stomach, be properly digested. Chewing our food properly can help in smooth digestion and nutrient absorption.
2. Doctors advise this because due to the disease our digestive system may become weak and may not be able to digest heavy food. That's why doctors suggest us to eat bland and nutritious food. Stomach and small intestine get affected.

Everyday Science

❖ Name the organ systems in which the following organs are present :



Digestive system



Excretory system



Nervous system



Circulatory system



Respiratory system



Digestive system

- A. 1. (c); 2. (a); 3. (a); 4. (c); 5. (a)
- B. 1. thermometer; 2. metre; 3. weight; 4. Second; 5. Length
- C. 1. T; 2. F; 3. F; 4. F; 5. T
- D. 1. Length is the measurement of distance.
2. Weight is the measurement of how heavy or light the thing is the standard unit of measuring mass is kilogram (kg). Smaller weights are measured in grams and very light objects are measured in milligrams.
3. Capacity is the amount of liquid a container can hold. A glass will hold lesser water than a jug. So we say that glass has lesser capacity than the jug. Litre is the standard unit of capacity.
4. We can measure the length of a thing using our body parts.
Cubit : The distance from the elbow to the tip of middle finger.
Handspan : The length between the tip of the thumb and the little finger.
Footspan : The distance between the point of the toe and the heel of the foot.
5. Temperature is the measure of how hot or cold an object is. When you suffer from fever, your mother takes the temperature of your body.
 Temperature can be measured on the Centigrade Scale ($^{\circ}\text{C}$) or Fahrenheit Scale ($^{\circ}\text{F}$).
- E. 1. (a); 2. (b)
- Everyday Science** (Do yourself.)

- A. 1. (c); 2. (b); 3. (c); 4. (c); 5. (c)
- B. 1. pull; 2. light; 3. source; 4. shortest; 5. shape
- C. 1. T; 2. F; 3. T; 4. T; 5. F
- D. 1. Anything that gives us light is called source of light. The sun

is the main source of light on the earth. Without sunlight, the earth will become cold and dark. We also get light from torches, bulbs, candles and diyas.

2. When an object comes in the path of light, its shadow is formed on the opposite side of light.
3. Sound is the vibration of fast back and forth movement of a substance.
4. Loud and unpleasant sounds are called noise.
5. **Luminous object** : An object that gives light.
Non-luminous object : An object that does not have its own light.

E. Do yourself.

Everyday Science (Do yourself.)



The Earth, Sun and Moon

- A. 1. (b); 2. (c); 3. (a); 4. (c); 5. (b)
- B. 1. sun, solar system; 2. natural satellite; 3. earth; 4. comet; 5. constellation
- C. 1. F; 2. F; 3. T; 4. F; 5. T
- D. 1. Our planet earth is the only planet where life is known to exist. It is one of the eight planets in our solar system. The solar system is everything that belongs to sun.
2. Earth rotates on its imaginary axis from west to east. This movement is called rotation.
The earth also revolves around the sun in a fixed path. This fixed path is called orbit. This movement of earth around the sun is called revolution.
3. Asteroids are big pieces of rocks. They also revolve around the sun. They are very small. Between Mars and Jupiter there exists an asteroid belt.
4. Comets are big blocks of ice and dust that revolve around the sun. When they come near the sun, a bright tail begins to develop behind them. Most of the comets are visible from the earth.
5. Moon is the natural satellite of earth.

- E. 1. Orion, Ursa, Major, Cassiopeia, Scorpius
 2. When you stare directly at the sun, ultraviolet light floods your retina, literally burning the exposed tissue.

Everyday Science

- ❖ In following Word Search Grid, spot and circle 10 terms related to our solar system:

M	O	O	N	A	J	I	V	O	R	F	M
E	A	E	A	U	U	A	S	U	N	A	E
R	I	N	R	M	P	D	A	N	A	N	T
C	D	U	E	A	I	A	T	I	H	E	R
U	K	S	A	R	T	R	U	V	M	P	U
R	I	K	R	S	E	P	R	O	U	T	R
Y	S	S	T	A	R	R	N	R	R	U	A
R	H	H	H	U	D	E	R	E	R	N	N
E	O	A	G	I	D	K	R	S	M	E	U
M	I	L	U	T	E	S	A	T	I	I	S
L	A	V	E	N	U	S	T	A	K	T	R

12 Chapter 

Air and Water

- A. 1. (a); 2. (c); 3. (c); 4. (a); 5. (b)
 B. 1. weight; 2. shape; 3. ice; 4. Water, air; 5. watercycle
 C. 1. T; 2. F; 3. T; 4. T; 5. F
 D. 1. Atmosphere is layers of air around the earth
 2. **Properties of Air**
 (i) Air is everywhere in our surroundings but we cannot see it with our eyes. We can only feel the moving air.
 (ii) There is no smell or colour in pure air. It is odourless. It carries good or bad smell of other things.
 (iii) Air fills space. It is everywhere, in an empty glass, in an half filled can of juice.
 (iv) Air is a form of matter. It has weight. When it is filled inside a box, it applies force on the walls of the box.
 3. **Properties of Water**
 (i) On a standard temperature and pressure, water has no smell and no colour.

- (ii) It has no shape, it occupies the shape of the container in which it is kept.
 - (iii) It is known to be a universal solvent. Most of the gases, salt and sugar, etc. get dissolved in water.
 - (iv) Water moves upwards in small spaces. Plants also get water through soil because of this property of water.
4. Water is found in three states on the earth : liquid, solid (ice) and gas (steam).
Water moves from earth to sky and sky to earth in a continuous way. This is called water cycle.
5. **(a) Condensation** : After reaching up in the air, this vapour again cools down and changes into tiny droplets of water and form a cloud.
(b) Evaporation : Water of water bodies gets heated up and begins to rise up in the air in the form of vapour.

E. 1. Do yourself. 2. True

Everyday Science

Do yourself.



13 Chapter

Space

- A. 1. (a); 2. (b); 3. (a); 4. (a); 5. (b)
- B. 1. space; 2. force; 3. Space suit; 4. spacecraft; 5. astronomy
- C. 1. F; 2. T; 3. T; 4. F; 5. T
- D. 1. The area beyond atmosphere of the earth is called space.
2. Astronaut is a person who go into space.
3. Space Suit is special suit for astronauts.
4. Spacecraft is special craft to travel into space. A space craft goes to space with the help of a space craft.
5. Gravitational force is force applied by the earth due to gravity.

E. Do yourself.

Everyday Science

❖ Write the name of five countries that are involved in space Mission Program of NASA :

United States Russia Europe Japan Canada



- A.** 1. (c); 2. (a); 3. (b); 4. (c); 5. (c)
- B.** 1. energy; 2. balanced diet; 3. energy giving; 4. the sun;
5. Preservation
- C.** 1. T; 2. F; 3. T; 4. F; 5. F
- D.** 1. Our body needs some particular substances to grow and become strong. These are called nutrients. We get these nutrients from our food.
2. Citrus fruits and vegetables are good sources of vitamins C.
3. A balanced diet contains balanced amount of all the nutrients : carbohydrates, fats, proteins, vitamins and minerals together with roughage and water. We need to take a balanced diet for healthy growth and development of our body.
4. If we leave the food unprotected for a long time, it becomes stale and bad. We cannot eat it as it is unhealthy for us. Storing food for a long time without getting it spoilt, is called the preservation of food.
5. Roughage helps us in proper functioning of our digestive system. Corn, salad, sprouted seeds such as grams and unsieved flour contain good amount of roughage.

E. 1. Carbohydrates

People doing lot of physical work like farmers, labourers, sportspersons, etc. need lot of carbohydrates to give them energy.

Fats

The extra fat stored under the skin keeps the body warm. They are stored sources of energy in the body. Eating lot of fat rich food can make you obese, which is not a healthy sign.

Protein

Proteins are needed to build muscles, to make them

strong, to grow and to repair the parts which are damaged due to injury or sickness. Food items rich in proteins are often called the body building food.

2. Some food nutrients are required by our body for its normal functioning and to fight against diseases. They are vitamins and minerals. They are needed in very small amounts. They are called protective food.
3. We eat some food items raw and some after cooking them. Mostly fruits are eaten raw. We should wash a fruit before eating it so as to remove all the dirt, germs and chemicals on it.

We cook rice, grains, vegetables, eggs, meat, etc. before eating. Cooking kills the germs that might be present in the raw food. Our body digests cooked food easily and it is tasty as well.

4. Before using any food items, whether we are eating it raw or cooking it, we must follow these tips :
 - Wash fruits and vegetables before cutting them. If we wash them after cutting, the nutrients are washed away.
 - Water in which we soak pulses and rice, etc. contains nutrients so we can use it for cooking.
 - Do not overcook the food as it destroys the nutrients in food.
5. There are some processes of preservation of food such as drying, pickling, refrigerating, deep freezing and canning or bottling.
 - Grapes and nuts are preserved by drying for later use. This process is called drying.
 - Some vegetables, mango and lemon are preserved by adding oil and salt. This process is called pickling.
 - We preserve fruits and vegetables by refrigerating.
 - Meat, fish and cheese can be preserved for a few days by deep freezing.
 - Airtight cans and bottles are used to preserve sauces and jams. This is called canning.

Everyday Science

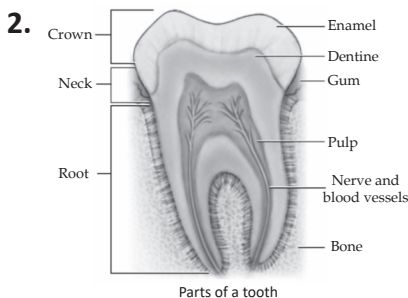
- ❖ Look for preserved food in your kitchen. Do you find any bottled or canned food or some pickle, or food kept in the refrigerator? Ask your mother about :

Food Item	Method of Preservation	Preservation Period
Pickles	Pickling	1 or 2 years
Fruits	Freeze	2-3 days
Curd	Freeze	4-5 days
Snacks	Air the container	1 month
Vegetables	Freeze	1 week

2 Chapter

Teeth and Digestive System

- A. 1. (a); 2. (b); 3. (c); 4. (c); 5. (a)
B. 1. enamel; 2. incisors; 3. Root; 4. Small; 5. minerals
C. 1. T; 2. T; 3. F; 4. F; 5. F
D. 1. Teeth are divided into four kinds on the basis of the functions they perform. incisors, canines, premolars and molars are four kinds of teeth.



3. Oesophagus is a tube which passes the food to stomach.
4. When anybody has crooked teeth, the dentist advises to wear an appliance called teeth braces. This presses on crooked teeth so that they gradually become more even.
5. The digestive process begins in the mouth.
E. 1. Teeth are divided into four kinds on the basis of the functions they perform. Incisors, canines, premolars and molars are four kinds of teeth.

1. **Incisors** : The incisors are chisel-shaped teeth with sharp and flat ends at the front of the mouth.
 2. **Canines** : Canines are pointed and sharp teeth. These are present right next to the incisors in both the jaws.
 3. **Premolars** : Next to canines are the flat and broad teeth called premolar. There are eight premolars– four in each jaw in an adult’s mouth. Premolars are bigger, stronger and have ridges, which make them perfect for crushing and grinding food.
 4. **Molars** : Molars are present behind the premolars. They are twelve–six on the upper jaw and six on the lower jaw.
2. Some ways to protect teeth from decaying are as follows :
- Brush your teeth after every meal. If not possible, brush at least twice a day. Rinse your mouth after every meal. Make sure you brush properly and in the right manner.
 - Do not damage your gums while brushing.
 - Brush for at least 2-3 minutes.
 - Use only soft bristles toothbrush.
 - Change your toothbrush after every three months.
 - Clean your tongue daily with a tongue cleaner.
 - Visit your dentist regularly for check-ups.
3. The digestive system comprises of several organs. Each organ performs a special task to complete digestive system.

Digestion

The digestive process begins in the mouth. Food is first softened with a watery substance called saliva. Saliva is a digestive juice produced by the salivary glands. The teeth and tongue break up this softened food into small parts. The food is then swallowed and moves down to oesophagus.

Oesophagus is a tube which passes the food to stomach.

The stomach is a sac-like organ that squeezes and breaks the food into smaller particles.

The liver secretes a digestive juice which helps in the digestion of food and absorption of nutrients. It secretes this juice into the small intestine.

From the stomach, the food passes into small intestine. The walls of small intestine absorb the broken down food particles and then these are carried to the other different organs by blood.

Food that is not digested moves to the large intestine.

4. From the stomach, the food passes into small intestine. The walls of small intestine absorb the broken down food particles and then these are carried to the other different organs by blood.

Food that is not digested moves to the large intestine.

The minerals and extra water are absorbed by the blood in large intestine. The rest material is called faeces that is then expelled out of the body through the anus.

5. Following eating habits will help to keep the body fit and healthy.
 - Wash your hands properly before and after every meal.
 - Drink a lot of water. It helps to remove the waste products from the body.
 - Eat slowly and chew the food properly before swallowing.
 - Eat a balanced diet that includes fibre rich food. The presence of fibre makes it easier for your body to pass out the waste.
 - Take small portions of meals at regular intervals. Do not overeat.

Everyday Science

- ❖ Write the food habits of following animals by observing their teeth :



Nuts



Flesh



Grass



Flesh

- A.** 1. (c); 2. (c); 3. (c); 4. (a); 5. (c)
- B.** 1. different; 2. sweat; 3. blood circulation; 4. natural;
5. synthetic
- C.** 1. F; 2. T; 3. T; 4. F; 5. F
- D.** 1. Long, narrow and thin threads obtained from plants and animals are called fibres.
2. Fibres are knitted or woven together to make fabrics, so the fabrics are intertwined threads or fibres.
3. To get a new kind of fabric, sometimes man-made and natural fibres are mixed together. In this way, we get long-lasting and wrinkle free fabric.
4. The fibres we get from plants and animals are called natural fibres. Some natural fibres are cotton, wool, linen, jute and silk.
5. Acrylic, nylon, polyester, etc. human-made fibres come from oil and coal. These fibres are called synthetic fibres.
- E.** 1. The fibres we get from plants and animals are called natural fibres. Some natural fibres are cotton, wool, linen, jute and silk.
The fibres which are made by human are called man-made fibres. Acryline, nylon, polyester, etc. are human-made fibres.
2. We wear heavy woollen clothes in winter because they do not allow the heat of our body to escape and don't let the outside cold get inside. In this way, they help to keep us warm in winter.
3. We must look after our clothes properly. They need proper washing, drying and ironing. They need a little mending properly and regularly.
Harsh detergents should not be used to wash clothes. Always use a good detergent and dry clothes in shade. Bright sunlight may fade their colour. Do not spin them roughly, they may get damaged. Moths and silverfish

generally attack silk and woollen clothes. If keeping them for a long time, always keep naphthalene balls with them to keep these harmful insects away.

Everyday Science

Do yourself.



Solids, Liquids and Gases

- A.** 1. (a); 2. (a); 3. (c); 4. (a); 5. (a)
- B.** 1. solute; 2. solvent; 3. liquid; 4. fluids; 5. gas
- C.** 1. T; 2. T; 3. F; 4. T; 5. T
- D.** 1. In solids, the molecules are packed very close to each other. They have a very little space between them. So they have a fixed shape and size. Some solids are hard like stones and diamonds and some are soft like cloth, paper, etc. Solids cannot be compressed.
2. When a gas is cooled down or its temperature is reduced, it becomes a liquid. This process is called condensation.
3. When a solid is heated or its temperature is increased, it changes into its liquid form. This process is called melting.
4. The evaporation is the process in which water completely vaporises on heating and the solute is left behind.
5. The filtration is the method in which insoluble substance collects on filter paper and liquid passes through the filter and gets collected in the container.
- E.** 1. Anything that has mass and occupies space is called matter. Everything in this universe is matter. All the things in our surroundings have various sizes and shapes. Some may be hard while some may be soft.

States of Matter

We can divide all the matter into three groups on the basis of arrangement of particles. We call it states of matter. The three states of matter are solid, liquid and gas.

All the matter found in universe is in either of the three states.

(i) Solid : In solids, the molecules are packed very close to each other. They have a very little space between them. So they have a fixed shape and size. Some solids are hard like stones and diamonds and some are soft like cloth, paper, etc. Solids cannot be compressed.

(ii) Liquid : The molecules in liquids are packed loosely. They have space between them. That is why liquids do not have a fixed shape and take the shape of the container in which they are put. Liquids have a fixed volume. Liquid can be compressed and can flow.

(iii) Gas : Particles in gases are packed very loosely. They have a huge space between them. The molecules of gas keep moving freely. Gas does not have a fixed shape and spreads all over the empty space available. It cannot be kept in an open container as its molecules always keep flowing to fill available space.

2. All matter is made of small molecules. These small particles are packed differently in different things. So all the things have different size, shapes and looks. All the matter found in universe is in either of the three states.

(i) Solid : In solids, the molecules are packed very close to each other. They have a very little space between them.

(ii) Liquid : The molecules in liquids are packed loosely. They have space between them.

(iii) Gas : Particles in gases are packed very loosely. They have a huge space between them. The molecules of gas keep moving freely.

3. The three states of matter are interchangeable in some substances. Such as a solid can change its state to liquid. Ice cube in the freezer are the solid form of water. Transfer of heat causes change in state of substance. The molecules of a substance get more energy and become active and faster when it gains heat. They start moving away from each other.

While the substance loses heat, the molecules lose their energy and start to move close to each other slowly.

On gaining heat, water becomes vapour and on losing heat, water becomes ice.

- When a liquid is cooled down or its temperature is reduced, it becomes a solid. This process is called freezing.
 - When a solid is heated or its temperature is increased, it changes into its liquid form. This process is called melting.
 - When a liquid is heated or its temperature is increased, it changes into a gas. This process is called evaporation if the heating is slow, and if the heating is fast, it is called boiling.
 - When a gas is cooled down or its temperature is reduced, it becomes a liquid. This process is called condensation.
4. In sedimentation, the solution is left without disturbing for some hours. The insoluble substance sits down at the bottom of the container. Then the pure water is transferred to another container.
5. When a gas is cooled down or its temperature is reduced, it becomes a liquid. This process is called **condensation**. Soluble substance can be separated from liquid by heating it. The evaporation is the process in which water completely vaporises on heating and the solute is left behind.

Everyday Science

Do yourself.



Soil

- A. 1. (c); 2. (c); 3. (a); 4. (b); 5. (a)
- B. 1. air; 2. Gravel; 3. Topsoil; 4. microorganisms; 5. soil erosion
- C. 1. T; 2. T; 3. F; 4. T; 5. F
- D. 1. Temperature act continuously on the rocks.

2. In the process of weathering, heat, wind and water affect the large rocks which break down into small pieces and collide each other against the ground. This collision changes them into very fine particles. These fine particles mixed with humus, i.e. remains of decaying plants and dead animals, and make soil.
 3. Sand is composed of fine granules of mineral material. These granules also allow water to pass through them. A mixture of clay and sand is called as loam. The presence of humus makes loamy soil the best soil for growing plants.
 4. Topsoil is made of sand and clay and is rich in humus and thus very fertile. It is washed away or carried away by water and strong wind respectively. This is called soil erosion.
 5. The measures that are taken to control soil erosion are called soil conservation. We can conserve soil by :
 - Recovering the fertility of a farming land by growing different types of crops. This method is called crop rotation.
 - Planting trees in forests. A lot of trees need to be planted to replace the cutting down trees.
- E. 1. The soil of various places may be different from each other. It depends on the types of rocks present at a place, climate of the region and local soil forming process. Soils can be categorised into three types according to their external appearance.
- (i) Gravel :** Gravel is made of small stones. These stones are hard and have space between them that allows water to pass easily. These stones cannot hold water.
- (ii) Sand:** Sand is composed of fine granules of mineral material. These granules also allow water to pass through them.
- (iii) Clay :** The clay is a composition of very tiny particles that can be carried to long distances by wind and water. Clay becomes thick, heavy and sticky when it mixes with water. It does not allow water to pass through it.

A mixture of clay and sand is called as loam. The presence of humus makes loamy soil the best soil for growing plants.

2. Soil is made of following layers :

(i) Bedrock : Bedrock is the lowermost layer of soil. It is a huge mass of pieces of rocks. It holds the water on its surface. It is non-porous.

(ii) Parent rock : Above bedrock layer, it is found, which holds water between spaces called ground water.

(iii) Subsoil : It is the central layer of soil. It has a plenty of soluble minerals. It is softer than bedrock and more compact than the upper surface of soil. It does not have much humus.

(iv) Topsoil : It is the topmost layer of soil. It holds the roots of plants. It has plenty of humus that provides nutrients to the soil. These nutrients are essential for a plant to grow.

3. The soil erosion is the removal of fertile topsoil by the action of wind and water. Trees control soil erosion. Overgrazing and cutting down trees are the causes of soil erosion. The infertile soil left after erosion is not suitable for the cultivation of crops and plants.

4. All the plants need soil to grow. They get essential nutrients for their growth from the soil. Some measures should be taken to stop soil erosion.

The measures that are taken to control soil erosion are called soil conservation. We can conserve soil by :

- Recovering the fertility of a farming land by growing different types of crops. This method is called crop rotation.
- Planting trees in forests. A lot of trees need to be planted to replace the cutting down trees.
- Preventing floods. Dams should be built across the river.

5. Soil erosion removes the top fertile layer of the soil. This layer is rich in the essential nutrients required by the

plants and the soil. The degraded soil does not support crop production and leads to low crop productivity.

Everyday Science

Do yourself.



Chapter

Food Synthesis in Plants

- A.** 1. (c); 2. (b); 3. (b); 4. (a); 5. (c)
- B.** 1. Chlorophyll; 2. blade; 3. Transpiration; 4. Small Veins;
5. Scavengers
- C.** 1. T; 2. F; 3. T; 4. F; 5. T
- D.** 1. Photosynthesis is the process through which leaves of plants make their food.
2. Carbon dioxide, water, sunlight and chlorophyll and needed for photosynthesis.
3. Stomata allows water and gases to enter and leave the leaf. Plants also lose water by evaporation through the stomata. This process is called transpiration.
4. There are little openings on the underside of a leaf. These little pores are called stomata.
5. we get four possible arrangements—simple and alternate, simple and opposite, compound and alternate and compound and opposite.
- E.** 1. A leaf has two main parts – stalk, called petiole and a wide, flattened portion called the blade. The narrow tip of the leaf is called apex. There is a long, tube like structure in the middle of the leaf that is called main vein or midrib of the leaf. From the midrib, a number of smaller, side veins emerge out and create a network of small veins throughout the blade. Midrib joins the leaf to the stem through the petiole. This network of small veins transports water and mineral to the leaf from the stem and carries food from the leaf to other parts of plant.

2. The leaves of a plant are the primary site where the food for a plant gets ready to be sent to different parts of the plant.

Leaves of the plants take sunlight and use it to convert carbon dioxide and water into food. It is a most important life process on Earth. It is important for plants as well as human beings and animals. The process of photosynthesis occurs inside a leaf.

3. Leaves make food for the plants. We can classify them as simple leaves and compound leaves.

Simple leaf has a single leaf blade joined with stalk. This stalk is joined to a woody twig and when the stalk is removed from the twig, it leaves a distinct scar on it.

Compound leaf has more than one leaf blade on a stalk. These leaf blades are called leaflets. These leaflets together form a leaf that is joined to a single stalk. It also leaves a scar on the twig when the stalk is pulled away.

Leaves are arranged in different manner in different plants. In some trees, leaves are arranged alternatively along the stem. In other trees, leaves occur in opposite pairs along the stem. These arrangements can be found in both simple and compound leaves. In this way, we get four possible arrangements—**simple** and **alternate**, **simple** and **opposite**, **compound** and **alternate** and **compound** and **opposite**.

4. **Mutual Relationship of Plants and Animals**

Plants and animals have a mutual relationship. They need each other for their existence. Plants take carbon dioxide in and give out oxygen while animals breathe in oxygen and release carbon dioxide.

Plants are primary producers. They make their food on their own by taking the energy from sunlight. Animals eat plants and get this energy to carry out their life process. The bigger animals either eat plant or a herbivore, so they are called consumers.

Some animals eat plants, they are called herbivorous animals. Such as, cow, deer, giraffe, elephant, etc.

Some animals eat herbivores, that are called carnivorous animals. Such as, lion, tiger fox, etc.

Some animals eat both animals and plants, they are called omnivores. Such as bear, crow, etc. Humans are also omnivores. Some animals eat the flesh of dead animals that are called scavengers, such as, vulture and hyena.

There are some very small microorganisms that live in soil. These microorganisms breakdown the bodies of dead animals into tiny particles that get mixed with the soil. These animals are called **decomposers**.

5. A food chain shows the transfer of energy. It describes how each living thing gets food and how energy is transferred from one organism to another.

We use an arrow (\rightarrow) between organisms to draw a food chain. This arrow indicate the eater.

A simple food chain is : Plants \rightarrow deer \rightarrow lion

Many food chains are interlinked together to form a food web.

Everyday Science

Do yourself.



Adaptation in Plants

- A. 1. (c); 2. (b); 3. (b); 4. (c); 5. (a)
- B. 1. Broad floating; 2. habitat; 3. needle-like; 4. insectivorous; 5. wax coating
- C. 1. T; 2. F; 3. F; 4. F; 5. T
- D. 1. The special features of plants that allow them to live in a particular place or habitat are called adaptations.
2. The coastal plants have some adaptations to survive here :
- They have plenty of leaves to protect the plant from exposure to the sun and salty water. They do not shed their leaves throughout the year.

- They produce very large seeds that can be dispersed by sea water for the growth of new plants.
3. Some desert plants have no leaf or they grow seasonal tiny leaves only when it rains. In this way, they reduce the loss of water during photosynthesis.
 4. Insectivorous plants are also known as carnivorous plants. These plants grow in places where the soil has not much nutrients and food for them.
 5. Non-green plants are called saprophytic plants. Mushroom, coral root and Indian pipe are some saprophytic plants. These plants do not have chlorophyll.
- E. 1. These are also known as land plants. It is clear that the plants that grow on land are called terrestrial plants.
We can categorise them as follows :
- (i) Plants in plains :** Plains have favourable conditions for a plant to grow. Many crop plants such as cereals, pulses, fruits, vegetables and other food crops grow in plains. Trees like neem, gulmohar, sheesham, peepal, sal, poplar, etc. shed their leaves at once.
- (ii) Desert Plants :** Hot, sandy and dry places are called deserts. They receive very scanty rainfall. The soil being sandy and rocky cannot hold much water. Direct sunlight falls on the plant.
- (iii) Plants on Mountains :** The weather conditions on mountains slows down the growth of plants. There are many other challenges that plants face in mountain areas. Strong rays of the sun damage the leaves of plants and soil is not having enough nutrients that are essential for the growth of plants.
2. **Desert Plants :** Hot, sandy and dry places are called deserts. They receive very scanty rainfall. The soil being sandy and rocky cannot hold much water. Direct sunlight falls on the plant.
Therefore plants in deserts really need some adaptations to grow.

- Some desert plants have no leaf or they grow seasonal tiny leaves only when it rains. In this way, they reduce the loss of water during photosynthesis. Their green stems make food for them through photosynthesis.
- Some succulent plants store water in their stems.
- The long roots of these desert plants go a long way down into the soil to absorb as much water as they can.
- Stems and leaves have wax coating to reduce water loss.

Aquatic Plants : Water plants are also called aquatic plants. We can categorise them into two groups—floating and underwater plants.

(i) Floating Plants : Floating plants are also of two types. Some plants are rooted with floating leaves such as lotus and water lily. Some plants are not rooted, but just float on the water surface, such as duckweed.

Floating leaves bear the force of moving water so they are usually sturdy to bear that. These plants have green leaves that have green pigment containing chloroplasts that is important for photosynthesis. The surface of the leaves are well lit. Upper surface of the leaves have stomata to breathe. The waxed upper surface of the leaves help to repel water and help to keep the stomata open and clear to breathe.

(ii) Underwater Plants : Tape grass and pondweed are some underwater plants. Such plants are completely submerged in water and have thin, ribbon-like narrow leaves. They have flexible leaves and stems to move with flowing water. Their stems do not have strong water transport system.

- 3. Insectivorous Plants :** Insectivorous plants are also known as carnivorous plants. These plants grow in places where the soil has not much nutrients and food for them. They now have adapted the habit of trapping insects to meet their nutritional needs. This adaptation took place over thousands of years.

In a pitcher plant, the leaf is modified into a pitcher-like structure. They seem to be full of nectar. Insects get attracted to these pitchers and go closer to these pitcher, but slide down the slippery slope and get trapped. Pitcher walls have hair-like growths along its sides that do not allow anything to scramble out.

4. Saprophytic Plants : Non-green plants are called saprophytic plants. Mushroom, coral root and Indian pipe are some. saprophytic plants. These plants do not have chlorophyll. So they cannot make their food on their own. They absorb nutrients from other decaying plants. They normally grow in sandy places or on woods.

5. Coastal Plants : Coastal areas have hot and wet climate. The soil in coastal area have no essential nutrients as it is salty and generally low in water.

The coastal plants have some adaptations to survive here :

- They have plenty of leaves to protect the plant from exposure to the sun and salty water. They do not shed their leaves throughout the year.
- They produce very large seeds that can be dispersed by sea water for the growth of new plants.

Swamp Plants : In swamps or moisty areas, the soil is very sticky and clayey. This soil does not provide much air to the roots of the plants. The plants that grow in swamp areas are called mangroves. They have special roots out of the soil to breathe.

Everyday Science

❖ **Find where do you find these plants and other information :**

Habitat	Coastal area
Leaves	Parallel
Adaptation	Sea coast



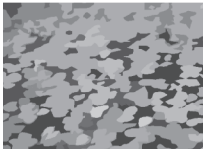
Habitat	Insectivorous Plant
Leaves	Pitcher-like structure
Adaptation	Nutritional need

Habitat Aquatic Plants
Leaves Round shape
Adaptation In water



Habitat Saprophytic plant
Leaves No leaves
Adaptation Sandy places

Habitat Mountainous plant
Leaves Needle-like shape
Adaptation Thin-fibre like structure called hair



Habitat Floating plant
Leaves Floating leaves
Adaptation Float on the water surface

8 Chapter

Interdependence of Plants and Animals

- A.** 1. (c); 2. (b); 3. (b); 4. (c); 5. (c)
B. 1. reproduce; 2. photosynthesis; 3. sense; 4. living; 5. pollen
C. 1. F; 2. T; 3. T; 4. T; 5. T
D. 1. Animals use sense organs to feel and respond to changes in their surroundings. Plants also respond to stimuli. For example : growth of plants towards sunlight, sunflower turning towards sunlight, closing of leaves of mimosa (touchme- not plant), when someone touches it, etc.
2. Plants do not consist of the digestive system while animals do. In plants, it occurs through stomata. Whereas, in animals, it occurs through lungs, gills, skin and more.
3. The flowers have small particles called pollens which help in reproduction. When honeybees and butterflies sit on the flower to suck the nectar, these pollens stick to their bodies and are carried to other flowers. In this way, these insects help these plants in pollination.

4. Animals breathe in oxygen from air and breathe out carbon dioxide while plants take in carbon dioxide and give out oxygen in the process of photosynthesis. So they depend on each other for breathing.
5. Plants make their own food through the process of photosynthesis. Some animals eat plants, some eat other animals while some eat both plants and animals. When plants and animals die, they become food for decomposers like bacteria, fungi and earthworms. Decomposers recycle these dead animals and plants into nutrients that are mixed back into the soil, air and water. Plants use these nutrients to grow. This is an ongoing cycle.

Everyday Science

Do yourself.



Circulatory and Excretory System

- A. 1. (c); 2. (a); 3. (b); 4. (b); 5. (c)
- B. 1. muscle; 2. Circulatory; 3. Ureters; 4. Urethra; 5. red, blue
- C. 1. T; 2. T; 3. F; 4. T; 5. T
- D.
 1. Arteries are blood vessels that carry pure blood, oxygen, water and nutrients from heart to other parts of our body.
 2. Veins are the blood vessels that carry back the blood to the heart, after delivering oxygen to the cells.
 3. Arteries branch off to make very small tubes that are called capillaries. Capillaries are spread throughout our body.
 4. The organ system that throws out the waste and harmful products from our body is called excretory system. A pair of kidneys, a pair of ureters, a urinary bladder and a urethra together form excretory system.
 5. Heart is a human-fist-like muscular structure. It beats at the rate of 70 beats per minute. On working hard or exercising, the rate of heartbeat increases. The main function of the heart is to pump blood throughout the body.
- E. 1. Circulatory system helps in carrying out substances such as oxygen, water and other nutrients to other organs. Heart,

blood and blood vessels altogether make up circulatory system. Blood travelling from the heart, delivers oxygen and nutrients to every part of the body. On returning back, it picks up waste products with it so that body can get rid of them.

2. Kidneys : To filter the waste of our body from blood, there exists a pair of bean-like structures, that are known as kidneys. They throw out waste in the form of urine. They make urine by combining waste with water. Kidneys work to maintain the balance of minerals and water in our body.

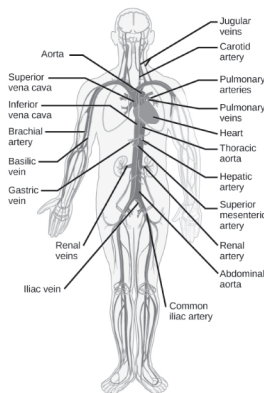
Ureters : Urine moves down through two thin tubes that are known as ureters. Then the urine gets collected into urinary bladder.

Urinary bladder : Urine is stored in urinary bladder. When the bladder is full, we need to go to washroom. Urinary bladder has a waterproof lining that does not allow urine to leak from bladder.

Urethra : The urine expels out of the body through the urethra. It is a tube that takes the urine from bladder to outside the body.

3. The excretory system works together with the circulatory system because the blood of the circulatory system is filtered through the excretory system. The main organ in the excretory system is the kidneys. Blood from the circulatory system passes through the kidneys where it is filtered.

4.



Circulatory system

5. Blood Vessels

There is a large network of blood vessels in our body.

The blood vessels are found everywhere in our body. They carry blood from the heart to other parts of the body and take back all the waste mixed in blood.

Arteries are blood vessels that carry pure blood, oxygen, water and nutrients from heart to other parts of our body.

Veins are the blood vessels that carry back the blood to the heart, after delivering oxygen to the cells.

We can see arteries as red and veins as blue tubes from outside the skin.

Arteries branch off to make very small tubes that are called capillaries.

Capillaries are spread throughout our body.

Everyday Science

- ❖ **Name 3 diseases related to our heart and kidney in the given space :**

Diseases related to heart	Diseases related to kidney
1. Heart Attack	1. Amyloidosis
2. Heart failure	2. Diabetes
3. High blood pressure	3. Ectopic Kidney

10

Chapter

Reproduction in Animals

- A. 1. (c); 2. (b); 3. (c); 4. (a); 5. (c)
- B. 1. albumin; 2. reproduction; 3. mammal; 4. butterfly;
5. tadpole
- C. 1. T; 2. F; 3. T; 4. T; 5. T
- D. 1. All living beings give birth to babies to increase their own species. This process is known as reproduction. Some animals give birth to their young ones while others lay eggs.
2. Reproduction is an essential process for all living beings. It is a characteristic feature of all the organisms. If plants and animals did not give birth to their babies, how would life on earth exist?

Animals which reproduce through laying eggs are called oviparous and the animals which give birth to their young ones are called viviparous.

3. When tadpole grows, its back legs begin to develop, and then front legs. Its tail begins to shrink. Its lungs begin to develop, tail keeps shrinking and eyes and mouth become larger. When the tail finally disappears' the tadpole becomes a mature frog. This process of changing a tadpole into a frog is known as metamorphosis.
 4. Animals which reproduce through laying eggs are called oviparous.
Birds, fish, reptiles and amphibians are oviparous.
 5. the animals which give birth to their young ones are called viviparous.
- E. 1. All the birds are oviparous that mean they lay eggs to reproduce. They make nests to lay their eggs. The parent birds take turn to ensure safety of the eggs. The parent birds keep the eggs warm by sitting on them till they hatch. This period is called incubation. When the eggs hatch, the babies come out. They have undeveloped eyes and no feathers. The parent birds look after and feed them till they learn to fly and begin to seek food on their own.

2. Life Cycle of Butterfly

Butterfly lays eggs on leaves of the plants. After hatching out, larva begin to eat leaves. For about two weeks, they eat leaves. Then they grow into a caterpillar. These caterpillars shed their outer skin and attach themselves to a twig. This stage is called pupa or chrysalis. The butterfly comes out of this pupa after nearly two weeks. It waits for its wings to dry and then it flew away.

3. Mammals have different ways of taking care of their young ones. They are divided into three categories on this basis.
 - Most of the mammals gives birth to their young ones and look after them. These animals are called placental mammals. Dogs, cows, sheep, cats elephants, etc. are some placental mammals.

- Some mammals carry their young ones in their pouches after birth. They are called marsupials. Kangaroos and opossum are such mammals.
- A few mammals lay eggs too. Duckbilled platypus and the spiny anteater are such animals. They are called monotremes.

Everyday Science

Do yourself.



Adaptations in Animals

- A.** 1. (c); 2. (a); 3. (b); 4. (b); 5. (a)
- B.** 1. blubber; 2. nocturnal; 3. opossum; 4. inherited;
5. Camouflage
- C.** 1. T; 2. T; 3. T; 4. F; 5. T
- D.** 1. The special characteristics that an organism holds to live and grow in a habitat are called adaptations.
2. The environment that provides food, shelter and protection to an animal is called its habitat.
3. Water animals are also called **aquatic animals**. Such animals are fish, turtles, crabs, dolphin, octopus, etc.
Fish have fins to swim in water.
Animals that can live in water and on land are called **amphibians**. They have both the organs gills and lungs to breathe. Inside water, they breathe through gills and on land, they breathe through lungs.
4. Whales are mammals. They have blowholes on their heads that open and close to allow them to breathe. They come up to the water surface to breathe.
5. The bugs secrete a nasty fluid from the joints of their legs, when they are threatened.
- E.** 1. Animals have some physical or structural adaptations. For example :
- (i) Body coverings :** The thick fur of a polar bear helps it to survive in freezing cold regions. It stores fat under its skin

for later use. Similarly, the outer skin of a snake has scales that help it to crawl.

(ii) Particular body parts : A camel's hump is a storage of fat that it uses to survive for a long period without food and water in deserts. Birds have wings to fly.

(iii) Size or shape of an animal teeth : Animals have different kinds of teeth according to their different food habits and the food found in their habitat.

(iv) Behaviour adaptation are the things organisms do to survive. Behaviour adaptations can be inherited or learnt. For example, moving in a large group.

- Animals live in groups. Zebras, deers, etc. have the behaviour adaptation of living in groups. They graze close together to keep the predators away.

2. Terrestrial animals

The animals that live on land are called terrestrial animals. Such as lion, sheep, tiger, cow, giraffe, etc. Terrestrial animals breathe through their lungs and have active sense organs to sense their surroundings. These animals have particular adaptations according to their habitat.

Snake has most useful adaptation, that is flexible jaws which allow it to gobble up the prey bigger than itself.

In deserts, gila monster lizard is found. It stores food in its short and plump tail. It stores food for the period of lack of food. Most desert animals stay underground during the day. They come outside at night to search for food.

- 3.** In deserts, gila monster lizard is found. It stores food in its short and plump tail. It stores food for the period of lack of food. Most desert animals stay underground during the day. They come outside at night to search for food. Snakes and foxes are nocturnal. Camels can close their eyes in deserts and their nostrils are structured to keep away the blowing sand.
- 4.** All the animals have some adaptations that protect them from predators. Some adaptations are as follows :

Camouflage is a method in which animals blend themselves with the surroundings, so that they cannot be seen or spotted easily and remain protected from predators.

Grasshoppers blend themselves with the green colour of leaves and grass.

Tigers blend themselves with the brown grass to hide themselves while hunting.

Zebras and polar bears use their fur to camouflage with their surroundings.

5. Arboreal Animals

Animals that live or spent most of their time on trees are called arboreal animals. They live on trees for food and shelter.

They have various kinds of adaptations in manner of climbing and living on the trees.

Tree frogs and geckos have adhesive pads for a better grip on branches. Chameleons and opossums also use their tails to balance on trees. It also helps them to move.

Sloths hang from the trees with the help of their strong claws. Squirrels have flexible ankle joints. This helps their feet to point backward, and their claws can hook into the bark, while they scamper down the tree. Chameleons have mitten-like feet for a better grip.

Everyday Science

Do yourself.



Force, Work and Energy

- A. 1. (c); 2. (b); 3. (c); 4. (b); 5. (c)
- B. 1. Force; 2. work; 3. Energy; 4. Sun; 5. fulcrum
- C. 1. T; 2. F; 3. T; 4. F; 5. T
- D. 1. A push or a pull on an object is called a force.
2. Gravity is the force that is applied by the earth on everything.

3. **Friction** : When two objects come together, their motion stops.
 4. When a space shuttle returns back from space and enters earth's atmosphere, too much energy is produced due to the friction between fast moving spacecraft and the atmosphere of earth. Spacecraft turns hot and red due to this energy.
 5. We can categorise simple machines as pulley, lever, axle, wheel, inclined plane, wedge and screw.
- E. 1. This pulling or pushing something is called force. So the force can change the position or shape of the object on which it is applied. Force is applied to stop a moving object, in the opposite direction to motion. Shape and direction of an object can also be changed by applying force on it.

In our daily life, no work can be done without force. It is a very important factor of our life. There are different types of forces.

(i) Gravitational Force : When we throw a stone to the sky, it falls down to the earth. And when we drop a stone from the roof of a building, it also comes down. Force of gravity makes all the things fall on earth. It is a special force that earth applies on everything to attract towards it. That means earth pulls everything towards its centre.

(ii) Frictional Force : Without friction, anything that starts moving will never stop. When we roll a ball on the ground, it stops after moving for some distance. The ball stops moving due to friction. When a moving object comes in the contact of a surface, a force works between them that stops the moving object on the surface. This force is friction.

2. if we push a wall, it does not move. That means no work has been done. If somebody is holding a heavy load in his hand, after some time, he gets tired and the weight becomes heavier for him. Although no work is done on the

load, that seems heavier than before. When we put it on ground, that is noted to be work done.

We calculate it from the given formula.

Work done = force applied on an object \times distance moved by the object

3. We use some tools to do our work easily. If we want to fix a nail into wood, we cannot do it with our hands, but a hammer can do it easily. These tools are called simple machines. We use them to do our work easier and faster. Some simple machines that we commonly use are scissors, knives, screw drivers, etc.

Machines help us to perform a job with less effort, and increase the size of force we apply. We can categorise simple machines as pulley, lever, axle, wheel, inclined plane, wedge and screw.

(i) Inclined Plane : A ramp is an inclined plane. These ramps are used in factories to move the objects into and outside the loading area. Cars are also loaded on a transport truck and unloaded from it using an inclined plane.

(ii) Wedge : A wedge is used to cut things. It has a sharp end on one side. An axe is a wedge. When it is forced downward, its blade chops the wood apart. A knife is also an example of wedge.

(iii) Screw : Screws are used to hold things together. The structure of a screw is an inclined plane in a round shape and a wedge at the tip.

4. Sources of Energy

(i) Sun : The main source of the energy is the sun. It is the primary source of energy on the earth. It gives us light and heat. We use sunlight to cook our food in solar cooker and heat our water in solar heater. Energy that we get from food comes from solar energy. Plants use sunlight to make their food. Human beings and animals eat this food for energy.

(ii) Wind : Moving air is called wind. Wind has energy to do work. It is used to rotate the blades of windmill and thus electricity is produced. It is also used to move sail boat. In olden days, ships were moved by the energy of wind.

(iii) Water : Stored water also has energy. The water that is stored in the reservoir of a dam, also has energy. When this water is released, it moves and rotates the turbines of the generators to produce electricity.

Everyday Science

❖ **Energy keeps its forms changing. This is called energy transformation. Following are some examples of energy transformation in everyday routine. Match them :**

Column A	Column B
1. Windmill	(a) Electrical energy to light and heat.
2. Loudspeaker	(b) Muscular energy to sound energy
3. Study lamp	(c) Sound energy to electrical energy and then again electrical energy to sound energy.
4. Beating a drum	(d) Electrical energy into mechanical energy.
5. Electric motor	(e) Wind energy to mechanical energy and to electrical energy.

- A.** 1. (a); 2. (a); 3. (a); 4. (c); 5. (b)
B. 1. Heat; 2. thermal conductors; 3. plastic; 4. hotter, colder; 5. thermal insulators
C. 1. Heat is a kind of energy.
 2. Temperature tells us the level of heat.
 3. Thermal conductors pass heat through them easily.
 4. Thermal insulators do not let the heat transfer.

5. The heat always travels from hot to cold.

When two objects touch each other or are combined, their particles transfer heat energy. They adjust their temperature at the same level. Heat travels from the hotter object to the colder one.

D. 1. Some materials are good conductors of heat energy. They let heat move through them easily. These materials are called thermal conductors. Metals allow heat to conduct through them quickly such as steel and aluminium.

Plastic and wood are the materials that do not transfer the heat. They are not good conductors of heat. They are called thermal insulators.

On a cooking pan, plastic handle is attached because it prevents heat from travelling to handle from pan and saves our hand from getting burnt while holding the pan.

2. Heat is also a kind of energy. We measure it by temperature. The unit of measuring temperature is degree Celsius ($^{\circ}\text{C}$).

The things having a high temperature are hot while others having a low temperature are cold.

So the way to measure hot or cold is temperature. Heat transfers from a hot object to a cold one.

Everyday Science

Name of the object	Made of	Insulator/conductor
Frying pan	Aluminium	Thermal conductor
Thermos flask	Thermoplast	Thermal Insulators
Immersion rod	Iron	Thermal conductor
Tawa	Iron	Thermal conductor
Tea cup	Bone China	Insulator
Blanket	Fibre	Insulator
Pullover	Fibres (wool)	Insulator

A. 1. (b); 2. (b); 3. (a); 4. (a); 5. (c)

- B.** 1. Mercury; 2. Mars; 3. Uranus; 4. Saturn; 5. crust
- C.** 1. F; 2. T; 3. T; 4. T; 5. T
- D.** 1. All the planets revolve round the sun in their orbits. All the planets are attracted towards each other with a force of gravity. All the eight planets remain in their orbits due to the gravitational force between the sun and the planets.
2. **Mars** : Iron mineral in the soil of Mars causes the soil and the atmosphere to appear red. So it is called the Red Planet. Phobos and Deimos are its two moons. Largest volcanic mountain Olympus is found here on Mars. This planet experiences huge dust storms.
3. Ceres, Eris, Make make and Haumea are also some dwarf planets.
4. **Comets and Asteroids**
The spherical celestial bodies made of ice and dust that revolves around the sun, are called comets. Sometimes, they have tail-like formation of dust and gases. Asteroids are chunks of massive rocks, they are smaller than planets. These asteroids are found in 'asteroid belt' in orbit around the sun between Mars and Jupiter.
5. Our earth completes one rotation in 24 hours. That means a complete day on earth is 24 hours long.
- E.** 1. The sun is a big star. Our solar system consists of the sun and eight planets. These eight planets revolve around the sun in their orbits.

Planets

Our solar system consists of eight planets. They are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. Mercury is the closest to the sun. All the planets revolve round the sun in their orbits. All the planets are attracted towards each other with a force of gravity. All the eight planets remain in their orbits due to the gravitational force between the sun and the planets.

(i) Mercury : This is closest to the sun. Its temperature can reach 430°C. Mercury does not have any moons.

(ii) Venus : It is the second planet, closest to the sun. It also has no moons. One Venus day is about 117 earth days long. This planet rotates backward in comparison to other planets.

(iii) Earth : It is the third planet from the sun. It has one moon. It has perfect balance of gases– 78% nitrogen, 21% oxygen and 1% other gases in atmosphere that supports life.

(iv) Mars : Iron mineral in the soil of Mars causes the soil and the atmosphere to appear red. So it is called the Red Planet.

(v) Jupiter : It is the largest planet. Its four largest moons are – Europa, Ganymede, Callisto and Io. It has many more natural satellites. It has rings.

(vi) Saturn : It is also known as Ringed Planet as it has a unique ring system different from all the planets. Its rings are made of ice, rocks and dust.

(vii) Uranus : Uranus rotates on its side or spins horizontally. It is bright green-blue planet. It has faint rings.

(viii) Neptune : It has 13 known moons. Triton is its largest moon. It is the eighth planet from the sun.

2. The celestial bodies that revolve around a planet are called satellites. Moon is the Earth's only natural satellite. It is the fifth largest satellite in the solar system. It does not have its own light but reflects the light of the sun.

Moon does not have any atmosphere. The days on moon are very hot and nights are very cold. Moon seems to change its shapes every night , that are called phases of the moon.

These phases are known as new moon, waxing crescent, first quarter, waxing gibbous, full moon, waning gibbous, third quarter and waning crescent.

Some man-made satellites are also revolving around the Earth. These satellites help us in communication, weather forecast, broadcast, security, etc.

3. Comets and Asteroids

The spherical celestial bodies made of ice and dust that revolves around the sun, are called comets. Sometimes, they have tail-like formation of dust and gases. Asteroids are chunks of massive rocks, they are smaller than planets. These asteroids are found in 'asteroid belt' in orbit around the sun between Mars and Jupiter.

4. All the planets revolve around the sun. These planets also rotate on their imaginary axis. The time of rotation is different for every planet. Our earth completes one rotation in 24 hours. That means a complete day on earth is 24 hours long.

The earth always faces the sun from one side, the other side remains in dark. As the earth rotates, the side changes and other side of the earth faces the sun now and the first side gets dark. That means on lighter side, there is day and on darker side, there is night.

5. The earth is tilted on its imaginary axis. It rotates in leaning position. It never gets straight.

As we know, the earth revolves round the sun. As the earth revolves in tilted position, this tilt causes one hemisphere to get comparatively closer to the sun and receives direct sunlight resulting in summer. While the other hemisphere which is comparatively farther to the sun receives slanting rays. Thus less intense heat causes winter. Regarding the position of the earth, the northern and southern hemisphere experience opposite seasons.

Everyday Science

Do yourself.



How Plants Grow

- A.** 1. (b); 2. (a); 3. (d); 4. (d); 5. (d)
- B.** 1. water, air, manure; 2. leaves; 3. oxygen; 4. seed coat; 5. harvesting
- C.** 1. T; 2. T; 3. F; 4. F; 5. T
- D.** 1. Cotyledons are the leaf-like parts of a seed which store food for the early stages.
2. Germination is the process of seed growing into a new plant.
3. Seedling is a baby plant.
4. Agriculture is the practice of growing and harvesting crops.
5. Dandelion get dispersed by wind.
- E.** 1. Number of seeds varies in various plants. Each seed has the potential to grow into a new plant like its parental plant. Only some seeds get a chance to grow into a plant. Some other seeds are destroyed by rain and storm and do not get favourable conditions, i.e. air and warmth to grow or are eaten up by animals.
2. Sometimes seeds are taken away from the parent plant and grow in a distant area. There are many factors which are responsible for the scattering of seeds. The process by which seeds get scattered away from the parent plant is called dispersal.
Following are some factors through which seeds get scattered :
- (i) Wind** : Many small seeds that are very light and have wing-like structures are carried away by the wind to distant places. For example, dandelion and sycamore.
- (ii) Water** : The seeds of aquatic and coastal plants get dropped into or near water bodies. For example, the fibrous covering of the seeds of lotus and coconut plants.

(iii) Animals : Birds and other animals eat fruits. The undigested seeds come out with waste from their bodies, often at a distant place from the parent plant.

(iv) Explosion : Poppy pea and bean seeds are the fruits that scatter their seeds by explosion. The seed pod of the plant ripens and bursts open and forcibly shoots the seeds in different directions.

3. Most plants grow from their seeds while other plants grow from various parts like leaves, stems and roots.

(i) Growing Plants from Seeds : In plants, flowers change into fruits. Seeds are contained inside the fruits.

A baby plant is contained safely inside a seed. The hard outer covering of a seed is called seed coat that protects the baby plant. There are two thick structures called cotyledons, inside the seed coat. The food for baby plant is stored inside these cotyledons. The baby plant begins to grow, when water enters the seed coat through a tiny hole.

(ii) Growing Plants from Roots : Some plants grow from their roots. Radish, turnip, carrot and beetroot are such plants.

(iii) Growing Plants from Stems : Potato, rose, hibiscus and onion are some plants that grow from the stem of their parent plant.

(iv) Growing Plants from Leaves : Jade, rex begonia and bryophyllum plants are plants that can be grown from the leaves of the parent plant.

The leaf of these plants develop many shoot buds. These buds form roots at their base. When these plants drop on moist soil, they grow into new plants.

4. Germination

Germination is the process of a seed growing into a new plant. When a seed takes in water, it rapidly begins to produce a new plant. Due to this rapid action, the inner layer of the seeds begin to swell, and it splits the outer coverings and seed coat.

At the initial stage, the seed uses food reserves from the cotyledons to grow. In the beginning, baby plant also uses this food reserve to grow. It also takes the needed amount of oxygen through pores in the soil.

Roots of the plant grow downward into the soil while the other parts of the plants grow upward. These parts convert into stem, branches and leaves. The roots absorb water and nutrients from the soil and transfer them to stem. Stem transports these water and nutrients to the other parts of the plant.

Many new born plants would die if they do not get proper space to grow. A seed requires enough space to grow into a healthy baby plant. The seeds that are close to each other will struggle for water, food and light to grow after germination.

5. A number of same kind of plants grown in a field in a particular area and in a particular season to fulfill the need of food is called crop. Crops are also used as raw material for industries.

Growing and harvesting crops are called agriculture. Cutting and storing the crops is called harvesting.

We get food and different raw materials from agriculture. As sugarcane is used as a raw material to make sugar and jaggery.

There are different crops grown in India in different seasons.

Rabi crops are grown from November to April. Wheat, barley and legumes are some examples of rabi crops. These crops are sown in winter and harvested in spring.

Everyday Science

Do yourself.



Healthy Food to be Healthy

- A. 1. (d); 2. (c); 3. (b); 4. (a); 5. (b)

B. 1. nutrients; 2. healthy; 3. disease; 4. Antibiotics; 5. Symptoms

C. 1. T; 2. F; 3. F; 4. T; 5. T

D. 1. Non-communicable Diseases are diseases that do not spread from one person to another.

2. Fat is stored by our body for further use.

3. Antibiotic is used to kill the bacteria of various diseases.

4. Carbohydrates contain carbon.

5. Germs in milk are killed by heating it at high temperature for about half an hour and then cooling it down quickly. This method is called pasteurisation.

E. 1. Some elements that we get from our food are essential for our body. These are called nutrients. They give us energy, help us grow and keep our body healthy. Carbohydrates, fats, proteins, vitamins, minerals and fibre are some nutrients.

(i) Carbohydrates : Carbohydrates provide energy to our body to do all kinds of work and body functions. We get carbohydrates from bread, cereal, rice and pasta.

(ii) Fats : Fats also provide energy to our body. These get stored in the body under the skin. Foods that are rich in fats include meat, milk, cheese, vegetable oils and nuts.

(iii) Proteins : These are the nutrients necessary for growing and repairing our body parts, from skin to bones. Chicken, fish, beans, eggs, nuts, and dairy products such as milk, yogurt and cheese are rich in protein

(iv) Vitamins and Minerals : The substances that are essential for normal functioning of our body are called vitamins. For example, vitamin C is important in maintaining many body parts.

(v) Roughage : The substances that are essential to keep our digestive system working well.

(vi) Water : The body also needs sufficient amount of water. Our body contains two-thirds water, and this water constantly moves around in the body and gets used up.

2. **Roughage** : The substances that are essential to keep our digestive system working well and which are not get

digested and absorbed by our body are called fibres, dietary fibres or roughage.

Water : The body also needs sufficient amount of water. Our body contains two-thirds water, and this water constantly moves around in the body and gets used up.

3. Disease	Symptoms	Treatment/Preventive Measures
Jaundice	<ul style="list-style-type: none"> • loss of appetite • yellow colouration due to excess bile pigment in the blood • yellow urination • fever 	<ul style="list-style-type: none"> • hepatitis B vaccine • purified water • avoid contact with infected people • the patient should be given plenty of sugarcane juice
Tuberculosis	<ul style="list-style-type: none"> • persistent fever • cough, sputum with blood • fatigue, weight loss, night sweat 	<ul style="list-style-type: none"> • balanced nutrition and adequate rest • good ventilation and environmental hygiene • the patient should not spit here and there
Influenza	<ul style="list-style-type: none"> • fever, fatigue, cough, sneeze, runny nose, sore throat, muscle ache 	<ul style="list-style-type: none"> • enough rest • balanced nutrition for stronger immunity • good personal hygiene • while sneezing or coughing cover the mouth and nose

4. Non-communicable diseases can be caused by deficiency of vitamins and minerals. These are called deficiency diseases.

Dangerous non-communicable diseases such as cancer are caused by bad habits such as smoking. Lack of exercise and intake of too much fatty food causes obesity.

Deficiency	Caused by the lack of	Sources of the diseases vitamins/minerals
Scurvy and poor wound healing	Vitamin C	citrus fruits such as strawberry, tomato, broccoli, cabbage, green pepper

5. Balanced Diet

Too much or too less of certain foods can make us ill. A diet full of a wide range of foods that provide all the nutrients needed by the body in the right amount is called a balanced diet. Several servings of grains, vegetables, fruits, dairy products, meat and beans must be included in our everyday diet.

Everyday Science

Do yourself.



Staying Safe

- A.** 1. (c); 2. (c); 3. (a); 4. (a); 5. (b)
- B.** 1. rabies; 2. unconscious; 3. irritating liquid; 4. germ-free, sterile; 5. medical personnel
- C.** 1. F; 2. T; 3. T; 4. F; 5. T
- D.** 1. Immediate help given to victim of an accident before medical assistance is called first aid.
2. Water is a good conductor of electricity. The person gets an electric shock when it comes in contact with the water which is used to extinguish the fire. Due to this reason, water is not used to put off the fire caused due to electricity.
3. Apply direct pressure over the wound to halt the bleeding. Use a large sterile or germ-free pad or a clean cloth to cover it.

4. Dogs, wolves, bats and cats are known to carry the rabies virus.
 5. A fire blanket can also prevent the spread of fire and put it out by cutting off oxygen supply.
- E.
1. Most specks are visible. Lift the upper lid off the eyeball and pull the lower lid down.
 - Try to remove the speck by gently splashing water with your hands.
 - If the speck has not come out, try to pick it up with a moistened corner of a clean cloth or handkerchief.
 2. Following methods can be used to put out a small fire :
 - Switch off the main electric connections of the house and never use water in case of fire in electrical wiring or electrical system.
 - Use a fire extinguisher if available or throw sand to stop a small fire. In case of major fire, call the nearest fire station.
 - If a person's clothes catch fire, try to throw water on the fire as soon as possible. A fire blanket can also prevent the spread of fire and put it out by cutting off oxygen supply. Ask the person to roll on the floor to stop the fire.
 3.
 - For scorch or small burns, apply towels or sheets soaked in cold water immediately for comfort.
 - For a chemical burn, the area should be thoroughly flushed with water (under a running tap if possible) for 15 to 30 minutes.
 4.
 - Scrub the wound with soap and water for at least 10 minutes.
 - Cover with a dry, clean cloth or dressing.
 - Consult for medical help immediately without getting late. Make sure you take the complete course of injections as prescribed by the doctor.
 5.
 - To prevent fainting, make the victim lie down.
 - Apply direct pressure over the wound to halt the

bleeding. Use a large sterile or germ-free pad or a clean cloth to cover it.

- Rush to the doctor as soon as possible for further treatment.

Everyday Science

Do yourself.



States of Matter

- A.** 1. (a); 2. (c); 3. (b); 4. (c); 5. (d)
- B.** 1. matter; 2. closed; 3. ice; 4. object; 5. away from each other, come closer
- C.** 1. F; 2. T; 3. T; 4. T; 5. F
- D.** 1. The three states of matter are solid, liquid and gas.
2. Evaporation is the change from liquid to gas.
3. Freezing is the change from liquid to solid.
4. Melting is change of form from solid to liquid.
5. A liquid that allows some substances to dissolve in itself is called a solvent. The substance that dissolves is called the solute. The mixture formed by a solvent and solute is called a solution. The components of a solution get mixed together completely.
- E.** 1. Anything that has mass and occupies space is called matter.

All objects are made of matter. Matter consists of tiny particles known as molecules. These molecules are so small that they cannot be seen with naked eyes. These molecules are further composed of very small particles called atoms. Atoms are the smallest units of matter and therefore also known as the 'building blocks of matter'.

The molecule of a matter has all the properties of a substance. That means, each sugar molecule contains the properties of sugar.

Each state of matter has its own distinct properties on the basis of the arrangement of particles/ molecules and their movement.

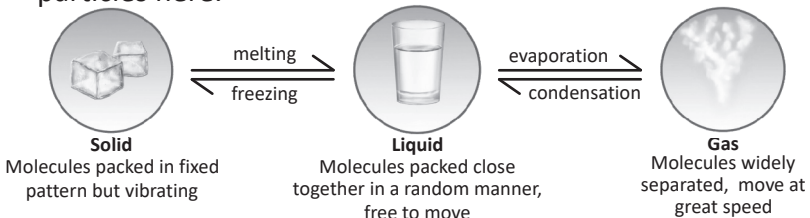
2. Following table shows the particle arrangement and movement in solid, liquid and gaseous substances.

	Solids	Liquids	Gases
Arrangement of particles	The particles are close together and arranged in a regular pattern. Examples : stone, pencil, car, leaf, wood	The particles are less closely packed and arranged randomly. Examples : juice, milk, oil, petrol	The particles are far apart and have a very random arrangement. Examples : oxygen, carbon dioxide, nitrogen

3.

	Solids	Liquids	Gases
Properties	Hard and rigid, they have a definite shape	They flow and take the shapes of the	They neither have a definite shape nor a

4. On heating or cooling, matter changes from one state to another and the most common example of this is water. Ice cubes are water in its solid state. Take out a tray of ice cubes from the freezer. Leave it outside for some time. The ice cubes will melt to form the liquid state of water. On heating this water in an open pan, we notice that the water is changing to vapour and dispersing into the air. Transfer of heat in matter causes change of state. Understand the occurrence of changing states of matter with reference to heat transfer and the movement of particles here.



5. a. On heating a substance, its molecules gain energy and start moving away from each other. This is called expansion. For example, when it is difficult to open a bottle of jam with a metal lid, the lid is heated gently. The metal lid then expands and loosens its grip on the bottle and can be opened easily.

Gases show maximum expansion whereas solids show minimum expansion.

Any substance contracts or shrinks. When we cool a substance, its molecules come closer and occupy less space. The situation is called contraction. Example : If we keep an empty mineral water bottle in the freezer for an hour, we will find that it shrinks in size and gets deformed. This happens due to contraction of air inside the bottle. When the air gets cooled, the air particles come closer and occupy less space. As a result, the bottle gets squeezed.

- b. The properties of a material can be changed. We can categorize these changes as irreversible and reversible. Irreversible changes are permanent. A change is called irreversible if it cannot be changed back again. For example, we cannot change a cake back into its ingredients again.

So the irreversible changes cannot be reversed.

New materials are always formed in an irreversible change. Many times these new materials are useful to us.

Everyday Science

❖ Write two example of :

(a) Reversible change : Ice to water.

Water to ice.

(b) Irreversible change : Milk to curd

Baked the cake.



Rocks and Minerals

- A. 1. (b); 2. (d); 3. (b); 4. (b); 5. (a)

- B.** 1. sedimentary rocks; 2. Quartzite; 3. Magnet; 4. shale;
5. Intrusive igneous rock
- C.** 1. F; 2. T; 3. T; 4. T; 5. F
- D.** 1. Igneous rocks are the oldest type of rocks. They are also known as fire rocks.
2. Magnetite is a type of mineral which can attract the iron objects.
3. Metamorphic rocks are formed when other types of rocks change their form under very high temperature and pressure.
4. The Earth's topmost layer is persistently being eroded. This means that rocks are being broken into smaller pieces by wind, water and ice. These small pieces of rocks turn into pebbles, gravel, sand and clay, and run down rivers and streams. They pile up in thick layers on the bottom of the water bodies. Over a long period of time, the pieces are pressed together and form solid rock called sedimentary rock. Most sedimentary rocks form under water.
5. Minerals are chemical substances found in earth's hard outer layer.
All the different kinds of rocks are made by these substances. Minerals form due to natural processes within the Earth. They are not made by humans.
- E.** 1. The upper surface of the earth is made of rocks and soil. Rocks are solid structure which are made up of various types of substances. In plains, rocks are not visible because they are covered by plants and soil.

Various Kinds of Rocks

Rocks are classified in various kinds on the basis of composition of minerals, their formation and other physical attributes

(i) Igneous rocks : Igneous rocks are the oldest type of rocks. They are also known as fire rocks. Deep inside the Earth, the minerals are present in liquid form due to the very high temperature.

(ii) Sedimentary Rocks : The Earth's topmost layer is persistently being eroded. This means that rocks are being broken into smaller pieces by wind, water and ice.

(iv) Metamorphic Rocks : Metamorphic is a Greek word that means 'change' and 'form'. Deep inside the earth, one type of the rock changes into another type of rock due to high temperature and pressure.

- 2. Sedimentary Rocks** : The Earth's topmost layer is persistently being eroded. This means that rocks are being broken into smaller pieces by wind, water and ice. These small pieces of rocks turn into pebbles, gravel, sand and clay, and run down rivers and streams. They pile up in thick layers on the bottom of the water bodies. Over a long period of time, the pieces are pressed together and form solid rock called sedimentary rock. Most sedimentary rocks form under water.

Metamorphic Rocks : Metamorphic is a Greek word that means 'change' and 'form'. Deep inside the earth, one type of the rock changes into another type of rock due to high temperature and pressure. The heat emerges from magma and the pressure comes from various layers of rocks piled on top of each-other. The lowermost layer gets squeezed. The thickness of layers depend on the pressure.

- 3.** However, various igneous rocks are formed depending upon how slow or fast the magma cooled. Igneous rocks formed by the slow cooling of magma deep under the Earth's surface are called intrusive igneous rock. Other rocks are formed when the magma erupts from a volcano or reaches the Earth's surface through long rifts. Magma is called lava when it reaches the Earth's surface. The lava cools quickly and forms extrusive igneous rocks. Basalt is such type of rock. Obsidian that looks like shiny, black glass is an example of another extrusive igneous rock that cools very fast.

4. Igneous Rocks and Kinds	Colour/Texture	Uses
Basalt; composed mainly of minerals plagioclase and pyroxene	Dark-coloured; fine-grained	Largely used in construction projects
Granite; intrusive igneous rock; mainly contains minerals quartz and feldspar	Red, pink, grey or white colour with dark mineral grains visible throughout the rock	Kitchen slabs, floor tiles, pavements
Obsidian; extrusive igneous rock	Commonly black, brown or green; smooth and glassy	Masks, sculptures, sharp cutting tools, jewellery, ornaments.
Pumice; extrusive igneous rock	Light grey or cream-coloured; extremely porous; this is the only rock that floats.	Pumice stones are commonly used as foot scrubbers. Also used for polishing

5. Minerals are chemical substances found in earth's hard outer layer.

All the different kinds of rocks are made by these substances. Minerals form due to natural processes within the Earth. They are not made by humans.

Oxygen is part of many minerals. Minerals containing oxygen make up almost half of the Earth's crust. Feldspar, quartz and mica are common minerals. These common minerals form various kind of rocks.

Gold and silver are also minerals. These are used to make beautiful jewellery. Some minerals are rare and expensive. They are called gems. Diamonds, rubies and emeralds are

good examples of such minerals. Diamond is the hardest known substance on Earth.

Calcium, phosphorus, potassium, iodine, iron, etc. are essential parts of our diet. These are known as dietary minerals.

Everyday Science

- ❖ Names of some rocks are given below. Write them in appropriate column in following table : Quartzite, Conglomerate, Obsidian, Granite, Gneiss, Sandstone, Limestone, Pumice, Marble, Basalt, Slate, Shale

Igneous Rocks	Sedimentary Rocks	Metamorphic Rocks
Obsidian	Conglomerate	Quartzite
Granite	Sandstone	Marble
Pumice	Limestone	Slate
Basalt	Shale	Gneiss



Living Organisms and Their Surroundings

- A. 1. (a); 2. (d); 3. (a); 4. (a); 5. (d)
- B. 1. heterotrophs; 2. oxygen; 3. adaptation; 4. ecosystem; 5. adapt
- C. 1. T; 2. F; 3. T; 4. T; 5. T
- D. 1. **Autotrophs** are the primary producers or plants that produce food through the process of photosynthesis. **Heterotrophs** are all animals, as they depend on plants for food.
2. Respiration is the process through which food is broken down to get energy from it.
3. Instinct is also known as innate behavior. This is a type of behavior in which the individual does not have to be taught how to do something. Unlike instinct that does not have to be taught or practiced, learned behavior has to be taught.

4. Stimulus is any change in an organism's environment that makes it react.
5. Response is how an organism reacts to a stimulus that brings a change in behaviour.

E. 1. Some basic needs

(i) Oxygen : Most life forms use oxygen as the main component in many of the essential activities needed for life.

(ii) Energy : All life forms need energy to survive. Energy is what allows organisms to perform activities. Living things use energy for different processes, such as, to move around in search of food, water, shelter and to protect themselves and all other requirements.

(iii) Food : We know that different animals have different food habits. The food provides energy to them.

(iv) Water : Water is essential for living things to survive. Water in our blood helps to transport food and nutrients to the different body parts. It helps remove waste products from the body.

(v) Space : The amount of resources found in a region is often limited. Like, there might be only a certain amount of food and water available. So, living things need enough space to support them without interfering with the lives of other living things.

2. All life forms need energy to survive. Energy is what allows organisms to perform activities. Living things use energy for different processes, such as, to move around in search of food, water, shelter and to protect themselves and all other requirements.

The Sun is the main source of energy on Earth. Sun's energy is absorbed by the autotrophs to make food, and then passed on from one organism to another in the food chain.

3. The amount of resources found in a region is often limited. Like, there might be only a certain amount of food and

water available. So, living things need enough space to support them without interfering with the lives of other living things.

4. Waste products are produced in the body of all living organisms. Much waste comes from food. The rest is produced by movement, growth and other life process. If this waste remains inside the body of an organism, it would become ill. Thus, living things must have a way to dispose off waste. Excretion is the process that removes waste products from the body of a living organism.
5. An adaptation is a change in the organism's body, or behaviour that helps it to survive in its habitat.

An animal may adapt to its habitat in various manners. The limbs of birds are modified into wings and the shape of a cheetah's body is appropriate for running at a fast speed. Polar bear lives in a cold habitat and has thick fur to keep warm while an African elephant lives in a hot habitat and has very large ears that it flaps to keep cool. The gills enable fish to breathe in water. Webbed feet of a frog help it swim quickly. Animals camouflage themselves to adapt to their environment. For example, insects can change their colour to blend into the surroundings. This makes it hard for predators to catch them. Animals living in harsh, cold climate of the snow covered areas have learnt to adapt to the weather by storing food in their body and keeping warm with the help of the warm fur that cover their body.

Everyday Science

Do yourself.



Human Skeletal System

- A. 1. (c); 2. (c); 3. (a); 4. (c); 5. (b)
- B. 1. 206; 2. Spine, vertebrae; 3. Twelve; 4. voluntary muscles; 5. heart

C. 1. T; 2. F; 3. F; 4. T; 5. F

- D. 1. Ball and socket joints allow lots of movement in every direction. The shoulder and hip joints are ball and socket joints.
2. The hinge joint is found in the elbows, knees, fingers and toes.
3. The spinal cord is a long, tube– like band of tissue. It connects your brain to your lower back.
4. Only the lower jaw is movable in the facial region that enables us to talk and eat.
5. The heart and the lungs are protected by the ribcage.

E. 1. **The Limbs**

The forelimbs or arms are joined to the spine through the shoulder girdle and stretch from the shoulder to the finger tips. The shoulder girdle comprises a pair of shoulder blades and a pair of collarbones.

The hindlimbs or legs are large and strong to help support the body weight. The thigh bone or femur bears the weight of the whole body. Femur is the longest bone in the body.

2. **Types of muscles**

(i) Voluntary muscles : The voluntary muscles work only when we particularly want them to. They are under our control and are attached to the skeleton. They are also known as skeletal muscles. The muscles of our hands and legs are examples of voluntary muscles.

(ii) Involuntary muscles : As the name suggests, the involuntary muscles are not under our control. These muscles control actions that are essential for our body such as the movement of food from the small intestine to the large intestine or the circulation of blood in the body.

(iii) Cardiac muscles : Our heart is actually a big muscle. Cardiac muscle is a specialised form of muscle found only in the heart. It is an involuntary muscle, which means it isn't under our conscious control and keeps beating

without us needing to think about it. The cardiac muscle of the heart contracts to pump the blood through the body.

3. There are four types of movable joints in our body: hinge joint, ball and socket joint, pivot joint and gliding joint.

(i) The Hinge Joint : The hinge joint works like the hinges of a door. Just as most doors can only open one way, we can bend our arms and legs in one direction. The hinge joint is found in the elbows, knees, fingers and toes.

(ii) The Ball and Socket Joint : The ball and socket joints are made up of the round end of one ball-like bone fitted into a small cup-like area (socket) of another bone. Ball and socket joints allow lots of movement in every direction. The shoulder and hip joints are ball and socket joints.

(iii) The Pivot Joint : These joints allow parts of our body to turn. A pivot joint is found between the skull and the first two vertebrae of the spine. It helps us to move our head sideways, upward and downward. Pivot joints also allow the twisting movement of the bones of the forearm against the upper arm, such as, the movement used to turn the lid of a jar.

(iv) The Gliding Joint : Gliding joints allow our back to bend, twist and turn at each joint. They occur between the surfaces of two flat bones that are held together by ligaments. This joint is found in the wrists, ankle and between any two vertebrae of the spine. It allows some of the bones in our wrists and ankles move by gliding against each other.

4. The hard structure made of bones in the human body is called the skeleton or the skeletal system. It provides a frame for the human body and supports it. Without this framework of bones, our body would be just like a pile of mass—without any shape and without the ability to move! The human skeletal system not only provides the structure to stand up straight to our body but also keeps and protects all the important and delicate organs inside the body.

There are 206 bones in an adult human skeleton. The skeletal system comprise of the skull, the backbone, the rib cage and two pairs of limbs that are forelimbs or arms and hind limbs or legs.

5. The skeletal system plays a significant role in our body.

Shape : Gives shape to the body.

Support : The vertebral column supports and holds the body upright.

Protection : The vertebral column protects the spinal cord. The skull protects the brain.

Movement : It makes the body flexible and helps the body parts to move.

Blood production : Red blood cells and white blood cells are produced in the bone marrow of some bones. Red blood cells carry oxygen while white blood cells protect us against infections.

Everyday Science

- ❖ **Name some professionals that deal with bones.**

Orthopedic surgeons, Podiatrists, Chiropractors, Orthologists.



Chapter

Nervous System

- A. 1. (c); 2. (b); 3. (c); 4. (c); 5. (b)
- B. 1. Medulla; 2. Cerebrum; 3. Cerebellum; 4. sounds; 5. nerve endings
- C. 1. T; 2. F; 3. F; 4. F; 5. T
- D. 1. Cerebrum stores our memories.
2. Motor nerves, Sensory nerves, Mixed nerves.
3. The spinal cord connects the other body parts to the brain through thread-like structures called nerves.
Nerves are made up of bundles of fibres, that carry thousands of messages every second.
4. There are three types of nerves:
- Motor nerves carry 'orders' from the brain or the spinal cord to the muscles.

- Sensory nerves carry messages from the sense organs to the brain or the spinal cord.
 - Mixed nerves carry messages to the brain and bring back orders from the brain.
5. Brain stem is the other name for medulla.
- E. 1. The nervous system is made up of our brain, spinal cord and an enormous network of nerves that spread throughout the body. It controls all the other systems of our body.
- We wouldn't be able to do any of these actions without the nervous system! such as : tasting, smelling, seeing, hearing, cooking, touching, reading, writing, and feeling pain.
2. Following is the detailed information about how this works for each of the five sense organs.
- (i) Sight** : Our eyes see many things from day to night. At the back of our eye, the optic nerve works like a messenger. It carries nerve signals from the eye to the brain.
- (ii) Smell** : Olfactory epithelium is situated upon the roof of the nasal cavity, i.e. the space behind our nose. It contains special receptors that are sensitive to odour that travels through the air.
- (iii) Taste** : Each taste bud is made up of taste cells, which have sensitive, microscopic hair called microvilli. These send messages to the brain which interprets the signals and identifies the taste.
- (iv) Sound** : The main job of the outer ear is to collect sounds. It is called the Pinna. The sound travels from the outer ear to the middle ear. Sound comes into the inner ear as vibrations and enters a small, curled tube in the inner ear. Here, nerve signals get created to become the sound that the brain can understand.
- (v) Touch** : The outermost layer of the skin is called the epidermis. The next layer down is the dermis which

contains nerve endings. They work with the brain and nervous system so that the brain gets the message about what we are touching.

3. The human brain is undoubtedly an exceptional machine. It is able to function only with the help of the spinal cord. It cannot work alone.

The spinal cord connects the other body parts to the brain through thread-like structures called nerves. It starts at the narrowed base of the brain and spreads down inside the spine.

Nerves are made up of bundles of fibres, that carry thousands of messages every second.

The brain is directly connected to the head and neck by the nerves. The rest of the body parts are connected by nerves through the spinal cord. There are three types of nerves :

- Motor nerves carry 'orders' from the brain or the spinal cord to the muscles.
- Sensory nerves carry messages from the sense organs to the brain or the spinal cord.
- Mixed nerves carry messages to the brain and bring back orders from the brain.

Some actions that do not involve the brain are also controlled by the spinal cord. These actions are called reflex actions. Such an action is the unconscious response of the body to a sudden event. These actions occur as a result of messages sent by the spinal cord.

5. The brain has three parts: cerebrum, cerebellum and medulla.

(i) Cerebrum : The cerebrum is the centre of intelligence. It is the largest part of our brain.

Functions :

- It is the place where our memory resides.
- It controls our voluntary muscles to help us with activities such as singing, dancing, skipping, kicking a ball, etc.

- It helps us to think hard while we solve a maths problem.

(ii) Cerebellum : This part of the brain is situated below the cerebrum.

Functions :

- It helps us stand upright, maintain our balance and move around.
- It helps coordinate the actions of the muscles so that they can work together.

(iii) Medulla or the brain stem : The brain stem or the medulla runs down our neck and back and connects the rest of the brain to the spinal cord.

Functions :

- All the functions that our body needs to perform to stay alive, such as breathing, digestion and blood circulation are performed by medulla. The involuntary muscles such as those in the heart and stomach are controlled by medulla.

Everyday Science

Do yourself.



Measuring Up

- A.** 1. (c); 2. (d); 3. (a); 4. (a); 5. (b)
- B.** 1. temperature; 2. unit; 3. weight; 4. period; 5. temperature
- C.** 1. T; 2. T; 3. F; 4. T; 5. F
- D.** 1. The people in early ages used their hands, steps and palm, etc. to measure something. They also used some suitable things from their surrounding to measure.
- The forearm, hand or finger are used to measure length. Weights were measured by using seeds, grains and stones.
 - Time was measured by looking at the sun, moon and other heavenly bodies.
2. Measurement is the process of finding the size or amount of something.

3. Mass is the measurement of the amount of matter in an object. The measurement of mass tells us about the weight of an object.
Milligram (mg), gram (g) and kilogram (kg) are some units of measurement of mass.
4. Capacity may be defined as the maximum amount that a container can hold, for instance, the capacity or volume of a bucket is the amount of water it can hold.
Millilitre (ml), litre (l) and kilolitre (kl) are some units used to measure volume.
5. When we have fever, a clinical thermometer is used to measure the temperature of our body. A digital thermometer displays the temperature in digits on a small screen.

E. 1. **Measurement of Length**

Length is the measurement of an object from one end to another. Millimetre (mm), centimetre (cm), metre (m) and kilometre (km) are some units to measure length.

Units can be changed from one to another.

- millimetres (mm) = 1 centimetre (cm)

As you can see millimetre, centimetre and metre are smaller units as compared to kilometre. To measure the length of objects such as a notebook or table, we use these smaller units.

Measurement of Mass

Mass is the measurement of the amount of matter in an object. The measurement of mass tells us about the weight of an object.

Milligram (mg), gram (g) and kilogram (kg) are some units of measurement of mass.

Measurement of Capacity or Volume

Capacity may be defined as the maximum amount that a container can hold, for instance, the capacity or volume of a bucket is the amount of water it can hold.

Millilitre (ml), litre (l) and kilolitre (kl) are some units used to measure volume.

2. Weights and measurements are also needed for many other activities in our day to day life, such as :
 - We have to buy grocery, milk and other things.
 - We want to get our clothes stitched.
 - There are many other various activities in which we need measurements.

The people in early ages used their hands, steps and palm, etc. to measure something. They also used some suitable things from their surrounding to measure.

- The forearm, hand or finger are used to measure length. Weights were measured by using seeds, grains and stones.
- Time was measured by looking at the sun, moon and other heavenly bodies.

Nevertheless, these weights and measures could not be same all the time. For instance, seeds, stone and people's hands are of various sizes.

3. The fixed quantity that is used as a standard of measurement is known as unit. Process of finding the size or amount of some quantity, and expressing it as a number of defined units is called measurement.

For example, a standard unit of length is metre across the world. One metre has a specific length which is taken as a standard. All the measurements in metre are done by comparing with its value.

4. To make measuring more accurate, we need some standard units of measurement. All measurements are based on a comparison. We measure things against a reference value which is called a unit.

The fixed quantity that is used as a standard of measurement is known as unit. Process of finding the size or amount of some quantity, and expressing it as a number of defined units is called measurement.

For example, a standard unit of length is metre across the world. One metre has a specific length which is taken as a standard. All the measurements in metre are done by comparing with its value.

Everyday Science

Do yourself.



Force and Energy

- A.** 1. (c); 2. (d); 3. (b); 4. (a); 5. (b)
- B.** 1. speed, direction, shape; 2. Gravity; 3. Light; 4. Friction; 5. complex
- C.** 1. F; 2. T; 3. T; 4. T; 5. T
- D.** 1. Mechanical energy is the energy of an object because of its position or motion. The energy is called potential when the position is considered.
2. The law of conservation of energy states that the total energy of our universe remains always the same. Energy can only be transformed from one form to another. We can never create or destroy energy. For instance, a solar cell converts light energy into electrical energy.
3. A simple machine helps us to reduce our effort by multiplying the force we apply.
4. Depending on the position of the fulcrum, load and force, levers are of three types.
- (i) Lever of the first kind : In this, the fulcrum is situated between the load and the force. Examples are see-saw, pliers, scissors and beam balance.
- (ii) Lever of the second kind : Wheelbarrow, nutcracker and bottle opener are examples of it. Here the load is situated between the fulcrum and the force.
- (iii) Lever of the third kind : Tweezers, tongs and fishing rods are examples of it. In this, the force or effort is situated between the load and the fulcrum.
5. Friction is a force that tries to oppose motion.

- E. 1. Whenever an object moves against another object, it feels frictional force. Friction is a force that makes it difficult for an object to move across a surface or opposes motion. This force acts in the opposite direction for things to move. Heat gets produced in friction.

Friction between the moving parts of a machine can be reduced by using oil.

Friction is termed as a necessary evil.

2. Effects of Force

Effect of force can be felt and observed but it cannot be seen. Some effects of force are :

- A force can move a body at rest. It can also increase the speed of a moving body.
- A force can stop or slow down a moving body.
- A force can change the direction of motion of a moving body.
- A force can change the shape of a body. Take a balloon filled with air and press it. It's shape changes.

3. Sometimes we feel tired and drained of energy. At other times, we feel very energetic. We use the word energy everyday but in science it has an accurate meaning.

The ability to do work is Energy.

Energy is found in different forms. Some forms of energy that we come across day-to-day are as follows :

(i) Light Energy : Stars are the natural sources of light. Bulbs, tube lights and candles are man-made sources of light.

(ii) Heat Energy : Heat is a type of energy. We get heat energy by burning fuels such as kerosene and coal, LPG and CNG.

(iii) Mechanical Energy : Mechanical energy is the energy of an object because of its position or motion. For example, water stored behind a dam has potential energy.

(iv) Electrical Energy : Electrical energy lights bulbs, tube

lights and lamps. All the appliances in our home such as television, computer, washing machine, microwave oven, juicer and grinder are run by it.

(v) Wind Energy : Blowing air is called wind. The ability of the wind to do work and move the windmill is because of the wind energy.

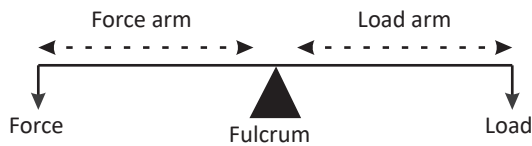
4. Lever

A lever is a rigid rod which has three parts: fulcrum, load and force.

Fulcrum : It is the fixed point, about which the rigid rod moves freely.

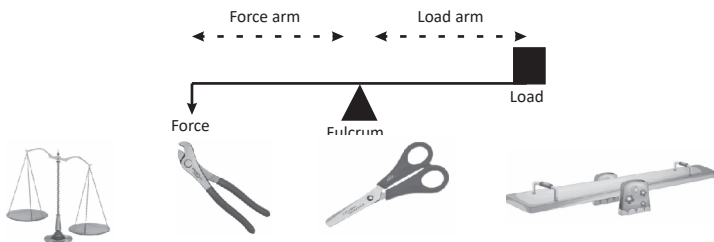
Load : The object which we have to lift.

Force : The force that we need to apply on the rod to complete the task.



Depending on the position of the fulcrum, load and force, levers are of three types.

- (i) Lever of the first kind : In this, the fulcrum is situated between the load and the force. Examples are see-saw, pliers, scissors and beam balance.
- (ii) Lever of the second kind : Wheelbarrow, nutcracker and bottle opener are examples of it. Here the load is situated between the fulcrum and the force.



Lever of the first kind

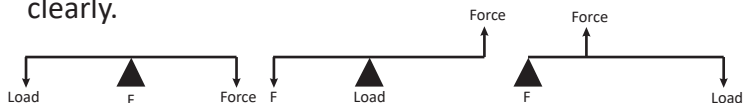
- (iii) Lever of the third kind : Tweezers, tongs and fishing

rods are examples of it. In this, the force or effort is situated between the load and the fulcrum.



Lever of the second order

The chart given below will explain the types of levers clearly.



5. Pulley

It is a simple machine that helps to lift objects. A pulley is a wheel with two raised edges so that a rope or a chain can run along the wheel without coming off.

A fixed pulley makes work easier by changing the direction of force. It is fitted to some support, for example, the pulley which is used to draw water out of a well. In this arrangement, a rope is passed over the pulley and a bucket is tied at one end of the rope. A bucket full of water is drawn out by applying a downward effort at the other end of the rope. Such a pulley is also used to raise a flag to the top of a flagpole.

In machines such as a crane, usually a movable pulley is used along with a fixed pulley. As the name suggests, a movable pulley is not fixed. It helps to lift heavy load with much lesser effort.

Everyday Science

- ❖ **Make a list of the forces that are acting on a person who is sitting on a chair and reading a newspaper.**

Do yourself.

- ❖ **Observe and write :**
 1. Muscular force
 2. Lever

- A. 1. (c); 2. (c); 3. (d); 4. (a); 5. (b)
- B. 1. boiling; 2. distilled water; 3. Troposphere; 4. Chlorine;
5. ultraviolet rays
- C. 1. T; 2. F; 3. F; 4. F; 5. T
- D. 1. Sedimentation is the natural process in which residues such as stones and sand are taken to the bottom of a water body and form a solid layer.
2. Insoluble Impurities are those impurities which cannot dissolve in water.
3. Soluble impurities are the impurities that can dissolve in water.
4. Atmosphere is the layer of air surrounding the Earth.
The atmosphere consists of many gases including nitrogen, oxygen, carbon dioxide, argon and many more.
5. Distillation is used to remove soluble impurities.
- E. 1. Two-third of our Earth's surface is covered by water bodies including oceans, seas, rivers and lakes. Water is the most significant and most abundant liquid on Earth. The water in ponds and wells is not pure enough as it may have impurities such as germs, dirt and mud.

Removing Impurities from Water

For removing insoluble impurities, filtration and sedimentation are used. For removing soluble impurities, distillation is used.

(i) Filtration : Filtration is the process of separating impurities such as dirt or sand from water through a porous medium in which water can penetrate easily.

(ii) Sedimentation : Sedimentation is the natural process in which residues such as stones and sand are taken to the bottom of a water body and form a solid layer.

(iii) Evaporation : The process of turning a liquid into a gas is known as evaporation. Normally by heating, it can be

used to separate salt from water. Water with dissolved salt is heated, the water evaporates as vapour and the salt is left behind.

(iv) Distillation : Soluble impurities such as common salt and sugar can be removed from water through the process of distillation.

2. The Earth is surrounded by the layer of air that is called atmosphere. The atmosphere consists of many gases including nitrogen, oxygen, carbon dioxide, argon and many other.

The concentration of air decreases on high altitude. As we go up, the air becomes thinner, that means fewer molecules of everything present including oxygen. This is why mountaineers use oxygen masks when they climb very high altitudes.

Depending on the change in air temperature with height, the atmosphere is divided into five layers. These layers are: troposphere, stratosphere, mesosphere, thermosphere and exosphere.

3. Objective : To separate residues from water.

Things needed : Funnel, two test tubes, filter paper and water with insoluble impurities.

Procedure : Keep the empty test tube in a test tube holder. Fix the funnel with filter paper on it. Gradually pour the impure water (original mixture) from the second test tube.

Conclusion : While the pure water (filtrate) gets collected in the empty test tube, the residues get collected in the filter paper.

Reason : In this process, dirt and sand (impurities) cannot penetrate the filter paper and get accumulated.

4. **Distillation** : Soluble impurities such as common salt and sugar can be removed from water through the process of distillation.

In this process, the impure water is boiled inside a container which is connected to another container through

a tube. The boiling water turns into water vapour and the vapour passes through the tube, where it cools down and turns into liquid again. The pure water gets accumulated.

5. Place the bottle in a water bath containing boiling water. After some time has passed, balloon will inflate. Now, take the bottle out of the water bath and allow it to cool by itself. the balloon will deflate and eventually collapse.

Everyday Science

Do yourself.



Chapter

Space

- A. 1. (d); 2. (a); 3. (d); 4. (c); 5. (b)
- B. 1. natural satellite; 2. mantle; 3. corona; 4. lunar; 5. orbit
- C. 1. T; 2. F; 3. T; 4. F; 5. T
- D.
 1. The Sun is at the centre of the Solar System, and its gravity holds all the planets in place. The Solar System consists of the Sun and everything that revolves around it. Eight planets and their moons, dwarf planets and countless asteroids, comets and other small, icy objects are part of the Solar System.
 2. Celestial bodies that revolve around their respective planets are called satellite or moon.
 3. The thin atmospheric layer of the Sun is called corona. Sometimes the corona is visible during a solar eclipse.
 4. A solar eclipse happens when the Moon comes in between the Sun and Earth and partially or totally hides the Sun. Moon casts its shadow on the Earth and we observe a solar eclipse.
 5. An eclipse of the Moon is called a lunar eclipse. Lunar eclipse occurs when the Earth comes between the Moon and the Sun. The umbra part of the Earth's shadow completely blocks the sunlight. The penumbra part blocks the sunlight partially.
- E.
 1. The deep inside of the Earth is much different from the

surface. Scientists have found out that the Earth consists of various layers. The earth becomes hotter and hotter as we go deep inside. The Earth is made up of three basic layers: the core, the mantle and the crust.

The Crust : It is the outermost layer of the Earth that consists of the continents and the oceans. Its thickness varies from 5 km to 70 km under ocean floors and under continents, respectively. It is made up of rocks and contains life support system.

The Mantle : This is the middle layer of the Earth and is made up of molten rocks in the lower portion and solid rocks in the upper portion. It is about 2900 km thick and has large amount of iron and magnesium. During volcanic eruptions, the molten magma comes out from the mantle.

The Core : It is the innermost layer of the Earth and forms the centre of the Earth. It comprises of two parts: outer core and inner core. The outer core is about 2300 km thick and contains molten iron and nickel and some sulphur. The inner core is about 1200 km thick and contains solid iron.

2. All the celestial bodies in space are constantly in motion. As the Earth is orbiting Sun, the Moon is also moving around the Earth. The same thing happens with the other planets. An eclipse occurs when the Sun, the Moon and the Earth come in a straight line. When the Earth is at the middle, its shadow falls on the Moon and hides it from the Sun. Similarly, when the Moon is in the middle, its shadow falls on the Earth and hides it from the Sun.
3. When the Moon covers the Sun, the deepest part of the Moon's shadow, called the umbra, falls on a small patch of the Earth. This patch experiences a total eclipse. Penumbra is the less deep part of the Moon's shadow which causes a partial solar eclipse in the region where it falls. When the Moon comes under the deep shadow (the umbra), a total lunar eclipse occurs. When the Moon comes under the less deep shadow (penumbra), a partial

lunar eclipse occurs. During a total lunar eclipse, the Moon is completely hidden. During a partial lunar eclipse, the Moon is partially hidden.

4. The Moon is our nearest celestial body in space. It appears as the biggest thing in our sky apart from the Sun. It is the only natural satellite of our Earth. It is about 3,84,400 km from the Earth. The Moon reflects the Sun's light and appears bright at night. A natural satellite is a celestial body.

There is no atmosphere on the Moon. The Moon's surface is covered with craters, valleys and mountains. The Moon takes about 27 days to go round the Earth. It also takes about the same time to turn round once on its axis. It is orbiting the Earth and turning at the same rate. As a result, the same side always faces us and we see only one side of the Moon.

5. We live on planet Earth which is the only planet that supports life. Other planets, and a few moons, have ice, atmosphere, seasons and even weather, but only on Earth all the factors come together to make life possible.

Humans, animals, forests, mountains and oceans are located at the surface of the Earth. It also has a layer of air around itself, that is called the atmosphere. The atmosphere protects life on Earth from the harmful ultraviolet rays of the Sun.

Everyday Science

Do yourself.



Natural Disasters

- A. 1. (d); 2. (d); 3. (c); 4. (b); 5. (b)
B. 1. Pacific ring of fire; 2. After shocks;
3. the Emperor Seamount chain; 4. primary vents; 5. lava
C. 1. F; 2. F; 3. T; 4. T; 5. F
D. 1. Rise and fall of the sea level is caused due to the gravitational force acting between the Earth, Moon and

Sun. The waves generated due to this rise and fall is called tidal waves.

2. A Richter scale is used to measure the strength of the earthquake with the help of recording made by the seismograph.
 3. A volcano is a crack or hole in the Earth's crust. The molten rock, smoke and gases escape from the mantle, the layer of hot rock below the crust.
 4. The shaking and vibration of the Earth's crust due to movement of plates underneath Earth's surface is known as an earthquake.
 5. Epicentre is the point on the Earth's surface above the focus of earthquake where energy is released in seismic waves. These waves spread out from the focus.
- E. 1. Sometimes, an earthquake is too weak to be felt by us. However, at times, earthquakes cause great damage, such as :
- Water pipes may burst and water supplies may get contaminated.
 - An undersea earthquake gives rise to tsunami, which causes severe damage in sea shore areas.
 - Sometimes an earthquake causes landslides and fires.
 - Death and injury of human beings and animals.
 - Destruction of houses and buildings.
 - Disruption of transport and communication links.
2. Earthquakes occur constantly all around the Earth. Most of them can only be detected by scientific tools. A seismograph is used to measure the strength of an earthquake. This instrument records the strength, direction and the duration of an earthquake. A Richter scale is used to measure the strength of the earthquake with the help of recording made by the seismograph.
 3. Undersea earthquakes, volcanic eruption or landslide can also be a reason of large waves in seas. These are called tsunamis. During a tsunami, large amounts of sea water

moves at high speed and bulge up to form huge waves as they reach the land. In deep ocean, tsunami waves may appear only a foot or so high. But as they approach the shoreline and enter shallower water, they slow down and begin to grow in energy and height.

Drought happens when a long period of surprisingly dry weather leads to critical water shortage. Activities of humans may be responsible for drought and can have devastating effects. Shortage of rain for a long time may lead to a drought situation. Also, if a particular area experiences hot dry winds for a long stretch of time, resulting in the evaporation of moisture from the ground, it may be struck by drought.

4. Depending on the type of eruption, volcanoes can be divided into three types.

Active Volcanoes

The active volcanoes, found around the Pacific Ocean are called Pacific Ring of Fire. Four of the world's most famous volcanoes are around the edges of the Mediterranean Sea. They are Mount Etna, Mount Vesuvius, Mount Stromboli and Vulcano. These volcanoes have erupted in the recent years and may erupt any time.

Dormant Volcanoes

These volcanoes have not erupted for several years in the past but may erupt in the future. Mount Fuji in Japan is a dormant volcano that last erupted in 1707, while Mount Rainier in the United States last erupted about 150 years ago. Other examples of dormant volcanoes are Narcondam in the Andaman Islands and Mount Kilimanjaro in Tanzania.

Extinct Volcanoes

These volcanoes are dead and will not erupt in future. There are extinct volcanoes in the British Isles, France and Germany. The hill that Edinburgh Castle was built on is an extinct volcano. The chain of extinct volcanoes in the Pacific Ocean is called The Emperor Seamount Chain.

5. When a volcano erupts, the magma from the mantle pushes the surface of the Earth by enormous pressure. The vertical tunnel through which the magma rushes upwards is called a primary vent. Secondary vents are smaller outlets through which magma comes out. The hollow opening on the surface of the Earth is called the crater.

Everyday Science

Do yourself.



Environment

- A.** 1. (d); 2. (a); 3. (b)
- B.** 1. atmosphere energy; 2. deafness; 3. greenhouse effect; 4. air; 5. Water
- C.** 1. T; 2. F; 3. F; 4. T; 5. T
- D.** 1. Motor vehicles, factory chimneys, power stations and aircraft release smoke and harmful gases into the air. These pollute the air.
2. Many towns and factories are built near lakes and rivers so that they can use the water. But some towns and factories do not treat the water they use before they put it back into the rivers and lakes. Fertilisers and pesticides used on farms, as well as animal manures, are washed into rivers and lakes.
3. Deposition of solid wastes that cannot be broken down quickly and get mixed with soil causes this type of pollution. Materials such as plastic bags, glass bottles and metal containers dumped on the land also increase land pollution.
4. It can disturb us while sleeping, check us from working efficiently and make us ill. By causing fear and panic, noise has harmful effects on animals too. It is caused by tooting vehicles, blaring loudspeakers and clamouring machines. Noise pollution may lead to deafness.
5. Carbon dioxide, Methane.

E. 1. The Sources of Greenhouse Gases

The emission of methane and carbon dioxide are contributing to increasing global warming. Some sources of greenhouse gases are natural and some are human-made.

Greenhouse Gases	Natural Sources	Human-made Sources
Carbon dioxide	Plants and animals give out CO ₂ in the process of respiration.	Released by vehicles and factory chimneys.
	Natural calamities such as forest fires and volcanoes.	
Methane	When plant waste gets decayed methane gas gets released.	Rice paddy fields, coal mines.

Simple steps to save the Earth

1. Make 3 Rs the part of your life—Reduce, Reuse and Recycle.
 2. Using environmental-friendly fuels such as CNG.
 3. Disposing waste properly.
 4. Saving fuel by Car Pooling.
 5. Profound use of Resources.
 6. Using environment-friendly resources such as solar and wind energy.
2. A greenhouse has walls and roof made of glass. All kinds of plants can be grown here. Even during harsh winter, it stays warm inside. The sunlight keeps the plants and air inside warm by filtering in. The heat gets trapped by the glass and can't go out. So it stays warm all through the day inside a greenhouse.
- The Earth's atmosphere works in a way similar to the

greenhouse effect. Carbon dioxide and other such gases in the atmosphere act just like the roof of a greenhouse. During the day when the Sun's energy reaches the Earth's atmosphere, some of it bounces back into space while most of it goes right through.

At night, most of the Sun's energy escapes back into space. But some is trapped inside the atmosphere by the greenhouse gases further warming the Earth.

The greenhouse effect goes a long way in supporting life on the earth.

3. The Earth gets warmer when the greenhouse effect becomes too strong. This warmth increases by the day and takes enormous quantity. This is what our earth is experiencing today. The planet is becoming hotter and hotter due to this much increase in carbon dioxide and other greenhouse gases in the air. This increasing greenhouse effect of the earth is leading to a situation called global warming.

4. **Pollution**

When the environment gets contaminated by waste, harmful chemicals and gases, we say it has been polluted. There are four major types of pollution: air pollution, water pollution, land pollution and noise pollution.

(i) Air Pollution : Air is one of our planet's most valuable things. Clean and fresh air to breathe is essential for living things.

Motor vehicles, factory chimneys, power stations and aircraft release smoke and harmful gases into the air.

(ii) Water Pollution : Many towns and factories are built near lakes and rivers so that they can use the water. But some towns and factories do not treat the water they use before they put it back into the rivers and lakes.

(iii) Land Pollution : Deposition of solid wastes that cannot be broken down quickly and get mixed with soil causes this type of pollution. Materials such as plastic bags, glass

bottles and metal containers dumped on the land also increase land pollution.

(iv) Noise Pollution : Unpleasant or unwanted sound is called noise. It can disturb us while sleeping, check us from working efficiently and make us ill. By causing fear and panic, noise has harmful effects on animals too.

5. The Earth is the only place where life exists. In our Solar system, our environment consists of all the living and non-living things. Human activities over the years have caused many dangerous changes to our environment. Now, there is a serious danger of a permanent change to the global environment.

Effects on the Environment

(i) Pollution : When the environment gets contaminated by waste, harmful chemicals and gases, we say it has been polluted. There are four major types of pollution: air pollution, water pollution, land pollution and noise pollution.

(ii) Greenhouse effect : Pros and Cons

A greenhouse has walls and roof made of glass. All kinds of plants can be grown here. Even during harsh winter, it stays warm inside. The sunlight keeps the plants and air inside warm by filtering in. The heat gets trapped by the glass and can't go out. So it stays warm all through the day inside a greenhouse.

(iii) Ozone layer : Ozone layer or ozone shield is a thin layer of ozone gas that absorbs sun's ultraviolet radiation. If it gets too thin, the harmful UV rays can damage plants, and cause dangerous diseases in animals and human beings.

Everyday Science

Do yourself.