



Chapter No.	Title of the chapter
1	Food- where does it come from?
2	Components of food
3	Fibre to fabric
4	Sorting materials into groups
5	Separation of substances
6	Changes around us
7	Getting to know plants
8	Body movements
9	The living organisms and their surroundings
10	Motion and measurement of distances
11	Light, shadows and reflection
12	Electricity and circuits
13	Fun with magnets
14	Water
15	Air around us
16	Garbage in, garbage out

SYLLABUS

S. No.	Title of the chapter	Month
1.	Light, shadows and reflection	APRIL
2.	Food - Where does it come from?(Non Assessed)	
3.	Components of Food	MAY
4.	Sorting materials into groups	
5.	Motion and measurement of distances	JULY
6.	Getting to know plants	
7.	Changes around us	AUGUST
8.	Fibre to Fabric (Non Assessed)	
	Components of food	SUMMER HOLIDAY HW
	TERM - 1	SEPTEMBER
9.	Body movements	OCTOBER
10.	Garbage in, Garbage out	
11.	Water	NOVEMBER
12.	Separation of Substances	
13.	Living Organisms and their surroundings	DECEMBER
14.	Electricity	JANUARY
15.	Fun with magnets	
16.	Air around us	FEBRUARY

Syllabus 2021-2022

Science

Class VI

Term 1

APRIL

Light, shadows and reflection

Transparent, translucent and opaque objects, luminous and non luminous objects, shadows, pin-hole camera, mirrors, reflection.

Activities

1. To observe samples of transparent, translucent and opaque objects.
2. Shadow play – Make different shadows on a wall using the concept of shadows.
3. To observe the different types of shadows formed at different times of the day.
4. Group work – make a pinhole camera and observe its working.

Food – Where does it come from?

Food variety, food materials and sources, plant parts and animal products as food, classification of animals on the basis of their food habits.

Activities

1. Collect pictures of food items eaten by people of different regions and stick them on the map of India.
2. Germination of seeds – Every child would make an assortment of sprouts and a day would be allotted to the class when they would bring the same as tiffin.
3. Observe the plants around you to find out their edible parts.

Components of food

What do different food items contain, test for presence of starch, protein and fats, balanced diet.

Activities

1. To bring various food items from home and test the same for the presence of protein, fats or starch.
2. Group work – make flash cards showing the cause, symptoms and cure for various deficiency diseases.

MAY**Components of food (contd.)**

Deficiency diseases

Sorting materials into groups

Objects around us, properties of materials, (appearance, hardness, solubility, etc.)

Activities

1. To observe the things kept on the table for a minute. Recollect the names of the items shown and then classify them into different states of matter on the basis of differences between them.
2. Activities to demonstrate diffusion, magnetism, luster, solubility, transparency and conductivity. The students would also be taught to use materials judiciously.
3. Preparing a saturated solution of sugar and observe the effect on solubility with an increase or decrease in solubility.

SUMMER HOLIDAY PROJECT 2021-22**Components of food****Part -1 Placard making..**

It is an individual activity.

Make 4 Flash cards (A-4 size each) for any two nutrients showing the following details

- The nutrient and its definition
- Importance of the nutrient
- Examples of food items rich in this nutrient
- Disease caused by its deficiency or excess intake

Submission- First week of July

Rubrics for Evaluation

Timely submission - 2marks

Content and information - 3marks

Picture and other details - 2marks

Creativity and innovation - 2marks

Overall neatness and presentation - 1marks

Total - 10 marks

*2 marks would be deducted for late submission.

JULY**Motion and measurement of distances.**

Story of transport, some measurements, standard units of measurement, measurement of length, types of motion.

Activities

1. To measure the length of given objects using scientific measures and rough estimation.
2. Learning the correct way to use a ruler.
3. Measurement of the lengths of regular and irregular figures.
4. Use of simple toys to observe the types of motion exhibited by the objects..

Getting to know plants

Herbs, shrubs and trees, stem, roots, leaf, flower

Activities

1. Collect leaves showing different kinds of venation, dry them and stick them on the worksheet.
2. A trip to the school garden to observe the various parts of the plant.
3. Identify the parts of a flower.

AUGUST**Changes around us**

Causes and effects of changes, reversible and irreversible changes, other types of changes (physical, chemical, slow, fast, desirable and undesirable changes), expansion on heating.

Activities

1. To show the difference between a reversible and an irreversible change.
2. Differentiate between a physical and a chemical change.
3. Each student will be asked to get his/her 2 photos – one recent and one when he/she was an infant and compare.
4. Newspaper cuttings of desirable /undesirable changes.

Fun with magnets

Discovery of magnets, magnetic and non-magnetic substances, properties of a magnet, testing magnets, uses of magnets, care of magnets.

Activities

1. Sorting magnetic and non-magnetic materials using a self made Magnes stick.
2. Magnetising an iron nail using single touch method.
3. To observe the correct way of storing magnets.
4. Identify different types of magnets- Bar, U- shaped, Horse shape, ball and stick etc.
5. Activity to show that magnetism can pass through water.
6. Activity to observe properties of magnets.

TERM 1 EXAMINATIONS**OCTOBER****Body movements**

Human body and its movements, different types of joints in the body, gait of animals.

Activities

1. A visit to the biology laboratory to observe the human skeletal system and the use of various joints in the body.
3. Observe specimens of snail, cockroach, earthworm, frog etc., to understand their locomotion .

Garbage in, Garbage out**Watch the video**

https://www.youtube.com/watch?v=hee9JQvE_Ys

Activity

Make an effective poster on an A4 sheet to create awareness to stop littering.

Try to search methods of better disposal of waste and reducing waste at domestic and community level.

NOVEMBER & DECEMBER**Water**

Sources of water, water cycle, transpiration, water conservation, rain water harvesting.

Activities

Disappearing trick of water - to study water cycle in a zip pouch.

To estimate your water consumption in one day and suggest methods of conserving water at personal level.

Light, shadows and reflection

Transparent, translucent and opaque objects, luminous and non luminous objects, shadows, pin-hole camera, mirrors, reflection.

Activities

1. To observe samples of transparent, translucent and opaque objects.
2. Shadow play – Make different shadows on a wall using the concept of shadows.
3. To observe the different types of shadows formed at different times of the day.
4. Group work – make a pinhole camera and observe its working.

Separation of substances

Pure substances and mixtures, physical methods of separation, separation using more than one method, solubility in water.

Activities

Demonstration of methods of separation of mixtures (sublimation, filtration, separating funnel, loading etc.

Living organisms and their surroundings

Organisms and their surroundings, habitat and adaptations, different types of habitat, characteristics of living beings.

Activities

1. Films showing the various types of habitat and how the abiotic and the biotic components work in harmony to ensure balance in nature.
2. Enacting organisms belonging to specific habitats after doing a research on their adaptive features .

POST WINTER BREAK

JANUARY**Electricity and circuits**

Electric cell, electric circuit, electric switch, electrical conductors and insulators.

Activities

To observe the various components of a simple circuit.

1. An experiment to test whether the given material is an insulator or conductor.
2. Making a switch using drawing pins, a safety pin and wires.
3. Connecting a simple circuit and identifying the reasons for non- emission of light by a bulb.
4. Observing the parts of an electric bulb.

5. To be able to identify a fused bulb and to observe the MCB .
6. To study various circuits with series and parallel combination of bulbs.

Fibre to Fabric – Non assessed (By project method)

Collect samples of at least five different types of fibres.

Cut each fibre into a sample size of 2" x 2".

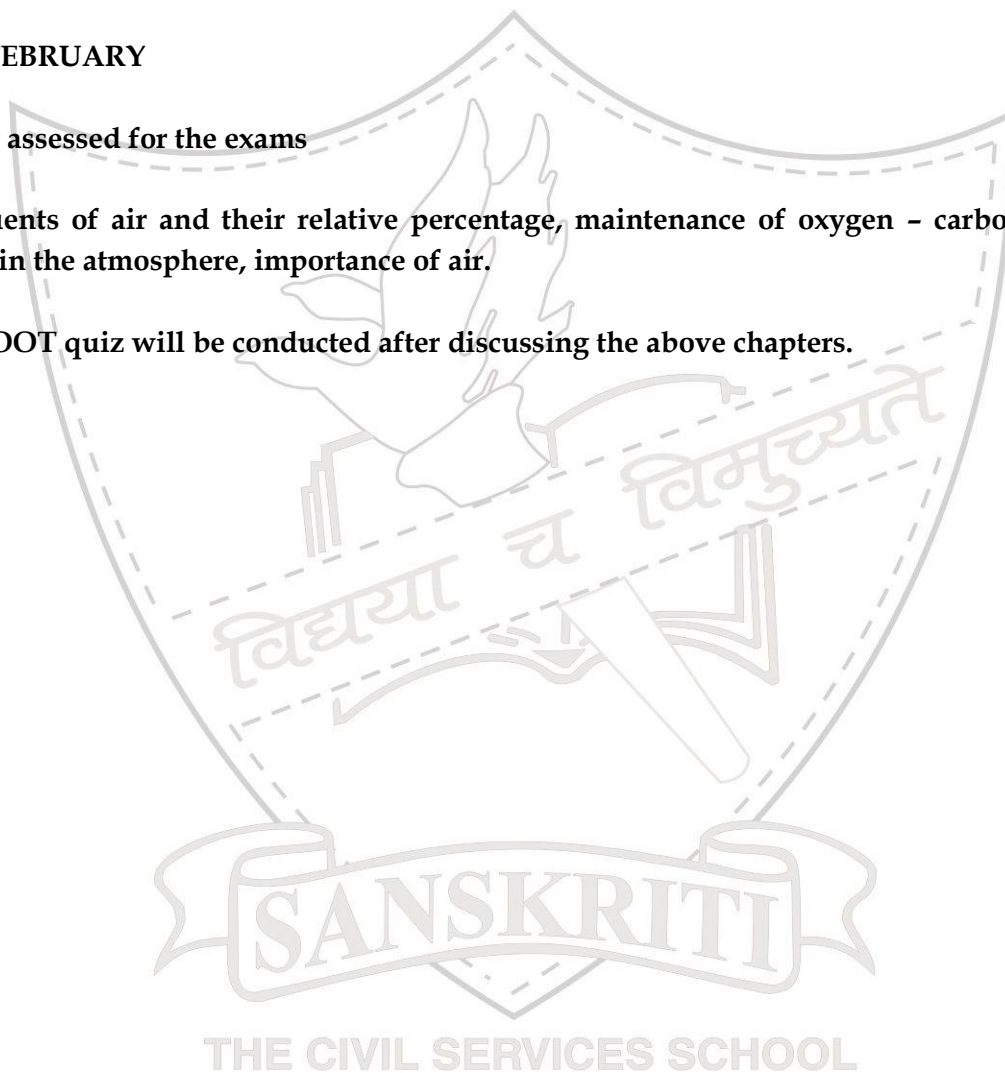
Study the properties of each fibre (hardness, lustre, absorption of water, speed of drying, size of pores, and effect of heating.)

FEBRUARY

Air- Not assessed for the exams

Constituents of air and their relative percentage, maintenance of oxygen – carbon-dioxide balance in the atmosphere, importance of air.

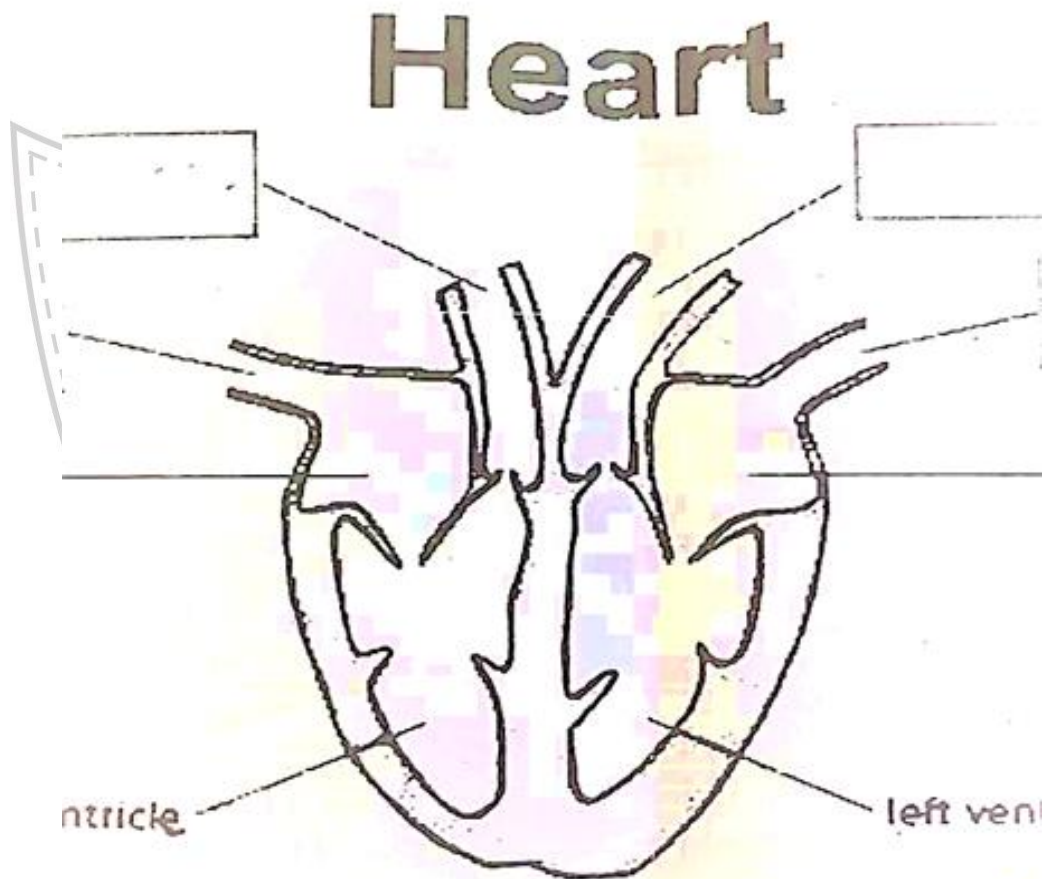
A KAHOOT quiz will be conducted after discussing the above chapters.



Let's review our learning from grade 5

- Q1. Water is important for the process of seed germination. Give two reasons to support your answer.
- Q2. Give three points of differences between a monocot and a dicot seed.
- Q3. 'Health is Wealth' - Write five ways how we can look after our health and remain healthy.
- Q4. Water is an important ingredient for a balanced diet. Write any two functions of water.
- Q5. How are the arrangement of molecules different in solids and liquids ?
- Q6. Where does the sugar disappear when it is dissolved in water ?
- Q7. In the morning when the Sun rises, the shadow formed points to the west and in the evening when the Sun sets, the shadow points to the east. Can you tell why ?
- Q8. What is meant by total solar eclipse? Why should we not look at the solar eclipse with our naked eye?
- Q9. Blood is also called the life fluid. Give two important functions of blood.

- Q10 Human heart is the most important organ of the circulatory system. It is a muscular organ. It pumps blood to all parts of the body. It also receives blood from all other organs of the body. Label the diagram of the human heart given below.



THE CIVIL SERVICES SCHOOL

Chapter - 1

Food- Where does it come from?

Learning objectives-

After completing this topic, the students would be able to-

- Differentiate between edible and inedible parts of a plant
- Identify the sources of food
- Classify the sources of food as plant or animal
- Differentiate between animals on the basis of their food habits.

Notes

Edible part plants:

- a. Roots - Turnip, radish, carrot, _____
- b. Stems - Sugarcane, lotus, potato, _____
- c. Leaves - Spinach, lettuce, cabbage _____
- d. Flowers - Cauliflower, pumpkin flowers, _____
- e. Seeds - Cereals, mustard, _____
- f. Fruits- banana, brinjal, _____

Functions of food:

1. It provides us energy to do all the activities.
2. It is needed for growth and reproduction.
3. It is needed for the repairing of damaged cells.
4. It keeps us healthy and enables us to fight against diseases.

Classification of animals on the basis of their food habits:

- a. Herbivores - Animals that eat only plants and plant products.

eg. _____

Name two living giant mammals that are herbivorous. _____

- b. Carnivores - Animals that eat meat or flesh of other animals

eg. _____

Carnivores have long and sharp teeth for tearing, piercing and chewing flesh.

- c. Omnivores - Animals that eat both plants and flesh or meat.

e.g. _____

Name two omnivores present in the ocean?

d. Decomposers - organisms that feed on dead plants and animals

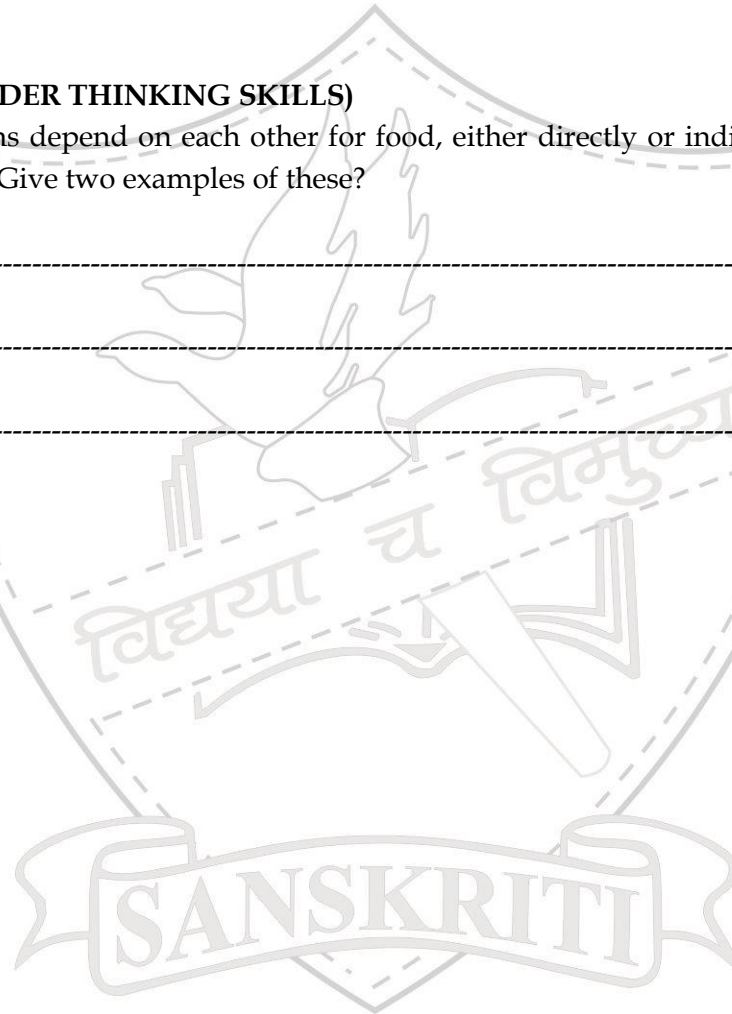
e.g. _____

e. Scavengers- animals that eat dead animals

e.g. _____

HOTS: (HIGH ORDER THINKING SKILLS)

All living organisms depend on each other for food, either directly or indirectly. What is this association called? Give two examples of these?



THE CIVIL SERVICES SCHOOL

Food: Where does it come from?**Assignment 1.1**

Q.1. Write down the source of the following food items:

Food item	Source	Nutrient rich in
Milk	Animal	Protein
Eggs		
Rice		
Curd		
Mango		
Butter		
Sprouts		


Q.2. List the parts of the following plants which can be used as food:

- a) Mustard plant - _____
- b) Banana plant - _____
- c) Coconut tree - _____
- d) Lotus plant- _____
- e) Groundnut- _____

Q.3. Classify the following animals as herbivores, carnivores or omnivores:

Cow, tiger, dog, deer, giraffe, fox, bear, crow, human being, butterfly, elephant, horse, cheetah

Herbivores	Carnivores	Omnivores



			1				2			3
4										
	5		6							
7										
			8							

Across

1. Many people drink it in the morning with milk or cream.
4. British people drink it at 5 o' clock.
5. Juicy, round fruit with a stone-like seed.
7. You make wine from this fruit.
8. You make lemonade from this fruit.

Down

1. You serve it at birthday parties.
2. You can find them in an aquarium.
3. Hens lay it.
5. Meat from a pig.
6. Eve gave one to Adam.

Chapter – 2

Components of food

Learning objectives- At the end of this topic, the students would be able to-

- Define the term balanced diet
- Understand the need of a balanced diet
- Name the nutrients present in a food item
- Test for the presence of starch, fat and protein in the given sample of food
- Correlate the symptoms with the deficiency disease

NOTES

All living organisms require food to live. Food comprises of six important nutrients - carbohydrates, proteins, fats, vitamins, minerals and water. Nutrients are essential to perform various metabolic activities. The main components of foods are carbohydrates, protein, fats, vitamins and minerals. These are called nutrients.

Carbohydrates: Carbohydrates are also called energy giving food. They are the main source of energy. They are made up of carbon, hydrogen, and oxygen. The main carbohydrates found in food are starch and sugars.

Protein: Protein helps in body growth and repairs the tissues so it is also called body building food. We get protein from milk, eggs, meat, fish and all kinds of pulses. When the body is building new tissue, more proteins are required, so growing children need more protein.

Fats: Fats are made up of carbon, hydrogen and oxygen. Butter, ghee, milk, egg-yolk, nuts and cooking oils are the major sources of fat in our fry day. Our body stores the excess energy in the form of fat. This stored fat is used by the body for producing energy as and when required so fat is considered as an energy bank in our body. Fats are essential for the absorption of vitamins A, D, E and K in the body. Fat in our body also prevents heat loss from the body surface.

Vitamins: Vitamins are complex organic compounds which are essential for the growth and maintenance of our body. It does not provide energy. Our body requires vitamins A, C, D, E, K and B-complex. Our body can make only two vitamins, Vitamins D and K so other vitamins must be present in our food. The B complex vitamin is a mixture of several water- soluble vitamins.

Minerals: Minerals are required by our body in very small quantities. Iron, Iodine, calcium, phosphorus, sodium and potassium are common minerals. The sources of these minerals are plants and animals.

Dietary fibre: The fibrous indigestible material present in any food is termed as dietary fibre or roughage. It helps in preventing constipation. It adds bulk to the food and gives a sense of fullness after the meal. Salad, vegetables, sprouted grains and fruits are the sources of roughages.

Water- water is required for all body functions. Water is an important constituent of body cells and most of the body processes are mediated by it. Water is not food in itself, but is an essential part of our diet.

1. It helps in absorption of nutrients; transportation of nutrients throughout the body.
2. Maintenance of proper body temperature
3. Excretion of waste in the form of sweat and urine

Balanced Diet: A diet that contains all the essential nutrients in the right proportion for proper growth and maintenance of good health is called a balanced diet. The food we eat must have all the nutrients. It should provide the required energy.

Deficiency disease- Deficiency of one or more nutrients in our food for a long time may cause certain diseases or disorders called deficiency diseases.

Nutrients- The process by which our body takes in food and uses it for growth and development is called nutrition. Food has some chemical substances called nutrients. These components of foods are needed by our body for maintaining good health.

Let's learn about few important minerals and their sources

FUNCTIONS-

Iron - essential for the formation of haemoglobin (a red pigment present in red blood cells)

Sodium - important for the proper functioning of the nervous system, maintains blood pressure

Potassium - needed for muscles and nerves to work properly, maintains normal body growth

Phosphorus - essential for the formation of bones and teeth, formation of energy molecules which supplies energy to each and every cell of the body.

Iodine - essential for the production of thyroid hormone, needed for the body to convert food to energy (*Hormone: a chemical substance produced in the body or in the plant that encourages growth or influences how the cells and tissues function*)

SOURCES-

Calcium - milk and milk products, nuts, soyabean, ragi, tapioca and green leafy vegetables

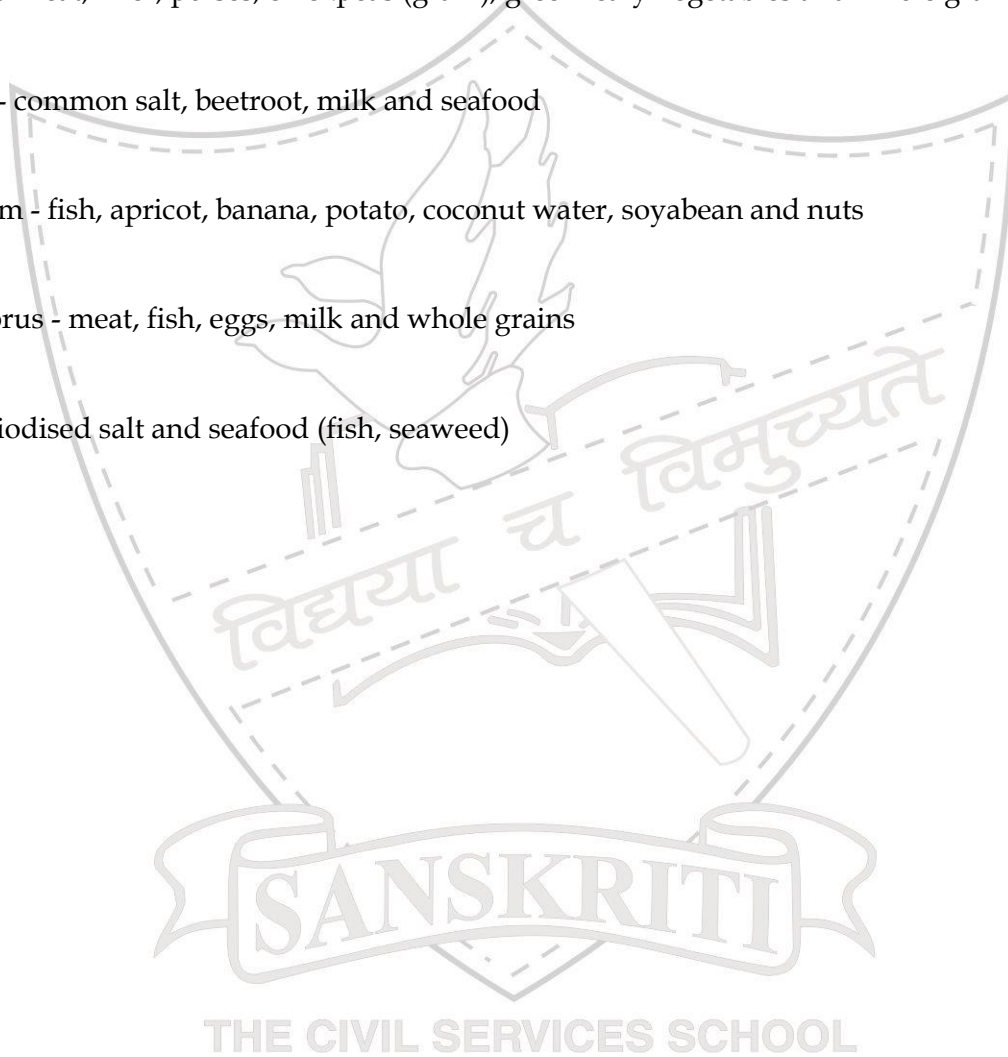
Iron - red meat, liver, pulses, chickpeas (gram), green leafy vegetables and whole grains

Sodium - common salt, beetroot, milk and seafood

Potassium - fish, apricot, banana, potato, coconut water, soyabean and nuts

Phosphorus - meat, fish, eggs, milk and whole grains

Iodine - iodised salt and seafood (fish, seaweed)



Components of Food Assignment 2.1

Q.1. Fill in the blanks:

- a) The components of food are _____, _____, _____, _____, _____ and _____.
- b) Green leafy vegetables are good for us because they provide us with _____ and _____.
- c) Vitamin B and Vitamin C are _____ soluble vitamins.
- d) _____ are needed for growth and development, and therefore required more by growing children.
- e) Deficiency of _____ can be treated by eating citrus fruits.

Q.2. State true or false. If false, write the correct statement:

- a) Balanced diet is very expensive.

Ans. _____.

- b) To a certain extent the body's water requirement is met by food alone.

Ans. _____.

- c) Fats are body building foods.

Ans. _____.

- d) It is better to eat raw fruits and vegetables than the cooked ones.

Ans. _____.

Q.3. Classify the following food items according to the major nutrient present in them :

Groundnuts, sweet potato, eggs, wheat, bajra, rice, milk, fish, **sesame seeds**, peas, cottage cheese, potato, butter.

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Carbohydrates	Proteins	Fats
potato	eggs	butter

Q4. Complete the following table:

Vitamin/Mineral	Deficiency disease/ disorder	Symptoms	Suggested food items/ ways to cure disease
Vitamin A			Yellow fruits
Iron	Anaemia		Spinach, apple, liver
Vitamin D		Weak and bent bones	
Iodine			Iodised salt, Sea food
Calcium	Bone and tooth decay		
Vitamin C	Scurvy		

Q.5. Complete the following conversations-

Rajesh : Is water important for our body?
 Mom : Yes, water is very essential for our body.
 Rajesh : Why is it so important for us?
 Mom: It helps us to absorb various soluble _____.
 Rajesh : Really! But do we retain all the amount of water we drink?
 Mom : No, some amount of water is lost in the form of _____ and
 helps in excreting wastes from our body as _____.
 Rajesh: Oh! Does water have any other function?
 Mom : Yes! It also helps in maintaining our _____.
 Rajesh: If all that is true, then how much water should a person drink?
 Mom : Well, on an average, an adult should drink _____
 of water. Now, I am sure, you have understood the importance of water.
 Rajesh : Yes, Mom! Thank you so much!

Chapter – 2

Components of Food

Assignment 2.2

Q.1. Give reasons for the following:

- a) Roughage does not give any nutrition but is considered an important component of food.
- b) Obesity leads to several life-style related disorders
- c) Excess of fats in our diet is not good for health.
- d) Peeled vegetables and fruits should not be washed repeatedly after cutting.
- e) Steamed food is healthier than fried food.

Q.2. Answer the following questions briefly:

- a) Asha saw a child begging on the street with a swollen neck. Identify the deficiency disease. Suggest one simple treatment to help the child. What would happen if a pregnant woman suffers from this nutrient deficiency.
- b) Anu loves eating pizza . Her parents insist on her having the pizza with some salads. Why is it so?

Q.3. The food sample leaves an oily stain if it is crushed between folds of a filter paper. What nutrient does the food sample contain?

Q.4. Why is food cooked? Mention its benefits.

Q.5. Rahul, a student of class VI, due to his misbehaviour in school was asked to sit in the science laboratory during lunch break. While eating his rice pulao, he dropped a bottle of some chemical solution in his lunch box. The colour of his rice changed to blue black.

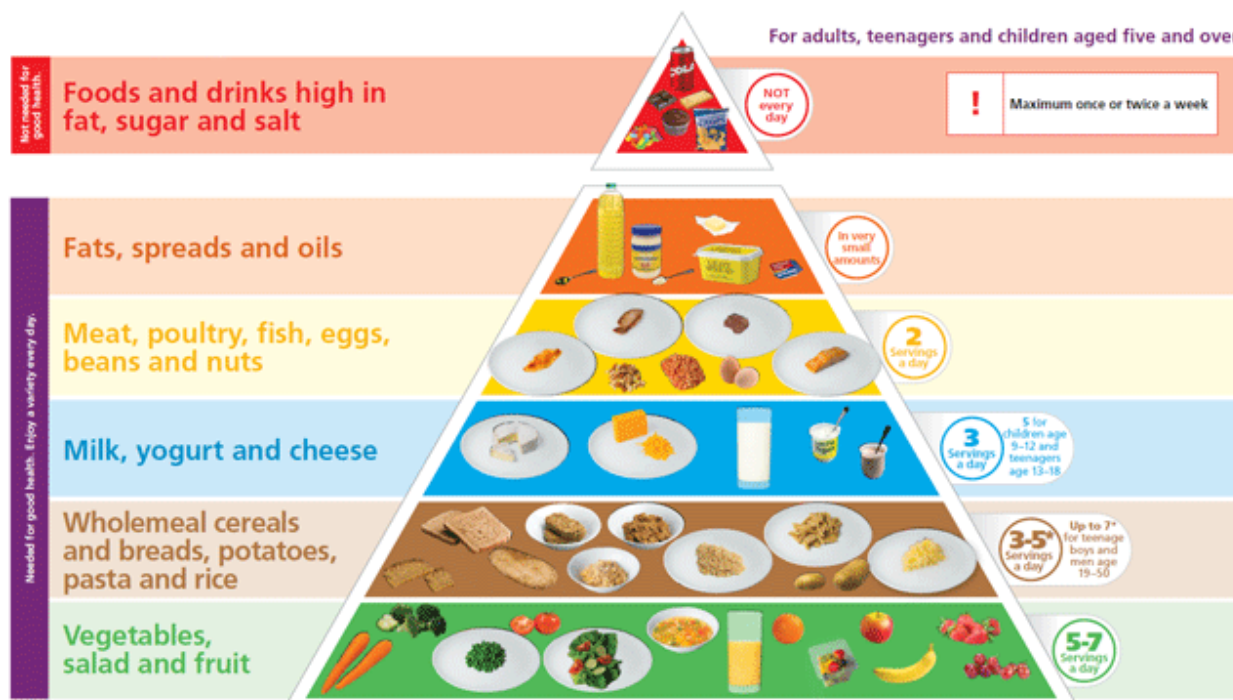
- a) Identify the chemical solution.
- b) Identify the nutrient present in rice responsible for the colour change.
- c) Give two examples of food items containing this nutrient (other than rice).

Q.6. Shreya's mother was always concerned about her diet. She tried very hard to make it balanced. But, Shreya is very fond of junk food. She does not eat green vegetables, pulses etc., regularly. What kind of meal will you plan for such a child.

Q.7. Joseph's mother packed him a large lunch box for the school picnic. But the school provided the children food. She took permission from his teacher and gave the packed food for the needy children who were there at the picnic site. His teachers also instructed the students to serve just what was needed, in their plates. What value is being inculcated by his mother and the teachers?

H.O.T.S

1. Now that you know so much about food and food groups, why don't we comprehend the food pyramid and write about the diagram shown below in a few lines



2. Reeya noticed that her mother strained out excess water from cooked rice and then used it to stiffen her cotton saree. Which component is responsible for stiffening the saree?

Food Group Riddles

I am white. You can drink me. I am in the dairy group.

Who am I? _____

I can sometimes be light brown or white. I have yellow stuff inside me. I am a protein.

Who am I? _____

I am green or red. I am spicy and hot. I am in the vegetable group.

Who am I? _____

I am yellow and long. I am a fruit. Monkeys eat me.

Who am I? _____

I am green and when you cut me open I am red. You eat me in the summer-time. I am a fruit.

Who am I? _____

I am green. I look like a tree. I am a vegetable.

Who am I? _____

Chapter - 2

Components of Food

Activity 1

Aim- To test the presence of fats in various food samples.

Materials Required - A sheet of paper, food items (apple, peanut, raisin, bread, orange, French fries, almond etc.)

Method- Place each item between the folds of the paper and rub slightly.

Unfold the paper and check if it has turned translucent.

Observation- _____

Diagram- _____

Result- _____

Activity 2

Aim - To test the presence of starch in various food samples.

Materials Required- watch glass or petri dish, dropper, iodine solution, food items

Method- Place each item on the petri dish.

Add a drop of iodine on the food item.

Observe for any change of colour.

Observation- _____

Diagram- _____

Result-

Activity 3

Aim - To test the presence of proteins in various food samples.

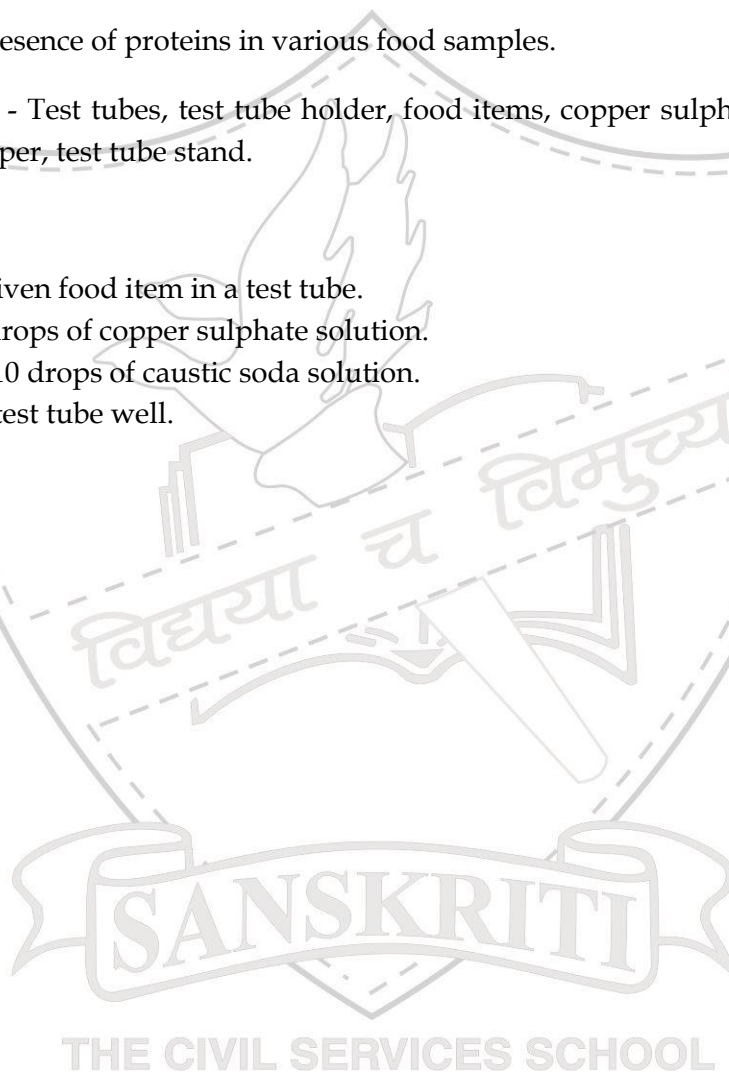
Materials Required - Test tubes, test tube holder, food items, copper sulphate solution, caustic soda solution, dropper, test tube stand.

Method-

1. Take the given food item in a test tube.
2. Add two drops of copper sulphate solution.
3. Now add 10 drops of caustic soda solution.
4. Shake the test tube well.

Observation -

Result -



Chapter 3

Fibre to Fabric (Project method)

Read the text and answer the following question

Q.1 Fill in the blanks:

1. _____ fibres do not absorb water.
2. Yarn is made up of _____.
3. A simple device used for spinning is called _____.
4. Weaving of woollen yarn is known as _____.
5. Soaking of jute plants is called _____.
6. Fibre from which linen is produced _____.
7. The process of separating cotton seeds from cotton fibre is called _____.

Short answer questions-

Q.1 Which soil is best for growing cotton?

Q.2 Spinning of fibres increases the strength of the yarn. How?

Q.3 Write a note on the history of clothing?

Project:

Different fabrics pass through different processes before we can wear them. Some of these processes are dyeing, printing, embroidery, painting and stitching.

Collect information about these processes and attach pictures.





Chapter – 4

Sorting Materials into Groups

Learning objectives-

At the end of this topic, the students would be able to-

- Define the term classification
- Understand the need to classify substances
- Use common properties such as lustre, solubility, magnetism, transparency etc as means to classify substances
- Explain 'solubility'
- Explain the variation of solubility of a solute with change in temperature.

Smart Notes

Classification- Grouping or classification means placing or sorting the objects on the basis of their similarities and differences.

Materials are classified on the basis of their characteristics such as its strength, transparency, conduction etc. These are called its properties.

Advantages of classification

- Helps in identification of objects
- Helps in sorting of objects
- Helps in locating things
- Makes study of different objects easy and more meaning full rather than studying them separately
- Helps to understand similarities and differences among objects

Properties of materials by which they can be classified are as follows

I) Appearance- Shape, colour , Lustre and roughness

Lustre-

Texture-

II) **Density** is mass per unit volume (Mass/Volume)

Floating -

Sinking-

III) **Ability to transmit light -- transparent, translucent, opaque**

Transparent objects-

Translucent objects-

Opaque objects-

IV) **Solubility**- the amount of solute that can dissolve in a solvent at a given temperature is called its solubility.

The solution in which no more solute can be dissolved at a given temperature is called a saturated solution.

Solids are called soluble if they dissolve and insoluble if they do not dissolve.

Liquids are called miscible if they mix completely into one another and immiscible if they do not dissolve.

Miscible liquids _____

Immiscible liquids _____

Soluble solids-

Insoluble solids-

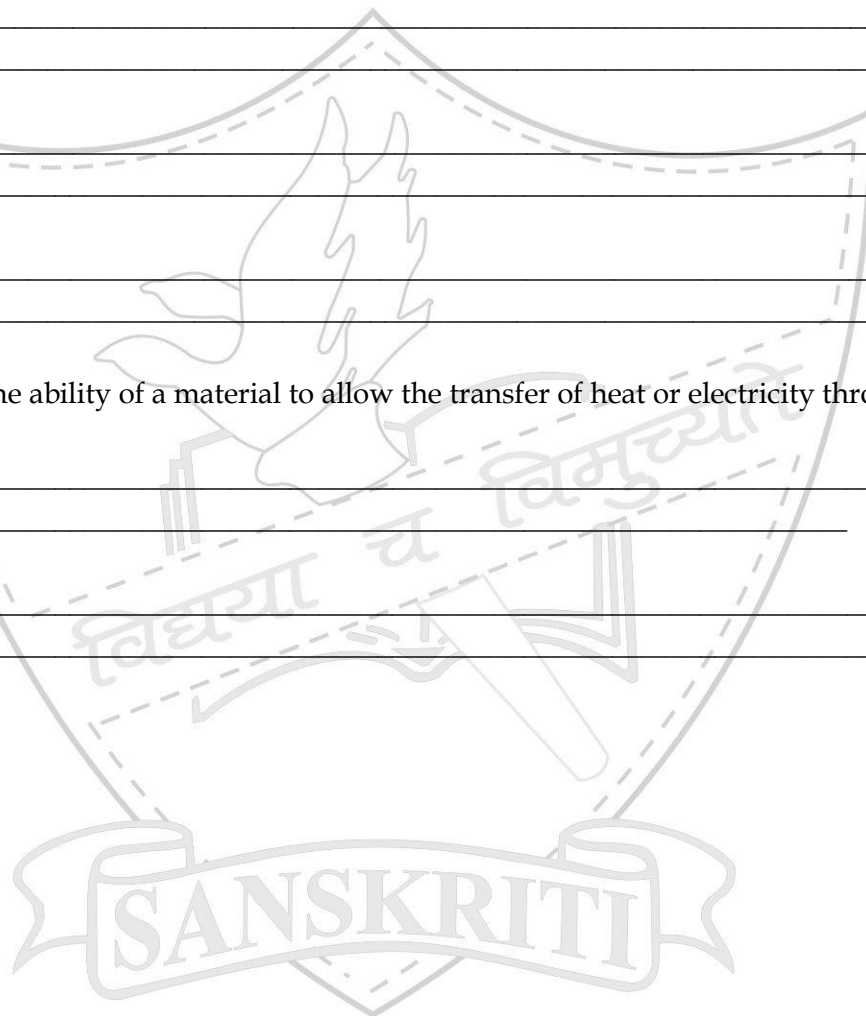
V) Compressibility

Hard objects

Soft object

VI) **Conductivity**-the ability of a material to allow the transfer of heat or electricity through it.
Conductors-

Insulators-



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Chapter - 4
Sorting Materials into Groups
Assignment 4.1

Q.1. Fill in the blanks:

- a) _____ materials do not allow light to pass through them.
- b) Sugar dissolves in water, so we say that it is _____ in water.
- c) Liquids which mix completely are called _____ liquids.
- d) _____ **and** _____ are examples of naturally occurring materials.

Q.2. In the table given below, classify the following substances according to the given property :

- a) Property : Lustre
 Substances : Chalk, fresh piece of iron, aluminium foil, silk, steel
- b) Property : Hardness
 Substances : Wood, cotton, steel, diamond
- c) Property : Solubility in water
 Substances : Sand, chalk powder, sugar, salt
- d) Property : Miscibility in water
 Substances : Petrol, honey , diesel, milk.

	Lustrous	Non-lustrous
	Hard	Soft
	Soluble	Insoluble

	Immiscible	miscible

Q.3. Match the objects with the kind of materials they can be made up of :

Iron, cement, mud, wood, cotton, marble, silk, steel, nylon, plastic, bricks, glass, wool, stainless steel, leather, rubber

	Objects	Materials
	Cloth	
	Spoon	
	Building	
	Shoe	

Q.4. Find the odd one out and give reason for your answer:

a) Spices, soft drinks, chalk, pulses

b) Chair, table, bed, flower -

Chapter - 4
Sorting Materials into Groups
Assignment 4.2 (To be done in the notebook)

Q.1. Define the following:

- a) Solubility
- b) Lustre
- c) Classification
- d) Saturated solution

Q.2. Differentiate between the following -

- a) Miscible and immiscible liquids
- b) Transparent, translucent and opaque objects
- c) Solute and solvent

Q.3.Explain why-

- a) A coin sinks while a cork floats on water .
- b) Frosted glass is translucent but clear glass is transparent.

Q.4.H.O.T.S-

Give reasons for the following:

- a) On heating, more solute can be dissolved in a solvent.
- b) A piece of sponge becomes heavy when dipped in water.
- c) A metal chair kept in sun becomes hot.
- d) Aquatic plants and animals are able to survive in water



Laboratory experiments

Describe the method used to prepare a saturated solution of sugar in water.

Aim: _____

Materials required - _____

Theory- A solution in which no more solute can be dissolved in a given solvent at a given temperature is called a saturated solution. A solute dissolves by occupying the empty spaces in the molecules of the solvent.

Method/Procedure- _____

Observations - _____

Result - _____

Precautions - _____

Fun time!!

Rearrange the following letters to form meaningful words:

- a) LETAM - _____
- b) SSLAG - _____
- c) LASCITP - _____
- d) OQUEAP - _____
- e) BBURER - _____

Try this-

<https://www.youtube.com/watch?v=J35rd3RC4vQ>

<https://www.youtube.com/watch?v=PjZSMu2SXt4>

Petrol pump attendants close the fuel cap very quickly after filling petrol in vehicles. They do this because of a property of petrol. Which property of petrol could this be?

- a.) It gets converted to a gas very fast.
- b.) It attracts too much dust and dirt.
- c.) It catches fire very easily in daylight.
- d.) It mixes with the paint of the vehicle very easily.

You must have played with balloons. A balloon is made of a certain type of material. Nikhit blows a balloon and ties it up. Which of the following can pass through the material of this balloon?

- a.) Air b.) dust c.) water d.) sound

Police stop a truck at a check post which claims to be carrying sacks of a black water soluble fertilizer. When the truck is examined, it is found to have sacks of at least four different materials which the police label W, X, Y and Z. They suspect that apart from the fertilizer, the truck is carrying iron filings, gun powder and black powdered wood. They conduct some tests whose results are

	W	X	Y	Z
Physical form	Black lumps	Fine black pieces	Black pieces	Fine black powder
Dissolves in water	Yes	No	No	No
Attracted to magnet	No	Yes	No	No
Burns when lit	No	No	Yes, after some time	Easily, explosively

Which of them, if any, may be gunpowder?

- a.) W b.) X c.) Y d.) Z

Which of these can be used to easily soak and wipe away some milk that has got split on a table?

- a.) A bar of soap
- b.) a sheet of rubber
- c.) a piece of cotton vest
- d.) a patch of rain coat

Chapter 5

Separation of substances

Learning objectives-

At the end of this topic, the students would be able to-

- Define the term 'mixture'.
- Understand the need for separation of a mixture.
- Explain the principle of various techniques used for separation of mixtures- handpicking, filtration, distillation etc
- Be able to separate the components of a given mixture using appropriate method of separation.

Smart notes

Substances can be classified as pure substances or mixtures.

Mixtures are formed when two or more substances combine together in any ratio. The different substances that make up a mixture are called components or constituents.

Mixtures are of two types:-

*Homogeneous mixtures -constituents are uniformly spread and each part of the mixture has the same properties. Eg sugar in water forms a uniform mixture.

*Heterogeneous mixtures- constituents are not evenly distributed or spread throughout the mixture and each part does not have the same property. Eg crude oil or petroleum

PROPERTIES OF MIXTURES

- The components of a mixture retain their individual properties. This is because, the molecules of the constituents do not change.
- The constituents of a mixture can be in any ratio.
- The constituents can be separated from a mixture by physical methods.
- Mixtures do not have fixed melting and boiling points.

Need for separation:

1. To obtain two different but useful components of a mixture.

e.g. _____

2. To remove impurities from a mixture.

e.g. _____

3. To remove non-useful component of a mixture.

e.g. _____

Methods of Separation:

A) SOLID - SOLID MIXTURES

a. Hand picking - The method of separating a mixture of solids into its components using hands, is called hand picking. The method is useful when:

1. Quantity of impurity is not large.
2. Can be easily picked up by hand.
3. Have different size, shape or colour.

eg. _____

b. Threshing - The method of separating grains from stalks by beating the stalk on a wooden board to free the grain seed is called threshing. It is also done using bullocks or machines.

c. Winnowing - The method of separating husk or chaff from grain by means of _____ is called winnowing. It is used to separate the components of a mixture when one of the components is _____ than the other.

d. Sieving - The method of separation of the components of a mixture when the size of one of the components is _____ than the other, by passing the mixture through a suitable sieve, is called sieving.

eg. _____

e. Sublimation - the method of separation in which one substance can directly change from a solid state

to a gaseous state on heating. some substances that can sublime are - iodine, camphor, naphthalene, ammonium chloride

f. Magnetic separation - the method of separation that involves separation of a magnetic substance from a non magnetic substance. eg iron from sand

Here, iron is _____

Sand is _____

B) SOLID- LIQUID MIXTURES

1. Sedimentation and decantation - The process of separating insoluble heavier solids by adding water to it so that the solid settles down is called sedimentation.

The solid particles that settle down during this process are called _____.

The process of pouring out the upper liquid/ water without disturbing the sediments is called _____.

e.g. _____

2. Filtration – The process by which two substances (an insoluble solid and liquid) are separated by passing the mixture through a filtering device is called filtration. During filtration, the insoluble solid is retained in the filtering device and the liquid passes through it.

The substance retained is called _____ and the substance that flows through the filter paper is called _____.

e.g. _____

3. Evaporation – The process of conversion of water into water vapour (liquid to vapour state) is called evaporation. This method is used to recover the solid component that has dissolved in liquid.

eg. _____

4. Condensation -the process in which a gas changes into a liquid , on cooling.

C. LIQUID IN LIQUID MIXTURES -

1. Distillation -the method of separating two miscible liquids from their mixture by following continuous evaporation and condensation. The separation is based on the fact that liquids have different boiling points.(more than 25°C)
2. Separating funnel-immiscible liquids can be separated by using a separating funnel . in this apparatus the lower layer is drained out and the upper layer remains in the funnel. Eg oil and water can be separated using a separating funnel.



Saturated solution – A solution in which no more _____ can be dissolved, at a given _____ is called a saturated solution.

A Saturated solution can be made to dissolve some more solute by-----.

A solute is a substance that _____.

A solvent is that in which _____.

How does heating a saturated solution help to dissolve more solute?

Water is known as universal solvent because it can dissolve many substances – solids, liquids as well as gases.



Separation of substances

Assignment 5.1

Q.1. Fill in the blanks:

- a) Winnowing is used to separate mixtures containing components, differing in their _____.
- b) Distillation is a process that takes advantage of the difference in the _____ of liquids.
- c) If one substance in a mixture changes directly to gas from solid, the method of _____ can be used for separation.
- d) _____ is a universal solvent.
- e) Solubility of a solid _____ on heating and _____ on cooling.

Q.2. Name the **method or device**, you can use to separate a mixture containing:

- a). Immiscible liquids _____
- b). Insoluble solid from a liquid _____
- c). Soluble solid and liquid _____
- d). Heavier and lighter solids _____

Q.3. Tick the correct answer(s):

- a). A mixture of water and kerosene oil is separated by :
- | | |
|------------------|------------------------|
| i). Sublimation | ii). Separating funnel |
| iii). Filtration | iv). Evaporation |
- b). Which one of the following is not a pure substance?
- | | |
|------------|------------|
| i). Air | ii). Sugar |
| iii). Salt | iv). Gold |
- c). Which one of the following sublimates on heating?
- | | |
|-----------------|--------------|
| i). Common salt | ii). Sugar |
| iii). Iodine | iv). Camphor |

Q.4. Classify the following into pure substances or mixtures :

Gold-

Air-

Sea water-

salt-

tap water-

rocks-
Iron-
copper-
lemonade-

Q.5. Match the following :

A	B
a). Separating of grain from stalks	1.Sieving
b). Removing husk from flour	2.Threshing
c). Water to water vapour	3.Churning
d). Butter from milk by rotating the mixture at a fast rate	4.Evaporation
e). Water vapour to water	5.Winnowing
f). Wind acts as a major role in	6.Condensation



Chapter – 5
Separation of substances
Assignment 5.2

Q.1. What is the difference between (explain with the help of examples) :

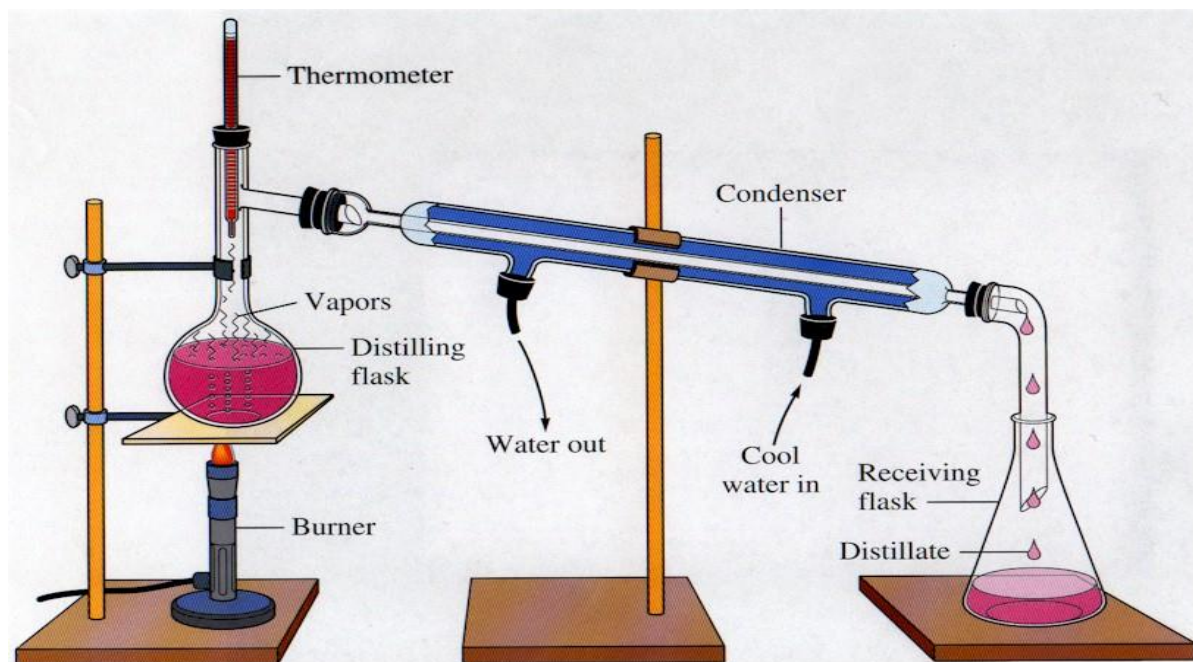
- a). Residue and filtrate
- b). Pure substance and a mixture
- c). distillation and filtration

Q.2. Answer in a word or two :

- a) Devices used to separate oil from water.
- b). Any two substances which sublime
- c). Process by which sand and iron-filings can be separated
- d). Chemical used for loading.
- e). Process used for separating butter from milk.

ADVANTAGES OF SEA WATER DISTILLATION –

- a.)Killing germs in sea water
- b.)Producing water for drinking
- c.)Making steam that can run ships
- d.)Generating useful components from seawater.



Given above is the distillation apparatus answer the questions based on this apparatus

- What kinds of mixtures are separated using this apparatus?
- On what principle does this work?
- How is it different from evaporation?

Just for information

SANSKRITI
THE CIVIL SERVICES SCHOOL

PURIFICATION OF DRINKING WATER

Water undergoes several cleaning methods before being supplied to our homes as drinking water. The steps in the purification of water are as follows:

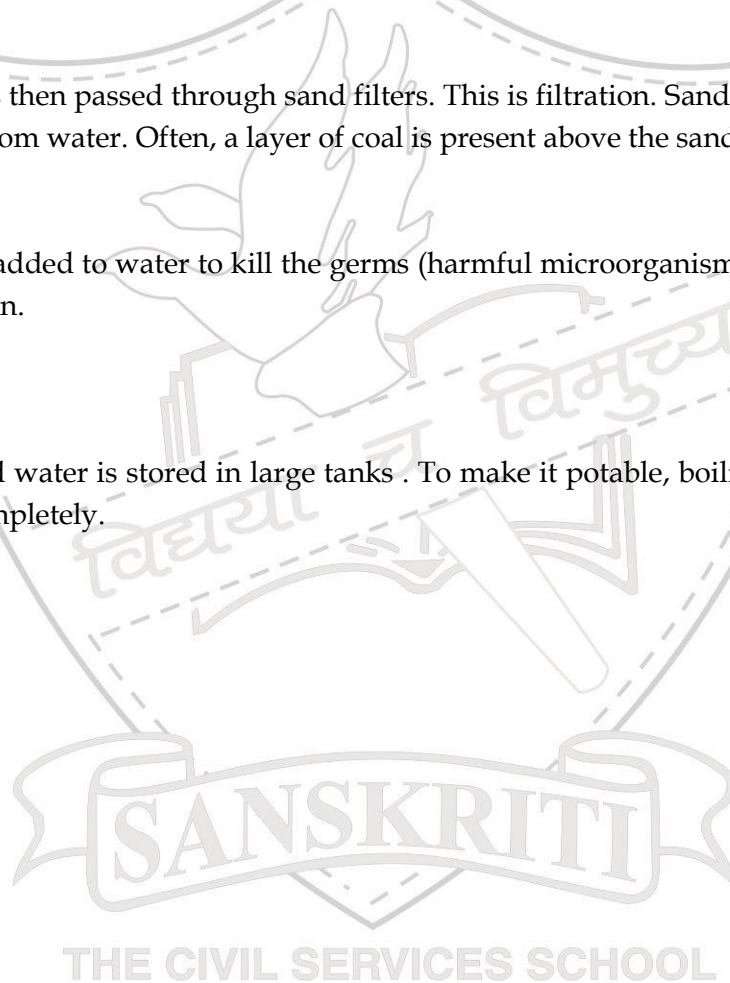
Step 1: At first, the water collected from pond, stream or river is passed through large screens (a type of filter) to remove large, solid impurities such as leaves, sticks, insects and pebbles. This process is called screening.

Step 2: Next, the water is allowed to stand. Finer solid impurities that are heavier than water settle down forming a layer at the bottom. This is sedimentation. At this stage, alum is added to water to speed up the sedimentation. This is known as loading. The dissolved particles of alum help the lighter and finer impurities to settle down. The cleaner water is then transferred, leaving behind the sediments, by the process of decantation.

Step 3: The water is then passed through sand filters. This is filtration. Sand filters separate very fine dirt particles from water. Often, a layer of coal is present above the sand filters.

Step 4: Chlorine is added to water to kill the germs (harmful microorganisms) present in it. This is called chlorination.

Step 5: The purified water is stored in large tanks . To make it potable, boiling is recommended to kill microbes completely.



Separation of substances

Activities

1. Aim-To show that tap water is a mixture of substances.

Materials required-china dish, tap water and flame.

Theory- When two or more substances are physically mixed in any ratio ,it forms a mixture.

Mixture is not a pure form of a substance.

Procedure-take water in a china dish and heat it till all the water evaporates. Observe the china dish.

Observations-

Conclusion-

Aim-To classify mixture into useful and harmful components.

Material required-wheat, cooked vegetables, rice with stones, boiled water with tea leaves.

Theory-Separation of mixture should be done to either remove harmful impurities from the mixture or to separate two useful components .

Procedure -Separate the components of a mixture into useful or harmful by looking carefully at its ingredients .

Observation table-

S.No.	Mixture	useful components	Non useful component or impurity
1	Wheat obtained from field		
2.	Rice with stones		
3.	wheat with husk and stones		
4.	Water with tea leaves		

Conclusion-

3.Aim-To separate a mixture of pebbles and sand using sieving.

Material required- sieve, pebbles, sand.

Theory-Sieving is the act of separating smaller particles from the bigger ones by passing them through a sieve.

Procedure-

Take the mixture of pebbles and sand and use a sieve to separate the components.

Observations-

Conclusion-

4.Aim-To understand the process of filtration in the laboratory.

Material required- Filtration funnel, filter paper, beakers, stirrer, chalk powder and water mixture.

Theory-the process of separating undissolved particles from a liquid by passing the liquid through the fine holes of a filter is called filtration.

Procedure-

Take a mixture of chalk powder and water and pour the solution into a beaker.

Clamp a funnel onto the stand and insert a filter paper into the broad end of the funnel

Place a clean beaker below the funnel and pour the mixture in small quantities into the funnel , using a glass rod.

Diagram-

Observations-

Conclusion-

HOTS

- Make fine powder of chalk pieces and mix it with flour. Can we separate them by sieving? Why or why not?
 - Jisha poured chilled juice into a glass. After a while, she observed water droplets on the surface of the glass. Why?
 - Which separation method will the following people use to separate the constituents of the given mixtures?
1. Garima cannot eat spicy food. She saw a lot of green chillies in her bowl of chana-jor-garam.
 2. Rahul spilled oil into a water container.
 3. A carpenter wants to collect the nails which are lying in the box of plastic buttons.
 4. Shriram wants to clean the mud from his cooler.

Chapter 6

Changes around us

Learning objectives-

At the end of this topic, the students would be able to-

- Understand the scientific meaning of the term 'change'.
- Classify the various changes as slow/ fast, physical/ irreversible, reversible/ irreversible etc.
- Understand why some changes are desirable while others are undesirable.
- Understand the term 'expansion'
- Apply the term 'expansion' to explain why gaps are left between railway tracks etc.

Smart Notes

Whenever something changes form, a change is said to occur. A change may be accompanied with change in shape, size, colour, energy involved, chemical properties and molecular structure.

Types of changes-

I. Fast and slow change- A change that takes a short time to occur (a few seconds to a few minutes) is said to be a fast change.

Examples- _____

A change that takes a long time to occur is called a slow change.

Examples _____

II. Reversible and irreversible changes- The changes in which the original substances can be obtained back by simple physical methods such as filtration are called reversible changes.

Examples - _____

The changes in which the original substances cannot be obtained back by simple physical methods like filtration are called irreversible changes.

Example- _____

III. Periodic and non periodic changes- The changes which repeat after regular intervals of time are called periodic changes. Example- _____

The changes which do not repeat after regular intervals of time are called non periodic changes. Example- _____

IV. Physical and chemical changes- The changes in which no new substance is formed and the change occurs only in the physical properties such as shape, size etc are called physical changes. Some physical changes may be irreversible. Example- _____

The changes in which a new substance with different properties than the reactants is formed is called a chemical change. Example- _____

V. Desirable and undesirable changes -Changes which are useful to us are called desirable changes.

Example - _____

Changes which yield harmful products are called undesirable changes.

Example- _____

Expansion- The phenomenon by which the volume of a substance increases on heating is called expansion. On heating, the molecules move faster and the intermolecular spaces increase as a result it occupies more space. Metals expand on heating.

Contraction-On cooling, the intermolecular spaces decrease as the molecules come closer together. So, the volume of the substance decreases on cooling. Metals contract on cooling

Applications of expansion-

1. Metal tools are heated before fixing them on the handle.
2. Transmission wires are not laid straight in summers.
3. Gaps are left between railway tracks etc.

Water is a wonder liquid as it shows anomalous expansion- The property of water to contract on cooling till 4 degree Celsius, but shows expansion when cooled below 4 degree Celsius.

Chapter - 6
Changes around us
Assignment 6.1

Q.1. Tick the correct answer(s) :

- a) In a physical change
- i) shape and colour of a substance can change
 - ii) Composition of a substance is not changed
 - iii) no new substance is formed
 - iv) all of the above
- b) The growth of a plant to tree is
- i) a fast change
 - ii) an irreversible change
 - iii) a physical change
 - iv) a reversible change

Q.2. Fill in the blanks:

- a) Sand is _____ in water while salt is _____ in water.
- b) Solubility of sugar is more in _____ water than in _____ water.
- c) To reverse the change of ice into water, we must _____ the water.

Q.3. Classify the following changes as reversible or irreversible-

- a) Melting of butter _____
- b) explosion of a bomb _____
- c) Mixing oil and water _____
- d) Caramelizing sugar _____
- e) Burning a cloth _____

Q.4. Correct and rewrite the following statements:

- a) Wooden part of the bullock cart wheel is heated to fit in the iron part.

Ans. _____

- b. Cooking is a reversible change.

Ans. _____

- c) Conversion of cow dung to biogas is a physical Change.

Ans. _____

- d). On heating, solids contract.

Ans. _____

Q.5. Rashmi and Ravi finished their homework quickly to help their mother to bake a cake for their father's birthday. What type of change is it? Why do you think they did so?

Ans. _____

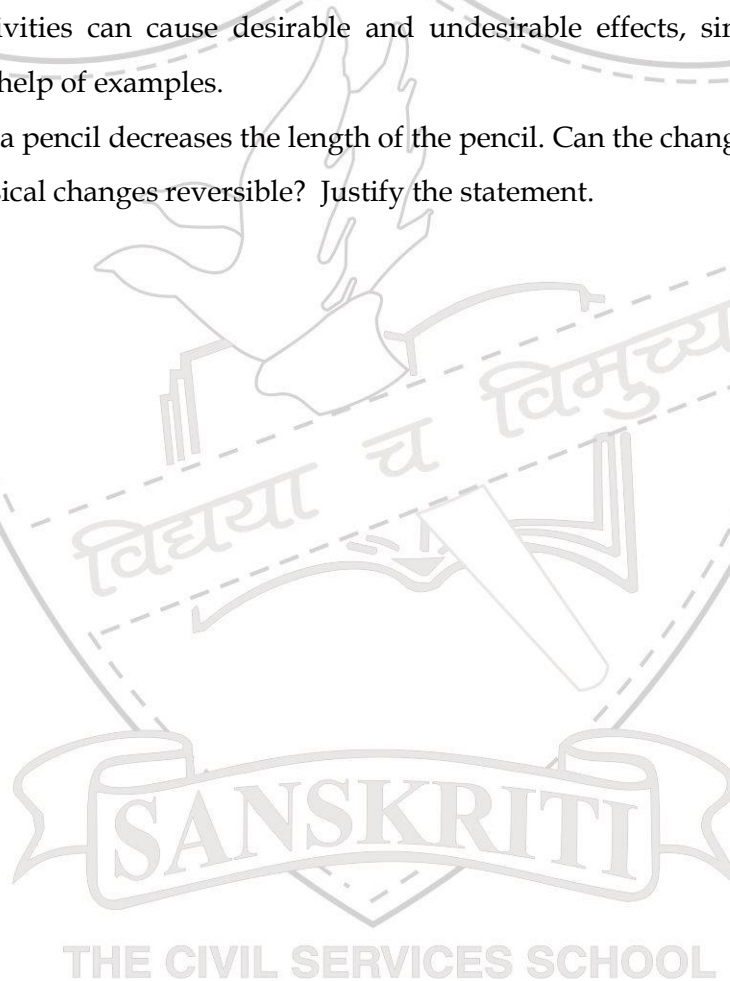


Chapter - 6

Changes around us

Assignment 6.2 (To be done in the notebook)

- Q.1. In which of the following can the original substances be obtained back-
Melting of wax OR Burning of a candle?
- Q.2. Give scientific reasons to support your answer.
- Gaps left in the iron rails of the railway tracks.
 - Tools are often heated before fixing wooden handles.
- Q.3. Human activities can cause desirable and undesirable effects, simultaneously. Explain the statement with the help of examples.
- Q.4. Sharpening a pencil decreases the length of the pencil. Can the change be reversed?
- Q.5. Are all physical changes reversible? Justify the statement.



Word search puzzle!

Try and search for all the terms related to this chapter

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

H.O.T.S

The phase of the earth is undergoing major changes due to the carbon emissions. Name the human activities that are responsible for this. Also, write down two steps you will take to minimise carbon emissions.

Chapter – 6

Changes around us.

Activities

1. Aim-To differentiate fast changes from slow changes as well as classify them under different types of changes.

Material required-glass of water, salt, a piece of paper , tongs , match stick.

Theory-Fast changes are those changes which take place over a short period of time.

A slow change is one which takes a long time to occur.

Procedure-

1. Take a glass of water and stir a spoon full of salt in it.
2. Hold the piece of paper using tongs and burn it.
3. Take a few pieces of iron nails and put them in salt solution. See if they rust immediately.

Observation-

Conclusion-

Other changes into which the above listed changes can be classified-

2. Aim-To classify changes as reversible and irreversible changes.

Material required- a piece of paper, ice, tray, a pair of scissors, refrigerator.

Theory-A reversible change is the one in which we can recover the substance in its original form. An irreversible change is the one in which we cannot recover a substance in its original form.

Procedure-

Keep a few ice cubes in a tray at room temperature and observe. Put the tray back in the freezer and observe.

2. Take a sheet of paper and tear it. Try fixing it back to its original form.

Observation-

Conclusion-

3. Aim-To classify changes as physical or chemical.

Material required- sugar, spatula, burner, frying pan, iron rod or stainless steel ruler.

Theory-Physical change is a process wherein the characteristic properties of a substance remain unchanged.

Chemical change is a process responsible for the conversion of the substance into a new product with changed characteristic properties. In a chemical change the substances present before the change are called reactants and the substances formed after the change are called products.

Procedure-Take a frying pan and put sugar in it. Now heat it over a slow flame. Observe the changes.

Take a stainless steel scale and heat it over the flame. Make your observations.

Observations-

Conclusion-

Chapter- 7

Getting To Know Plants

Learning objectives-

At the end of this topic, the students would be able to-

- Classify plants as herbs, shrubs, trees, creepers and climbers
- Label the parts of a flowering plant.
- List the functions of root, stem, leaf and a flower
- Draw a labeled diagram of the types of roots, leaf and a flower
- Experimentally prove that stem conducts water.
- Show that leaf makes and stores food in the form of starch.

Smart notes

Classification of plants.

They are classified on the basis of their life span

- Annuals- entire life cycle is completed within a year.eg brinjal, rice wheat gram
- Biennials- complete their life cycle in two years. Eg radish, turnip, carrot beet
- Perennials- remain alive for many years eg henna, neem , china rose mango

Classification based on form-

1. Herbs

- Small in height
- Have green , delicate, soft stem
- Have a short -life span



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e.g wheat, radish , coriander, mint etc.

2. Shrubs

- Taller than herbs
- Have a woody stem

- Branching starts from the base of the stem.
- e.g china rose, henna, cotton, rose, basil etc.



3. Trees

- Tall plants
- Have a hard woody stem called trunk
- Branching starts from high off the ground
- e.g. mango, neem, banyan



4. Creepers

- Have a soft stem
- Cannot stand erect and so remain on ground
- e.g- watermelon, pumpkin, cucumber etc.



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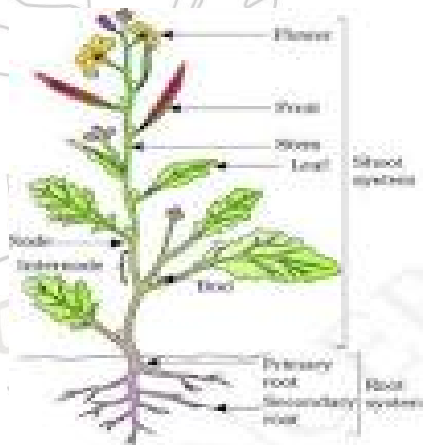
5. Climbers

- Have a soft stem and grow upwards vertically with a support.
- Have tendrils that help them to climb.

- e.g. peas, grape vine, money plant, poison ivy



PARTS OF A PLANT AND THEIR FUNCTIONS.



A flowering plant is made up of two main systems-

The root system

The shoot system

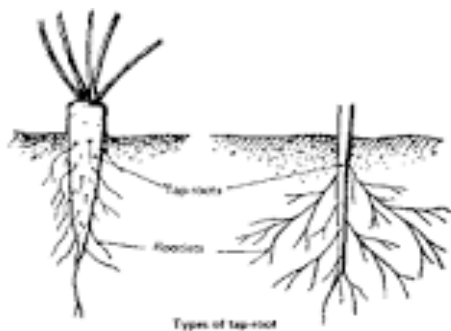
ROOTS

- It is the underground non-green part of the plant.
- It consists of primary roots and its branches.
- It grows towards soil and water and away from sunlight. (geotropism).

Functions of roots

- It anchors the plant in the soil (holds the plant firmly in the soil).
- It absorbs water and minerals from the soil
- It prevents soil erosion.

Types of roots



TAP ROOT	FIBROUS ROOT
<p>It is a primary root which is thick and long.</p> <p>Eg carrot, gram, mango, pea, radish</p> <p>Diagram:</p>	<p>Its a primary root is short lived and is replaced by a cluster of fibre</p> <p>Eg grass, maize, sugarcane</p> <p>Diagram:</p>

Functions of stem

- It is the ascending portion of the plant
- It grows towards sunlight and shows phototropism
- Bear branches, flowers leaves, fruit buds.
- Helps to conduct water and food throughout the plant.
- Some stems store food- onion, ginger, potato, sugarcane.

LEAF

It is the flat green lateral outgrowth of the stem, arising from the node.

Parts of a leaf -

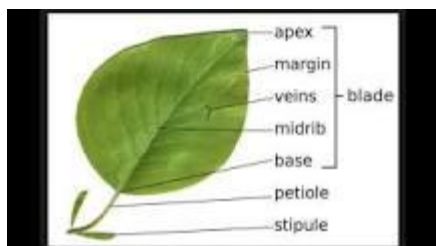
lamina -

Petiole -

Leaf margin -

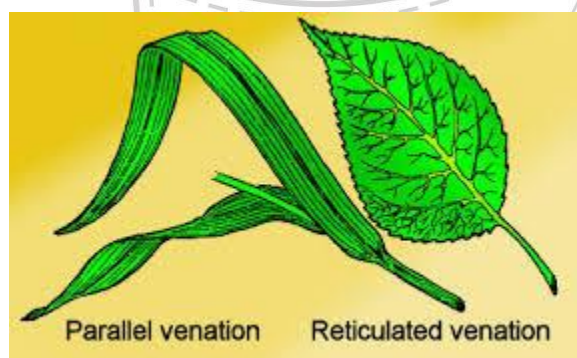
Midrib-

Diagram



Leaf Venation- The pattern of veins on the lamina of the leaf is called venation.

There are two types of venation-



Parallel- if all the veins arise from the leaf margin and end at the leaf base eg banana, grass, palm diagram-

Reticulate- when there is a network of veins criss crossing the entire lamina.

Eg rose, neem, hibiscus diagram-

Function of leaf

· **Photosynthesis-** makes food for the plant using carbon dioxide and water and in presence of sunlight and chlorophyll converts it to food and oxygen.

· **Transpiration-** The process by which leaves continuously lose water from the stomata in the form of water vapour.

· **Respiration-** The exchange of gases where oxygen is taken in and carbon dioxide is given out through the stomata on the undersurface of the leaf.

Reproductive part of the plant.**FLOWER**

It is made up of four parts –

1. Sepals- the green leaf like part that protects the flower in the bud stage.
2. Petals- the bright colorful part of the flower that helps to attract insects for pollination.

3. Stamen- It is the male reproductive part of the flower . It is made up of

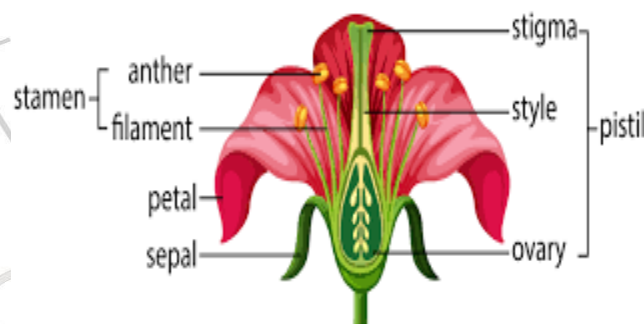
- Anther- a lobe-like structure that contains the pollen grains
- Filament- a thin thread like stalk

4. Pistil / Carpel-

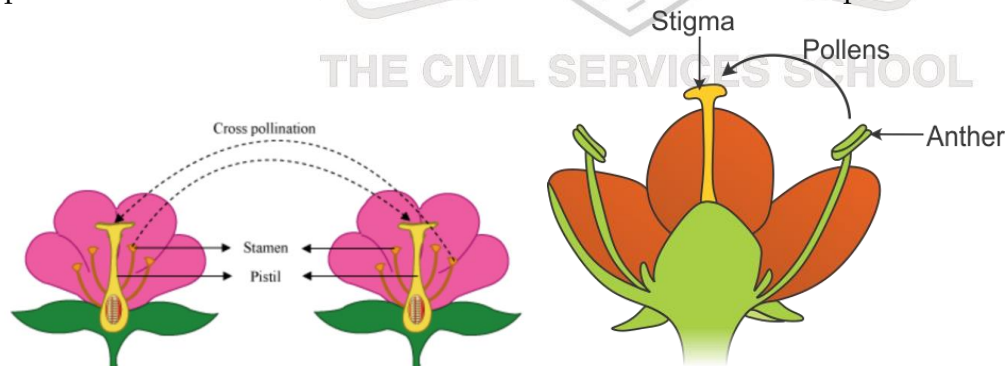
It is the female reproductive part of the flower.

It is made up of the following parts-

1. Stigma- a sticky / feathery part for the pollen to land.
2. Style- a tube like structure that carries the pollen grain till ovary.
3. Ovary- swollen part at the base that contains the ovules.
4. Ovule- it contains the female gamete.

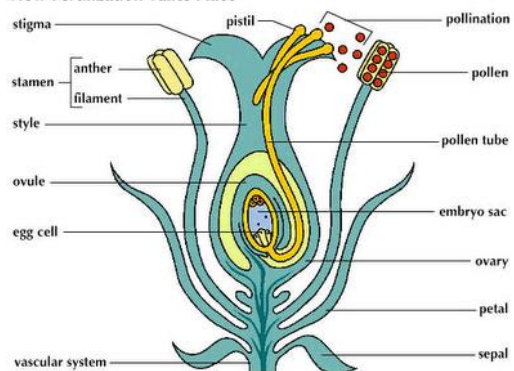
Common Flower Parts

Pollination is the process of transfer of pollen grains from anther to stigma by agents of pollination such as bees , moths, insects or wind , water is called pollination.



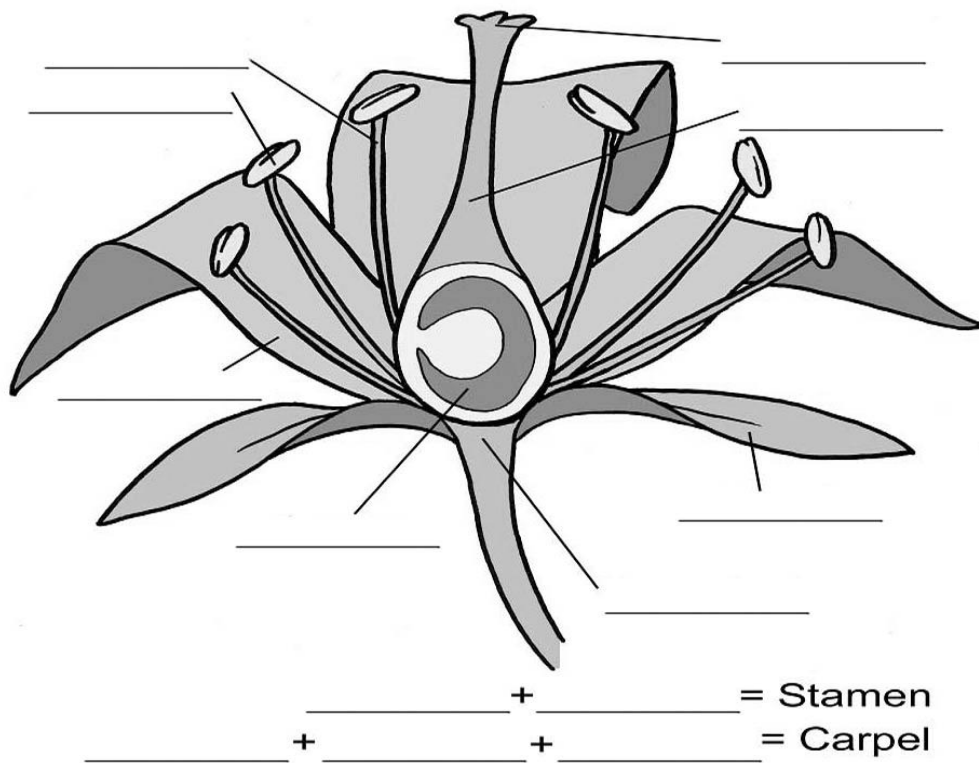
Fertilization- Plant **fertilization** is the union of male and female gametes (reproductive cells) to produce a **zygote** (fertilized egg).

How Fertilization Takes Place



After the process of pollination and fertilization, ovary changes into fruit and ovules into seed.

Label the parts of the flower



Chapter- 7
Getting to know plants
Assignment 7.1

Q.1. Fill in the following blanks:

- a) Based on their size, plants are classified as -----herbs-----, ----shrubs----- and ----- trees-----.
- b) Stem of the plant **-conducts-**-----water.
- c) A Peepal leaf shows ---RETICULATE-----venation and Grass shows---PARALLEL----- venation.
- d) Leaves prepare food for the plant by the process of -----.
- e) Plants store the food in the form of -----.
- f) If a plant has tap root, its leaves will show ----- venation but if the root is fibrous it will show ----- venation in its leaves.

Q.2. Match the columns:

Column A	Column B
a) The coloured part of the flower	Lamina
b) The broad green part of the leaf	Petal
c) Smaller branches of tap root	Edible roots
d) Carrot ,Radish	Sepal
e) green, protective part of the flower	Transpiration
f) The process of loss of water from plant leaves	Reticulate venation
g) Peepal leaf	Lateral roots

Q.3. Tick the correct answer(s):

- a) Tree trunk is
 - i) Stem
 - ii) root
 - iii) Both
 - iv) none of these
- b) Which of these is not a part of a flower?
 - i) Sepal
 - ii) anther
 - iii) Midrib
 - iv) pistil

Q.4. **Name and draw** the following parts of a plant that:

- | | | |
|----|--------------------------------------|-------|
| a) | Helps in reproduction | _____ |
| b) | Anchors the plant firmly in the soil | _____ |
| c) | Prepares food | _____ |
| d) | Conducts water | _____ |

Diagrams



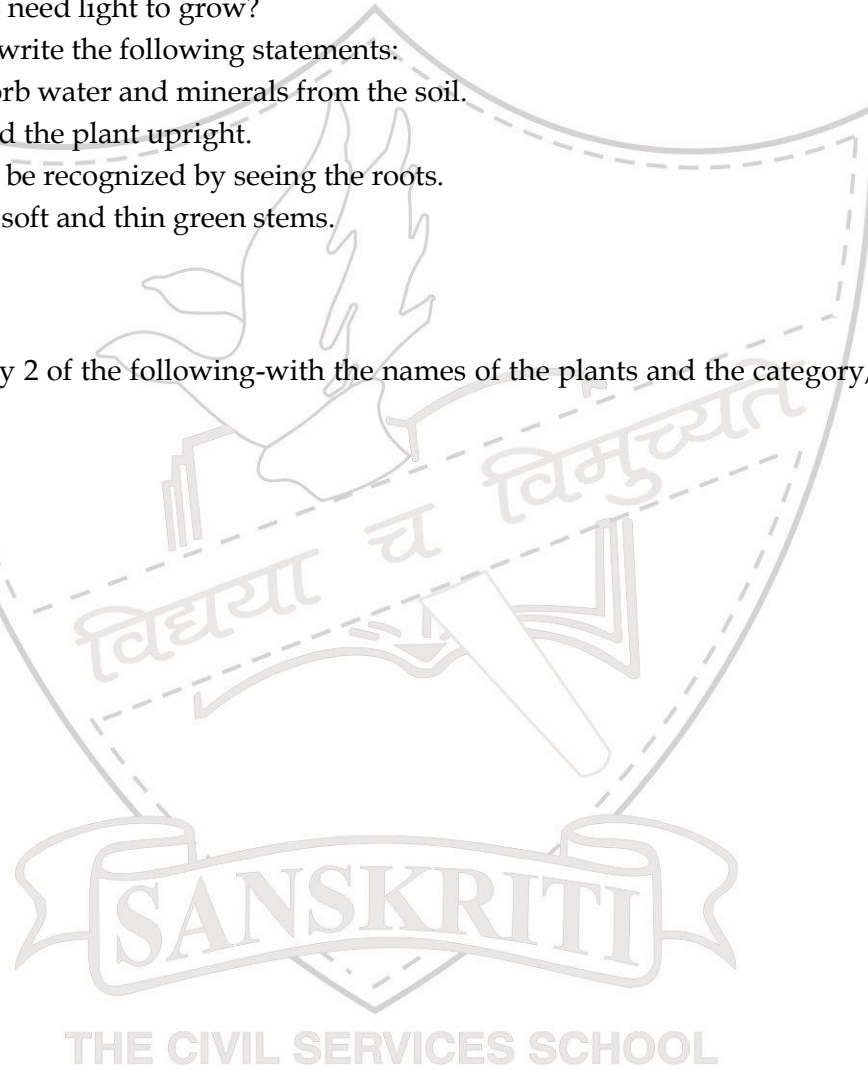
Chapter- 7
Getting to know plants
Assignment 7.2

- Q.1. When we cut the Pistil of a flower, what do we see? What happens to these structures after pollination?
- Q.2. What is fertilization? What happens after fertilization?
- Q.3. In which part of the plant, you are likely to find the ovary?
- Q.4. Why do plants need light to grow?
- Q.5. Correct and rewrite the following statements:
- Stems absorb water and minerals from the soil.
 - Leaves hold the plant upright.
 - Leaves can be recognized by seeing the roots.
 - Trees have soft and thin green stems.

Activity 1

Stick pictures of any 2 of the following-with the names of the plants and the category, the plant belongs to--

- Herbs
- Shrubs
- Trees
- Creepers
- Climbers



Activity 2

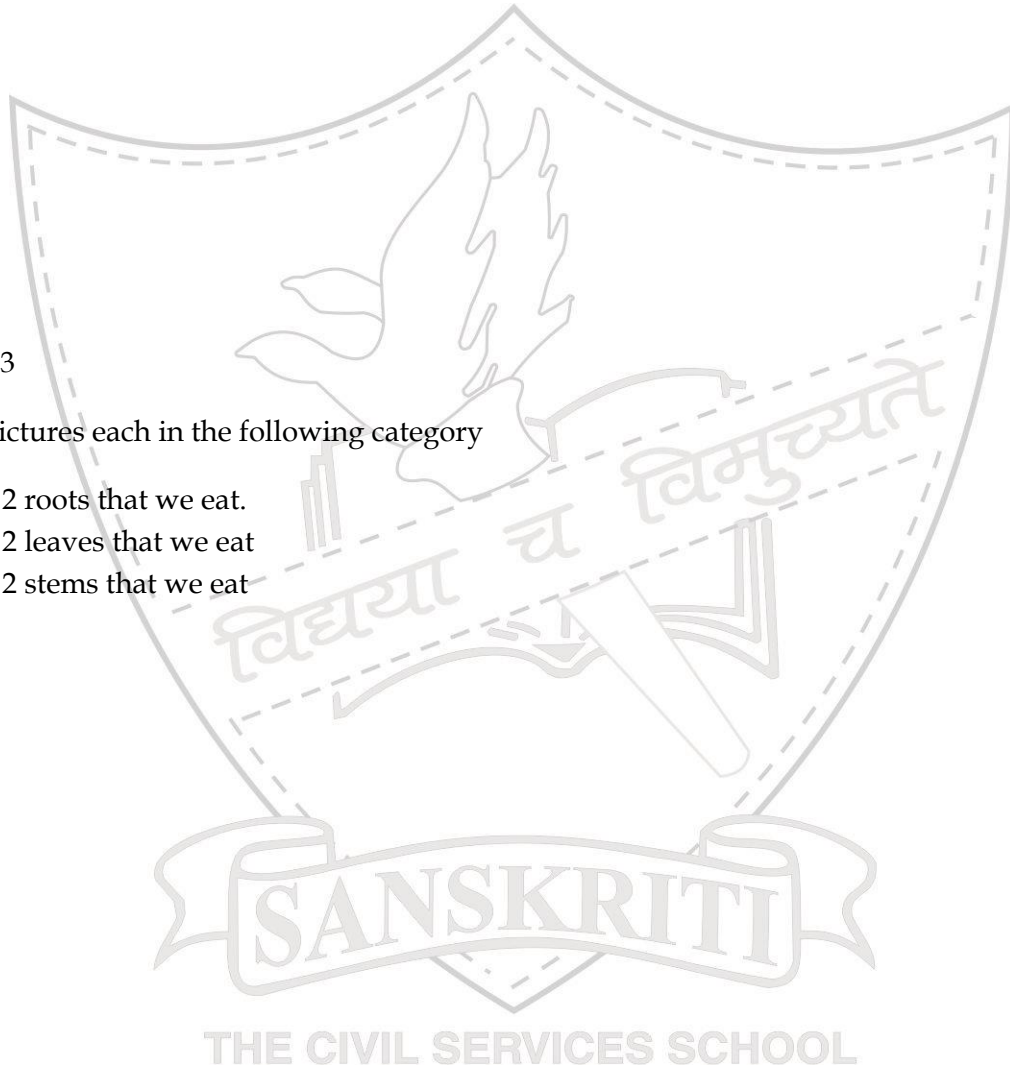
Trace the veins of 2 leaves (one with parallel venation and the other with reticulate venation)

Label all the parts of the leaf.

Activity 3

Stick 2 pictures each in the following category

1. 2 roots that we eat.
2. 2 leaves that we eat
3. 2 stems that we eat



Chapter 8

BODY MOVEMENTS

Learning objectives-

At the end of this topic, the students would be able to-

- Understand the term 'locomotion'
- Identify various joints in a human body and explain how they work.
- Understand the movement of animals such as earthworm, snail, snake, cockroach, bird and fish.

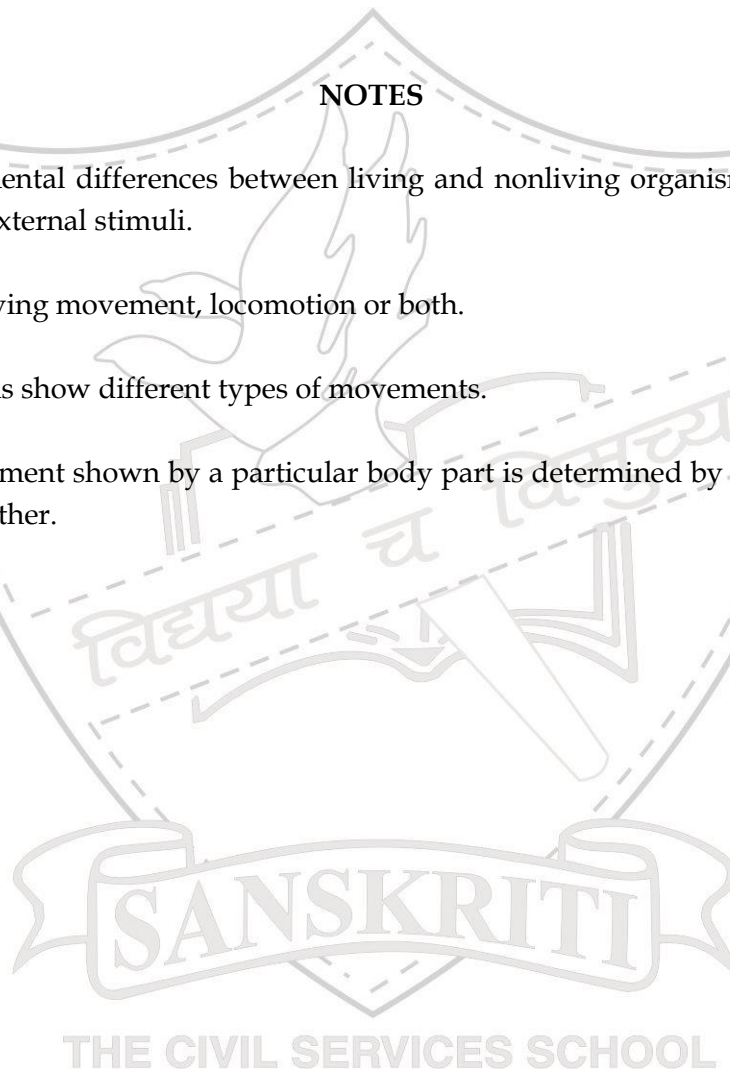
NOTES

One of the fundamental differences between living and nonliving organisms is that the living things respond to external stimuli.

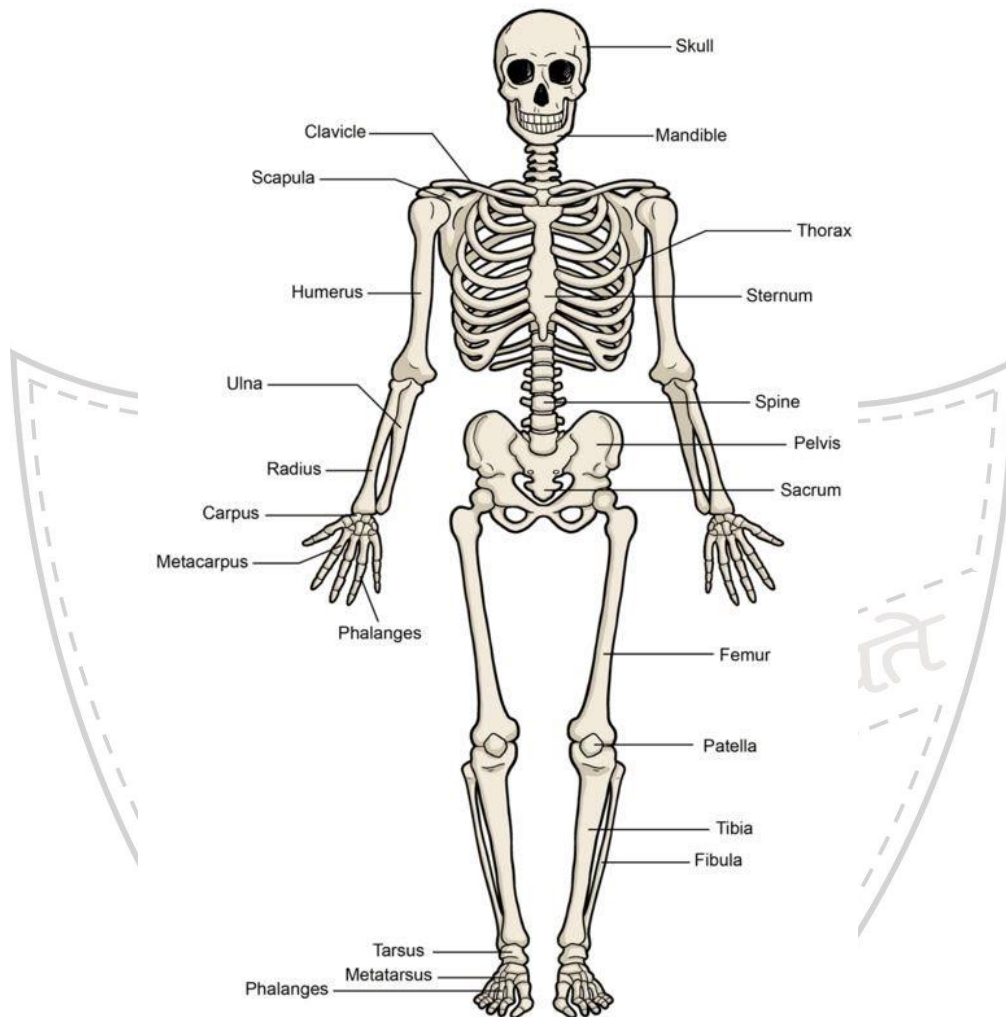
They do so by showing movement, locomotion or both.

Different organisms show different types of movements.

The extent of movement shown by a particular body part is determined by bones and how they are joined to each other.



THE HUMAN SKELETAL SYSTEM



All the bones of our body make our skeleton. An adult skeleton contains 206 bones. Children have more; the number reduces because many bones fuse together as a part of natural growth.

Following are the main functions of Skeleton system:

- It provides a hard support to the other soft body parts and gives our bodies shape. Without this system the human body will collapse.
- It protects our vital organs. Skull protects the brain; rib-cage protects the heart and lungs.
- The Bones and muscles help in body movements.
- The inside of big bones contains bone marrow, where blood cells are made on a continuous basis by the activity of adult stem cells.

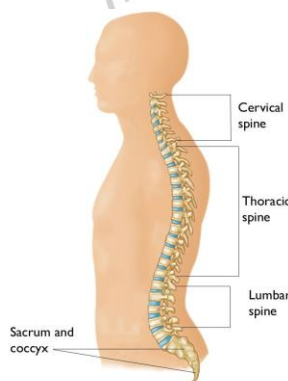
The different parts of human skeleton are listed below----

THE SKULL



This is the bony structure that protects our brain. It contains a total of 14 bones. All these bones cannot move because they contain immobile joints. The bone of the lower jaw is the only bone that moves and helps us talk and chew our food.

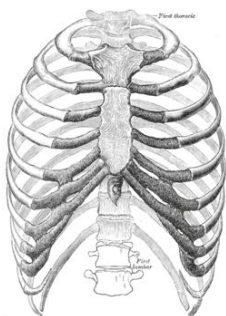
THE SPINE OR THE BACKBONE



Located at our back attached to the skull, this elongated part called the spine, consists of 33 very small bones called vertebrae.

Each vertebra is separated from the other by a small cartilaginous disc. They protect a very important part of Nervous system, The Spinal Cord, also called the spine or vertebral column, it forms the central supporting rod for the skeleton.

THE RIB CAGE

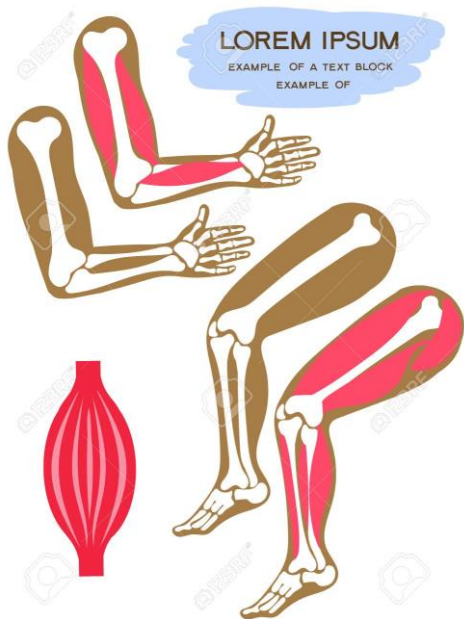


The curved bones clearly visible in the chest region form a protective structure called the Rib Cage, which protects our chest cavity.

The chest cavity has vital organs like Heart and Lungs. The front part of the rib cage is made up of a flat bone called the Breastbone.

Apart from protecting vital organs, the rib cage along with diaphragm plays vital role in the breathing process.

THE LIMBS(ARMS AND LEGS)



The arms and legs are attached to two girdle-like structures of the skeletal system. Both the arms are attached to the Pectoral girdle and both the legs to the pelvic girdle.

The upper arm has a long bone called Humerus. This bone is attached to the pectoral girdle. The lower arm contains 2 long bones. The wrist and hands contain many small bones .

It is the movement of these small bones that make our hands capable of a variety of movements. The longest bone of our body is the thigh bone or Femur. The lower half of the leg has the long shin bone and the calf bone. The ankles and feet contain a number of small bones. The Femur is attached to the pelvic girdle by the hip joint.

Nearly half of the bones are located in hands, wrist, ankle and feet.

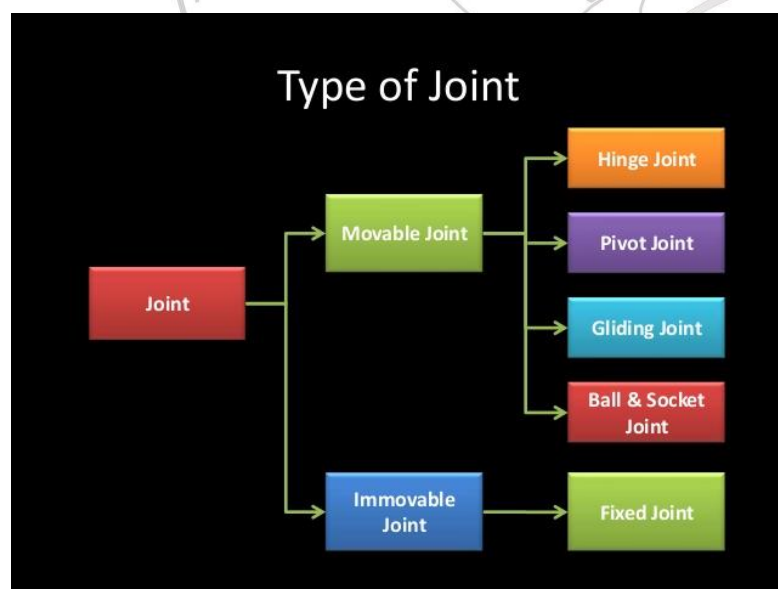
JOINTS

The joints are places in the body where the bones are joined together. Bones cannot be bent. We can bend or move our body only at the meeting points of bones: the joints.

These points are strong enough to withstand jerks. The ends of bones at these points are covered with another soft tissue called CARTILAGE. This tissue minimizes friction and also acts as a shock absorber during movements. Cartilage is also present on the tip of a nose and earlobes.

Another type of very strong tissue that attaches two bones at these joints is called LIGAMENT.

TYPES OF JOINTS



Joints are classified based on the degree of movement they show. These are

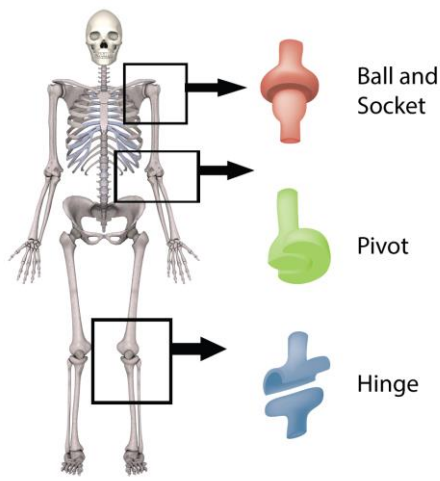
- IMMOVABLE
- SLIGHTLY MOVABLE
- FREELY MOVABLE

The bones of the skull except lower jaw do not allow any movement and are therefore classified under immovable joints.

The joint between the ribcage and the breastbone allows only slight movement and is classified under the second category.

Majority of bones of our body fall under the third category .i.e. FREELY MOVABLE

Movable Joints



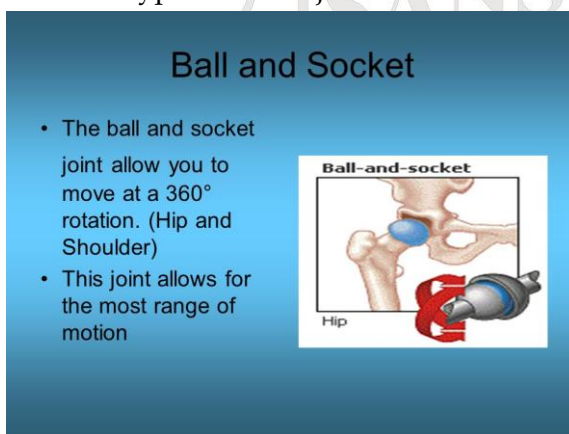
These are further divided into 4 types depending upon the type of movement they allow:

a. Hinge joint--- These allow movement in one plane only very much like hinges of a door and hence the name! These are found in the elbow, knee and fingers.



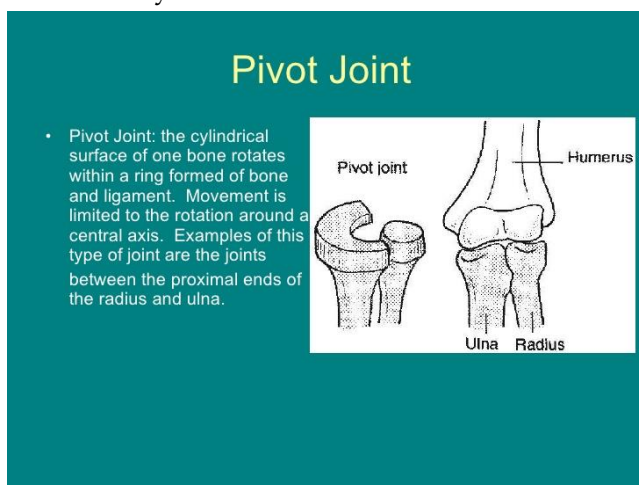
b. Ball and Socket joint----

These types of joints allow maximum movement in all directions.

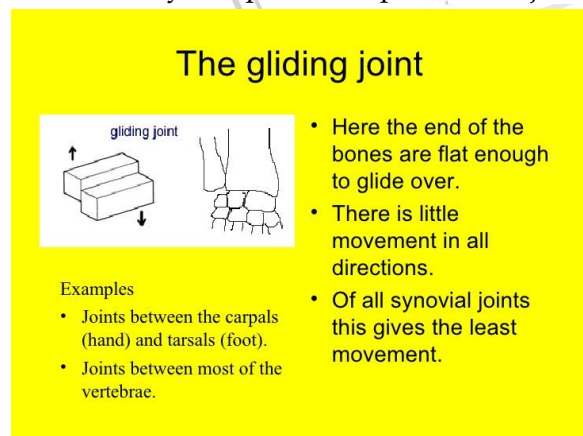


The two bones that are present, interact with each other as ball and socket and the movement involves rotation. Humerus of arm and Femur of leg show this type of joint with the pectoral and pelvic girdle respectively.

c. Pivot Joint---- These types of joints allow movement in directions along a fixed axis. This is found in your neck.



d. Plane/Gliding Joint---- Such joints allow gliding of small bones over each other allowing side to side as well as backward and forward movements. Such joints add greatly to the flexibility of a particular part. These joints are present in the spine, wrist, foot..



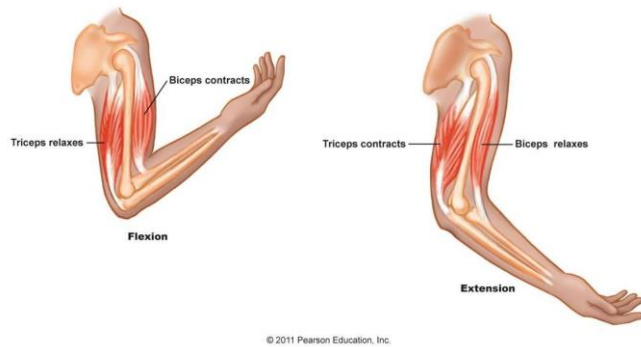
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HOW DO BONES MOVE?

Bones are able to move with the help of another system called the muscular system.

Muscles work in pairs and when one muscle of a pair expands the other contracts bringing about a particular movement.

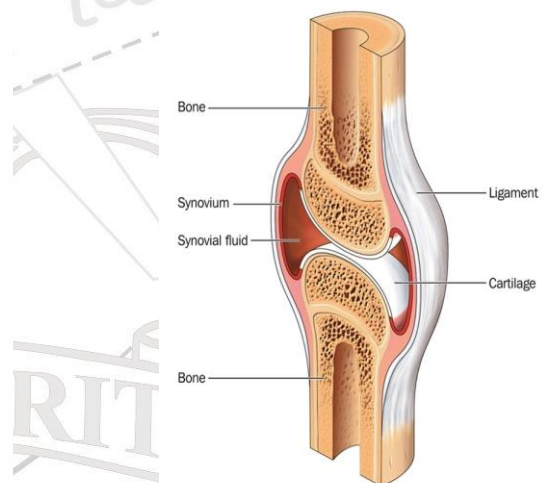
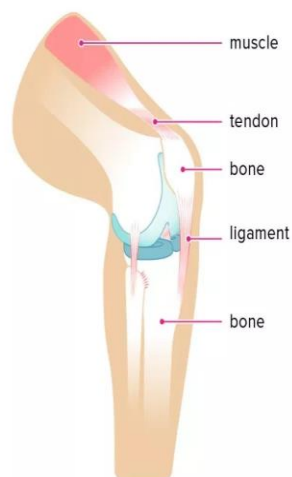
To move the arm a pair of muscles called Biceps and Triceps is needed.



Ligaments-(bone to bone) connect the bones that forms the joint and prevent bones from falling apart during movements. They are elastic and can stretch to permit easy moves.

Cartilage-Soft tissue, covering the ends of bones. It allows the ends of bones to move/slide over each other smoothly preventing wear and tear to ends of bones. An oily liquid lubricates the cartilage present between vertebrae, end of nose, pinna (upper end of ears).

Tendons(muscle to bone)- The upper end and lower end of biceps and triceps are attached to the shoulder blade and bones of lower arm through tendons.



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BODY MOVEMENTS

<u>Types of joints</u>	<u>Body parts where it is present</u>	<u>Type of movement</u>
1. Hinge joint- Knob and cup	Elbow, knee, finger joints(knuckles), lower jaw	Allows movement in only one direction.
1. Ball and socket joint	Shoulders, hip joints, humerus of upper arm is joint to pectoral girdle	Enables maximum movement in any direction, rotation, forward, backward, side to side
1. Pivot joint- cylindrical bone turns in a ring type bone	Between skull and head, neck, between lower arm and palm, wrist.	Permits rotation around a fixed Axis.
1. Fixed joint (Immovable) Tightly held bones that do not move; Provides strength and support to body, protects delicate organs like brain	Present in Skull(plate type bones) Hip bone Between upper jaw and skull	
1. Gliding joint	Between vertebrae, In wrist In ankles	Permits reduced movements Not freely moving

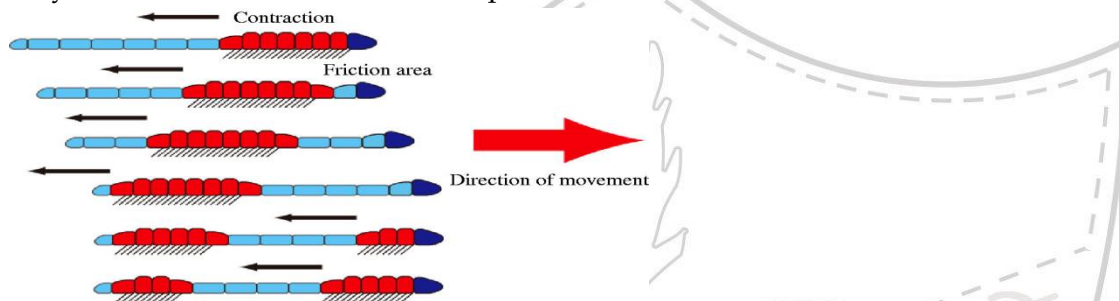
HOW DO OTHER ANIMALS MOVE?

Not all animals have bones and muscles .

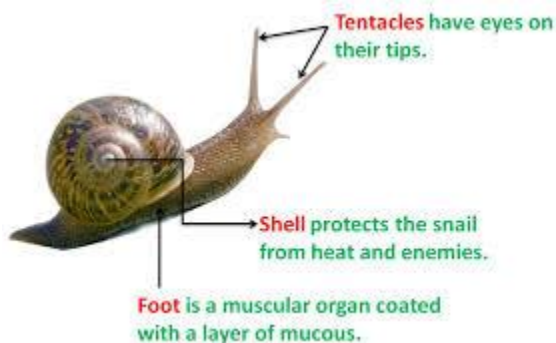
Different animals have different mechanisms for this.

EARTHWORM: They do not have bones. It is therefore an invertebrate. They feed on dead organic matter and breathe through their moist skin. Its body is made up of thin ring-like parts called segments. The muscles of earthworm contract and relax alternatively which help in its movement.

They have bristles at the base that help to attach to a surface.



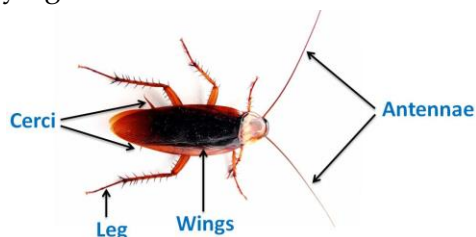
SNAIL : Snail is an invertebrate that has a spiral shell into which its whole body can be withdrawn. The shell is also called its exoskeleton. The shell protects the snail from harsh weather and predators. The body of snail releases a slimy substance called mucus, that enables it to move on rough, sharp surfaces without the risk of injury. These animals move with the help of a strong muscular foot, which makes a series of wave-like movements that push its body forward.



COCKROACH: They can walk, climb and fly.

They have 3 pairs of legs which move because of muscles

Two pairs of wings are attached to the muscles of the breast, movements of which bring about flying.



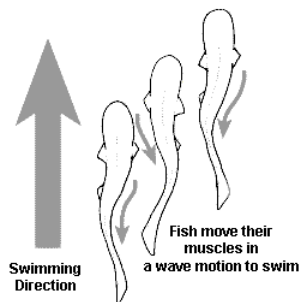
FISH: Their bodies are STREAMLINED to minimize friction in water.

In addition they have different types of Fins which help them navigate and change directions and balance the body in water. The tail is also a fin(caudal fin) and it is connected to the spine.

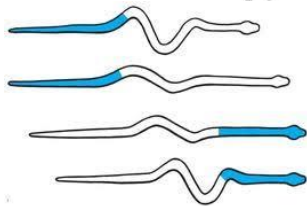
The movement of the fish is called a jerk. A series of such jerks helps the fish to steer ahead.

Many fish have an air bladder to help it stay afloat and adjust the depth under water.

Bodies of fish are covered with a slimy substance called mucus, this reduces friction while swimming.

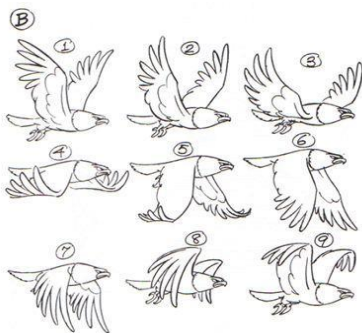


SNAKE : These animals show slithering movements. They also contain both bones and Muscles for movement. Their skin is covered with scales. The scales of the belly help it to grip surfaces while climbing. The backbone of snakes is a very long and flexible structure. The muscles interconnect the backbone, ribs and skin. The snake body curves into many loops, each loop gives a forward push by pressing against the ground. Since a long body makes many such loops snakes move very fast but never in a straight line. While crawling, the body of the snake bends alternately to left and right, causing wave-like motion.



BIRD : A bird's skeleton is designed to allow flight. Some special features of a bird's body are:

1. Forewings are modified into wings to enable flight.
2. Hollow and light bones.
3. Modified breastbones help them beat their wings during flight without tiring.



Chapter- 8
Body Movements
Assignment 8.1

Q.1 Fill in the following blanks:

- a) The framework of bones in our body is called _____.
- b) Cartilage is found in _____lobes and _____ of the body.
- c) Muscles work in _____.
- d) Earthworm secretes_____ which helps in its movement.
- e) The outer skeleton of a snail is called _____.
- f) The bones of birds are _____and _____.
- g) The body shape that tapers at both the ends is called _____.

Q.2. State True or False. If False, Give the correct statement:

- a) Cartilage is not a part of a skeleton system.

Ans. _____

- b) X Rays help localize the muscles in the body.

Ans. _____

- c) Upper jaw shows a hinge joint.

Ans. _____

- d) Muscles working in pairs contract and relax simultaneously.

Ans. _____

- e) The book 'The Gait of Animals' was written by Charles Darwin.

Ans. _____

Q.3. Name the following:

- a) The strongest and the longest bone in the human body. _____
- b) The body part by which muscles are attached to bones. _____
- c) The body parts protected inside the rib cage. _____

Column I

- (i) Upper jaw
- (ii) Fish
- (iii) Ribs
- (iv) Snail
- (v) Cockroach

Column II

- (d) is an immovable joint
- (a) have fins on the body, and (g) have a streamlined body
- (e) protect the heart
- (b) has an outer skeleton, and (f) shows very slow movement
- (c) can fly in the air, and
- (h) has an outer skeleton

Chapter - 8
Body Movements
Assignment 8.2

Q.1. Discuss the following briefly giving their location in the body:

- a) Ball and Socket Joint
- b) Pivotal Joint
- c) Hinge Joint
- d) Fixed Joint
- e) Rib Cage

Q.2. You might have heard about diseases like Arthritis and Osteoporosis .Try to find out more. Correlate how taking a diet rich in Calcium is helpful in management of bone related disorders.

Q.3. Where are blood cells produced?

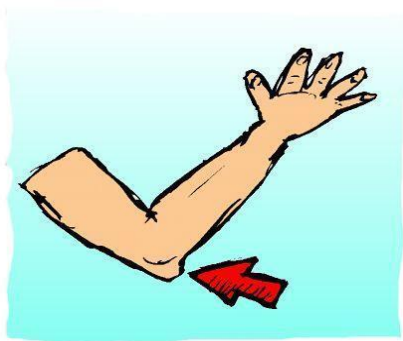
Q.4. How many vertebrae does a vertebral column of a human have?

Q.5. Discuss how Cockroach is able to do both, walk and fly?

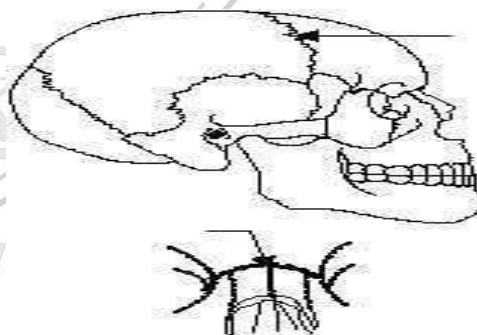
Q.6. How is the movement of Earthworm different from that of a Snail?

Q.7. Identify the joint shown in the picture and also mention its location.

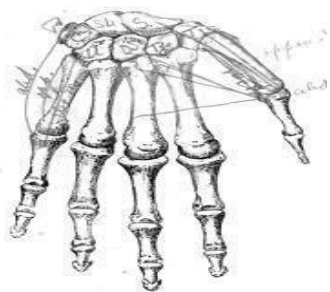
Identify the types of joint:



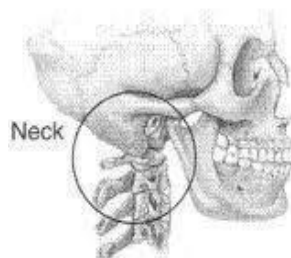
Type of Joint_____



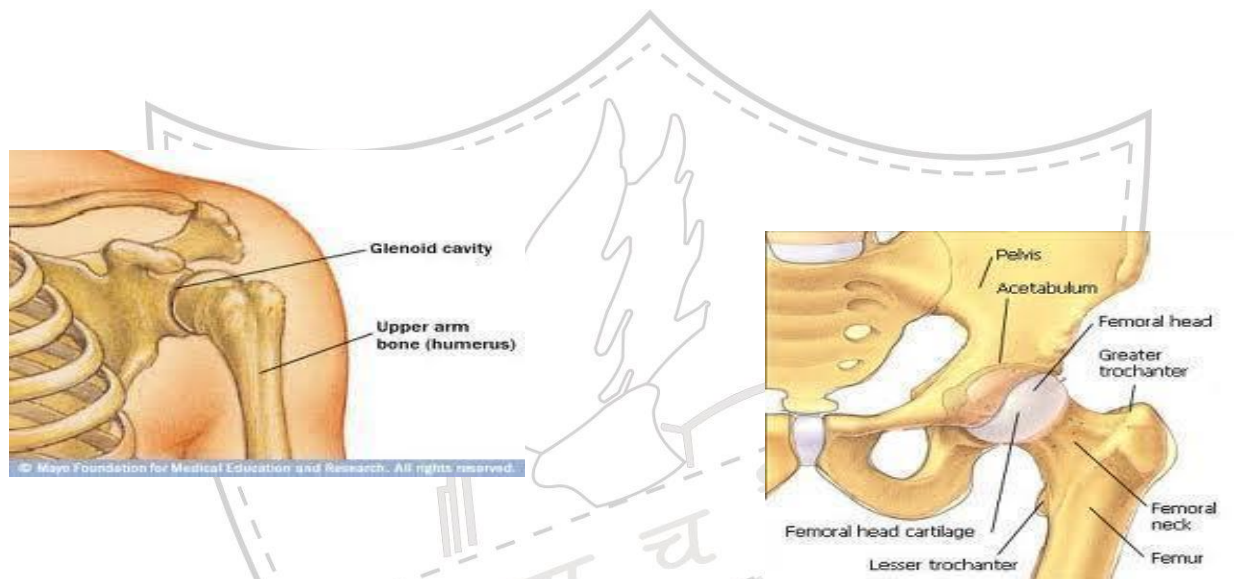
Type of Joint_____



Type of joint _____



Type of joint _____



Type of Joint _____

Type of Joint _____

Chapter- 9

Living organisms and their surroundings

Learning objectives-

At the end of this topic, the students would be able to-

- Understand the difference between biotic and abiotic components.
- Identify the characteristics of a living organism
- Define the terms 'adaptation' and 'habitat'.
- Explain the adaptations in grassland, desert, aquatic and mountain plants and animals.

Notes

Living and non-living things

Characteristics of living things

- Cellular organisation → All living things are made up of cells. It is the basic structural and functional unit of life.
- Nutrition → Animals and plants both require food as it provides them with energy so that they can perform various activities.
- Respiration → All living things use oxygen to produce energy from the food consumed.
- Growth → All living things grow and their growth is permanent and internal.
- Excretion → It is the removal of waste materials from the body. Animals remove wastes in the form of carbon dioxide, sweat and urine; whereas plant wastes are given out in the form of gums, resins and latex.
- Movement → Living things show movement. Animals move from place to place in search of food. Plants move only some part eg. Roots move downwards, shoot moves upwards, flowers open and close in response to light.
- Reproduction → All living organisms have the ability to produce young ones of their own kind. Animals lay eggs or have babies. Plants produce seeds or give rise to new plants from their body parts.
- Response to stimuli → Living things respond to changes in their surroundings. A response is an action which occurs as a reaction to a particular stimulus. eg. cold weather, hot objects, sunlight and gravity are stimuli as a result of which respective responses like wearing of woollen clothes, withdrawal of hand, closing of eyes, bending of plants, downward growth of roots and moving clothes of animals takes place.
- Life cycle → Living things follow a life cycle. The life cycle consists of birth, growth, reproduction and death.
- Camouflage → The adaptation of an animal to blend with the surroundings.
- Hibernation → The deep winter sleep in some animals that helps to survive in severe cold conditions. eg. in polar bear.

Living things	Non living things
They are made up of cells that have the living matter	They are made up of molecules that do not have any living matter.
They grow or increase in size due to division of cells in the body	They do not grow. The increase in size sometimes is due to addition of external layers on the outer surface.
Animals move in search of food, water and shelter. Plants show internal movements.	They cannot move on their own. Outside force has to be applied to move them
They need food to get energy in order to grow and move	They do not need any food
They respond to different kinds of external stimuli such as touch, heat, light, sound, smell and chemicals.	They do not respond to stimuli.
They breathe in oxygen to release energy from the food	They do not breathe.
They excrete excess water and harmful waste materials from their body.	They do not excrete.
They reproduce their own kind.	They do not reproduce.
They adapt themselves to their surroundings.	They can be anywhere and need not adapt to their surroundings.
They have a definite life span.	They do not have a definite life span.

Components of the environment

The physical (non living) and biological world where living organisms live is called our environment.

It consists of 2 main components –

1. Abiotic or physical component.
2. Biotic or living components.

Abiotic – rock, soil, air and water on the earth are the physical components. The climatic factors like sunlight, temperature, rainfall, humidity, wind are also part of an abiotic environment.

Biotic – Living things such as plants and animals.

Habitat

A place where an organism lives and which provides the organism with food , shelter and favourable climatic conditions, so that it can easily survive, breed and flourish, is called a habitat.

Types of habitats---There are two major types of habitat.

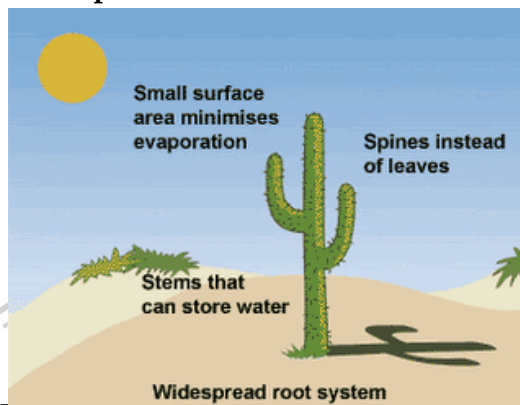
Terrestrial (land) – It is further classified as desert habitat, forest habitat, grassland habitat, coastal habitat and mountain habitat.

Aquatic (water) – it is further classified as fresh water and marine.

Habitat	Features	Animals	Plants	Area
Desert	Hot and dry	Camels, rattle snakes	Cactus, date palms	Sahara, Kalahari, Rajasthan
Grasslands	Moderate rainfall	Zebras, giraffe, deer, Lion	Mainly grasses and Shrubs, less trees	Savannahs
Forest	Hot, wet, and Rainy	Monkeys, snakes, langurs, elephants	Large number of trees	Tropical forests
Mountain	Cold and windy, Lot of snow	Polar bear, reindeer, Penguin, goat, sheep, Yak	Lichens, moss, Fir, pine trees.	Arctic, Himalayan region
Freshwater	Lakes, rivers, ponds, stream	Ducks, frogs, insects, Fishes	Lotus, water Hyacinth, hydrilla	Dal lake, Ganges
Marine	Oceans, lakes	Whales , sharks, crab Octopus	algae	Pacific Ocean, Bay of Bengal, Arabian Sea

Adaptations→

The development of characteristics that helps an organism to survive in a particular environment is known as adaptation.

**Xerophytic adaptation (in plants) -**

- These plants grow in deserts.
- Have extensive root system.
- Leaves are reduced to spines.
- Leaves are coated with cuticle to check loss of water
- Stomata are few and sunken in pits.
- Stem becomes thick and fleshy for conserving water

Eg. Cactus, Agave, Yucca.

Hydrophytic Adaptation(in plants) -

- They grow in water
- Root system is poorly developed.
- The stem of these plants are long, hollow and light to help them remain afloat.
- Leaves are thin and ribbon like or large and flat and float on the surface of water.
- Cuticle and stomata are absent.
- Eg. Lotus ,Hydrilla, Vallisnaria

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Adaptations in animals

Desert adaptations –

- A camel has long legs for walking in the sand
- The hump on the back is filled with fat.
- It can drink 50 L of water in one gulp.
- It excretes very little water.
- Its dung is dry
- It does not perspire.
- E.g. Camel



Aquatic adaptation-

- Animals such as fish have a streamlined body
- It has powerful tail and fins for swimming.
- They have gills for respiration
- Their body is covered with scales to prevent decay.

Activity 1

Stick pictures of an animal and a plant of the following habitats-

1 Desert		
2 Mountain		
3. Forests		
4. Aquatic		

Chapter- 9
Living organisms and their surroundings
Assignment 9.1

Q.1. Fill in the following blanks:

- a) The process of getting rid of body waste is called-----.
- b) During Respiration -----is used and -----is evolved.
- c) Changes in our surroundings are called -----.
- d) ----- is the source of energy for all living organisms.
- e) ----- and ----- are marine animals but do not have gills.
- f) Rivers, ponds and lakes are examples of ----- habitat.
- g) Plants and Animals constitute the ----- factor of our surrounding.

Q.2. Classify the following as living and non-living:

Cheese, cotton, leaves, bed, snail, sugar, wood, plastic, silk, jackal, rose

Living	Non-living

Q.3. Give one word:

- a) The plant whose leaves close or fold when someone touches it. _____
- b) The small pores by which exchange of gases is done in plants. _____
- c) The respiratory organ in humans. _____
- d) An animal whose process of breathing is similar to humans. _____

Q.4. Match the columns:

A	B
a) Living things	Habitat
b) Biotic components	Water, air, land, etc
c) Dwelling place of animals	Respiration
d) Exchange gases in plants and animals, and release of energy	Changes in the surroundings make us respond to them
e) Stimuli	Plants and animals
f) Abiotic components	Reproduce



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Chapter- 9
Living organisms and their surroundings
Assignment 9.2

Q.1. Give reasons for the following: ANSWER THESE IN YOUR NOTEBOOK.

- a) Leaves of submerged aquatic plants are thin and ribbon like.
- b) Deer have long ears and their eyes are located on the sides.
- c) Mountain trees show cone shaped canopy.
- d) Frogs can live both in water and on land.
- e) Cacti show spines instead of leaves.
- f) The stems of plants in ponds long, hollow and light

Q.2. Enlist the characteristic features of living organisms. Do you think it is easy to define life? Why/Why not?

H.O.T.S

Q.1. You might have heard of 'Project Tiger 'a conservation program initiated by the Government of India to protect the Tiger population of the country. Collect some information on the project. Why is it important to protect the top carnivore to protect a habitat? Find out potential tiger habitats in India and mark them on a map of India.

Q.2. Trace the animals and birds such as dinosaurs that have got extinct due to human activities and the repercussion that it has caused.

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Chapter- 10

Motion and measurement of distances

Learning objectives-

At the end of this topic, the students would be able to-

- Define the terms motion and measurement
- Understand the S.I system of measurement.
- Convert distances from one unit to another.
- Identify various types of motion such as linear, rotatory, oscillatory etc.
- Explain the working of early clocks such as a sundial.

Smart notes

Measurement - It is a comparison of an unknown quantity with a known fixed quantity.

Every measurement has two parts - _____ and _____.

eg.- the distance between two cities is 240 km.

Length -

- It is the distance between two fixed points.
- Its S.I. unit is metre (m).
- In earlier times, body units (like handspan, yard, foot, cubit) were used for measuring length.
- To overcome the confusion and inaccuracy caused due to body units, a more precise system of units was adopted called the "S.I. system of units" (International System of units).

Some important S.I. units: MKS system

Length - metre (m)

Mass - kilogram (kg)

Time - second (s)

Temperature - Kelvin (K)

Need for Standard units:

Standard units are preferred over body units because they are :

- Accurate and precise
- uniform
- universally accepted

Rules for writing units:

- Units must be written in small letters, unless derived from a scientist's name.

eg. cm, kg, K _____

- Units must be written in singular form.

eg. km and not kms, cm and not cms, _____

- There should be no full stop after the unit, unless it is at the end of the sentence.

eg. The length of my pencil is 10cm.

Sam is 1.5m. tall.

Precautions to be taken while measuring length of any object:

1. The scale should be _____.
2. If the zero mark of the scale is not clear or is broken, take reading from _____.
3. The position of the eye must be exactly in front or above the point where the reading is to be taken to avoid _____ error.

Diagram : Fig. 10.9 in the NCERT to be drawn in the notebooks.

Types of motion :

1. Random motion - An object is said to be in random motion when it is moving in any direction. eg. - _____.
2. Rectilinear motion - An object is said to be in rectilinear motion, when it moves along a straight path. eg. _____.
3. Circular motion - An object is said to be in circular motion, when it moves in a circular path. the distance of the object from the center remains the same. eg. _____.
4. Periodic motion - An object is said to be in periodic motion, when it repeats its motion after fixed intervals of time. eg. _____.
5. Oscillatory motion - An object is said to be in oscillatory motion, when it shows to and fro motion. eg. _____.
6. Vibratory motion - An object is said to be in vibratory motion, when it shows fast oscillatory motion. eg. _____.
7. Combined motion - An object is said to be in combined motion, when it shows two or more types of motions simultaneously. eg. _____.

Motion and measurement of distances

Assignment 10.1

Q.1. What do the following stand for?

- a) S.I. _____
- b) MKS _____
- c) CGS _____
- d) FPS _____

Q.2. List the S.I. units for the following-

- a) Temperature- _____
- b) Time- _____
- c) Length- _____
- d) Weight- _____
- e) Mass- _____

Q.3. Give one word for the following-

- a) In India, the standard metre scale is kept here- _____
- b) Every measurement has two parts- a number and a _____.
- c) Name two objects which can be used to measure the length of a curved line. _____

Q.4. Underline the mistakes in the following sentences and rewrite the correct ones-

- a) Agra is 210Km from Delhi. _____
- b) The temperature is 34^oc today. _____
- c) Rajni weighs 27kgs. _____
- d) My pencil is 17cm. long. _____

Q.5. What type of motion/s are exhibited by the following-

- a) Flight of a bird- _____
- b) Dropping a stone in water- _____
- c) Ship taking a turn- _____
- d) Strings of a sitar when struck- _____
- e) Blades of a fan- _____
- f) Hands of a clock- _____
- g) A giant wheel- _____
- h) Soldiers marching - _____

Chapter- 10
Motion and measurement of distances
Assignment 10.2

Q.1. Why are the standard units preferred over body units?

Q.2. Differentiate between rectilinear and circular motion.

Q.3. Convert-

a) 1750 m into km. _____

b) 2245 km15m into m _____

c) 40.82 km into m _____

d) 220.5 m into mm _____

Q4. If a track has 8 lanes each measuring 2m, express the total width of the track in m, mm, cm.

Q.5. If the zero marking on a ruler is not clear, can it be used to measure length? If so how?

H.O.T.S

Q.1. Meetu and Anuj had to measure the length of their circular lunch boxes. But they were unable to do so with a scale. Can you explain where they went wrong? Give an easy yet accurate method of measuring the length of their circular lunch boxes, with the help of an activity.

Q.2. Justify the following with examples-

a. All oscillations are not vibrations.

b. Heartbeat of a human being is not considered to be periodic.

Q.3. Why is the discovery of a wheel considered to be a revolution in the history of transport?

Q.4 Differentiate between :-

a. SI and FPS systems of units

b. Periodic and random motions

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Chapter- 10
Motion and measurement of distances
Activities(5 marks each)

1. Aim - To measure the length of given objects using **body units/rough estimation** and comparing these measurements with the results of your classmates.

Materials required - Table/ desk ; Classroom

Theory - Body units are not accurate as they vary from one person to another.

Method - _____

Observation - a. The length of table/ desk =approximately _____ hand spans

b. The length of classroom = _____ footsteps

c. The length of table/ desk measured by your friend = _____

handspans

d. The length of the classroom measured by your friend = _____ footsteps.

Conclusion - _____

Precaution - _____

2. Aim - To measure the length of given objects using standard units and comparing these measurements with other classmates.

Materials required - Table/ desk, ruler

Theory - Standard units are accurate as they do not vary from one person to another.

Method - _____

Observation - a. The length of table/ desk = _____ cm

b. The length of table/ desk measured by your friend = _____ cm

Conclusion - _____

Precaution - _____

3. Aim - To measure the perimeter of an irregular object using a string/ divider and a scale.
Materials required - A lunch box/ pencil box, scale, a string/ thread, pair of scissors.

Theory - Length of irregular/ curved surfaces cannot be measured by scale alone as a scale is not flexible.

Method - Put a mark on the **object**. Place one end of the string on that point and wrap the string around the object till the other end of the string meets this point. Now again ____put a mark on the **string** where it meets the other end of the string. Cut the string at that point

Now place the cut portion of the entire string on a ruler at and measure the length of the string.

The length of the string is the perimeter of the given object. _____

Observation - The perimeter of lunch box/ pencil box = _____ cm

Conclusion - _____

Precaution - _____



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Chapter 11

Light, shadows and reflections

Learning objectives-

At the end of this topic, the students would be able to-

- Understand that light is a form of energy.
- Prove that light travels in a straight line
- Define the terms luminous, non luminous, transparent, translucent and opaque.
- Explain the conditions necessary for the formation of a shadow
- Understand reflection and its laws
- List the characteristics of image formed by a plane mirror.

Notes

Light - Light is a form of energy.

It causes in us the sensation of vision.

Light travels in a straight line. This property of light is called Rectilinear Propagation of light. Thus, light is an invisible form of energy, which enables us to see objects around us.

Sources of light

An object which emits light is called a source of light. All sources of light can be classified as natural and man-made.

e.g. Natural sources _____

Man-made sources _____

Luminous objects - Objects that give out or emit light of their own are called luminous objects.

e.g. _____

Non-luminous objects - Objects that do not give out light of their own or reflect light from luminous objects, are called non-luminous objects.

e.g. _____

Classification of objects on the basis of transparency:

a. Transparent objects - Those objects through which we can see clearly and light can pass through completely. e.g. _____

b. Translucent objects - Those objects through which we can see, but not very clearly and light can pass through partially. e.g. _____

c. Opaque objects – Those objects through which we cannot see at all and light cannot pass through. e.g. _____

Shadows – A shadow is a dark patch formed on a screen when an opaque object comes in the path of light.

Characteristics of a shadow:

- It is always black (a dark region), irrespective of the color of the object.
- It gives only the outline of an object.
- It can be formed only on a screen.
- Sometimes shadow of an object gives an idea about its shape, while at times it can also mislead us.

Three essential conditions for the formation of a shadow:

- a. A source of light
- b. An opaque object
- c. An opaque screen

--The size of the shadow depends on :

- a. the distance between the source of light and the object
- b. the distance between the object and the screen
- c. the direction of the light

The shadow is smaller when the object is closer to the screen.

The shadow is larger when the object is closer to the light source.

Pinhole camera

A pinhole camera is a device that helps us get a real image. It is based on the principle that light travels in a straight line.

To view an image through a pinhole camera we need a regular rectangular cardboard box and we make a tiny hole in it using a compass. Light a candle (or any other object you wish to see) and then keep it in front of the hole. The screen which is behind the hole is moved towards the hole until we see a clear image of the flame or object.

Characteristics of an image formed by a Pinhole camera:

- The image is upside down or inverted as compared to the object.
- It is diminished (smaller in size than the object).
- The details of the object, such as color, size, etc., are clear in the image.
- It is obtained on a screen.

Diagram-

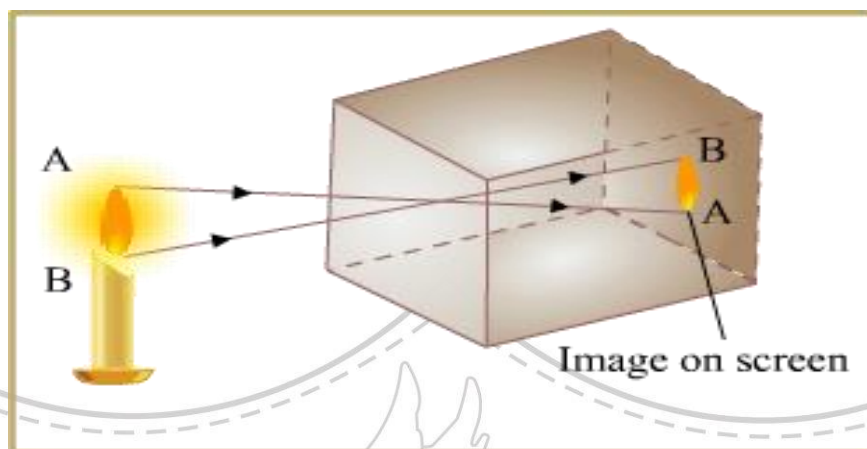


Image formed by a pinhole camera

Periscope

A periscope is a device used for observation of objects which are not at the level of our line of sight. In its simplest form, it is a C-shaped or Z-shaped tube. At both the ends of the tube, the two mirrors are placed parallel to each other at 45° with the tube. Objects are seen using a periscope because of rectilinear propagation of light and reflection by plain mirrors.

It is used to view objects that are higher than the eye level. It is commonly used in Army tanks and submarines.

Use a ruler and a sharp pencil to draw all the figures.

Diagram :-



Rectilinear propagation of light - This property of light suggests that light travels along a straight line. That is why, when opaque objects obstruct it, a shadow forms.

Diagram :-

Mirror – A mirror is a smooth, shiny and highly polished surface. It is an opaque object.

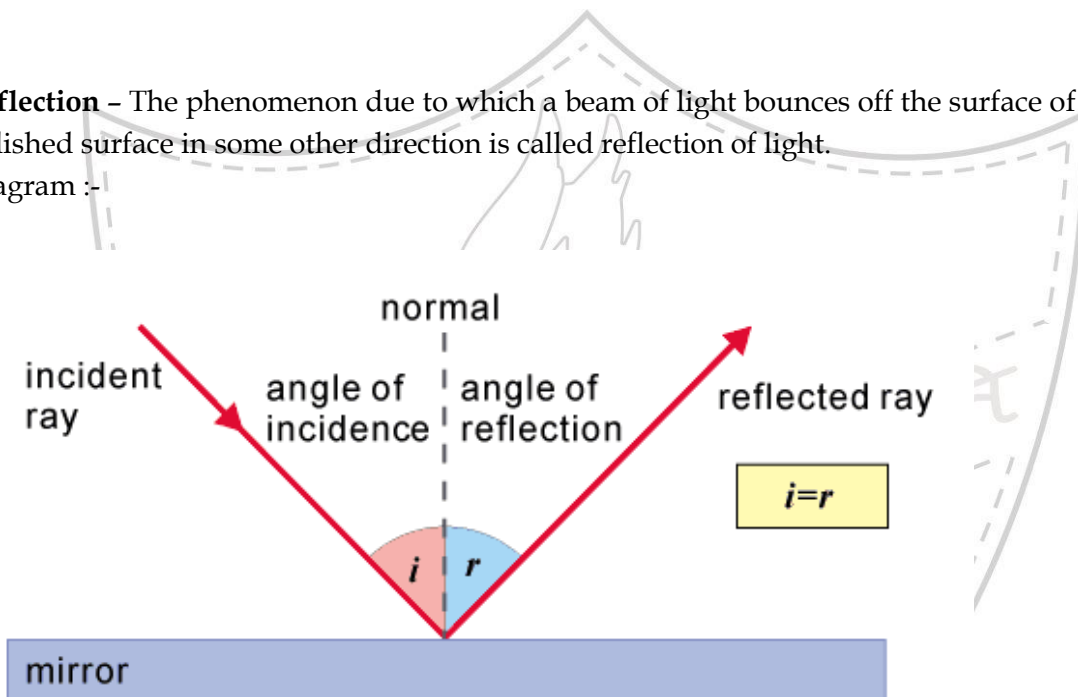
Light gets reflected from a mirror because it is smooth and shiny.

A mirror changes the direction of light that falls on it.

Diagram :-

Reflection – The phenomenon due to which a beam of light bounces off the surface of a brightly polished surface in some other direction is called reflection of light.

Diagram :-



Chapter- 11
Light, shadows and reflections
Assignment 11.1

Q.1. Fill in the blanks-

- a) An _____ shows all details of the object while a _____ does not.
- b) When the path of light is obstructed by an opaque object, a _____ is formed.
- c) A non luminous object is visible to us because it _____ the light of a luminous object.
- d) Light is a form of _____.
- e) The property by which the right hand side of the object appears to be the left hand side of the image and vice versa is called _____.
- f) The image that can be taken on a screen is called _____ image, while the image that cannot be taken on a screen is called _____.

Q.2. Match the following:

A	B
a) Wood b) Clear Glass c) Light d) Opaque objects form e) Butter paper f) Natural Pinhole camera g) Periscope	Multiple reflection Sunlight passing through spaces between the leaves Opaque Transparent Rectilinear propagation Shadows Translucent

Q.3. Rewrite the following letters, numbers and shapes as seen in a mirror:

Letters/ numbers	Mirror image
A	
V	
R	
F	
3	
N	
S	
P	

Q.4. What is this property, of an image seen in a mirror, known as? _____

Q.5. Following given are the incorrect characteristics of an image formed by a plane mirror. Correct and rewrite the following statements in the space given below.

Image formed by a plane mirror is:

a) larger in size as compared to the object.

Ans. _____

b) closer in distance from the mirror than the distance of the object from the mirror.

Ans. _____

c) upside down.

Ans. _____

d) not laterally inverted.

Ans. _____

Thus, the characteristics of the image formed by a plane mirror are as follows:-

Chapter 11
Light, shadows and reflections
Assignment 11.2

Q.1. Give reasons for the following-

- a) You must not look directly at the solar eclipse.
- b) Shadow of a flying bird is not seen on the ground even though it is opaque.

Q.2. Explain how is one able to see through a periscope using the principle of rectilinear propagation of light with the help of a neat labelled diagram?

Q.3. Differentiate between the characteristics of a shadow and a mirror image.

Shadow

Image

Q.4. Light is a form of energy. Justify the statement giving an example.

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Q.5. Show with the help of an experiment that light travels in a straight line.

Aim : _____

Materials required _____

Diagram :

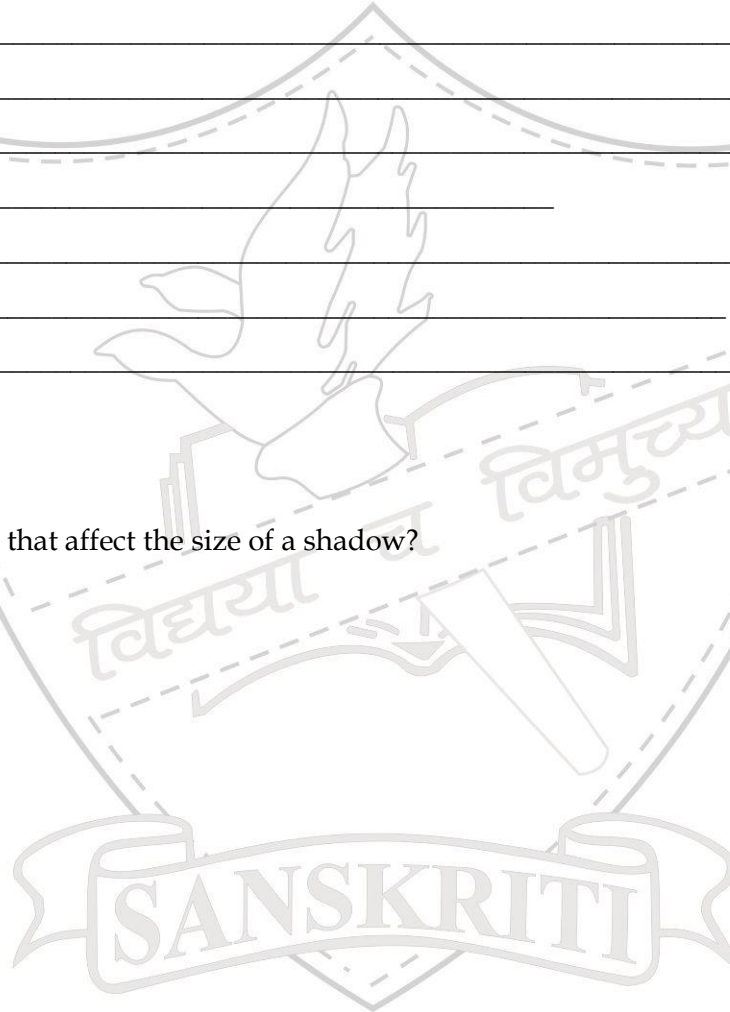
Method - _____

Observations _____

Result - _____

Precautions - _____

Mention the factors that affect the size of a shadow?



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H.O.T.S

Q.1. Why is a shadow not seen in a dark room?

Chapter 11

Light, shadows and reflections

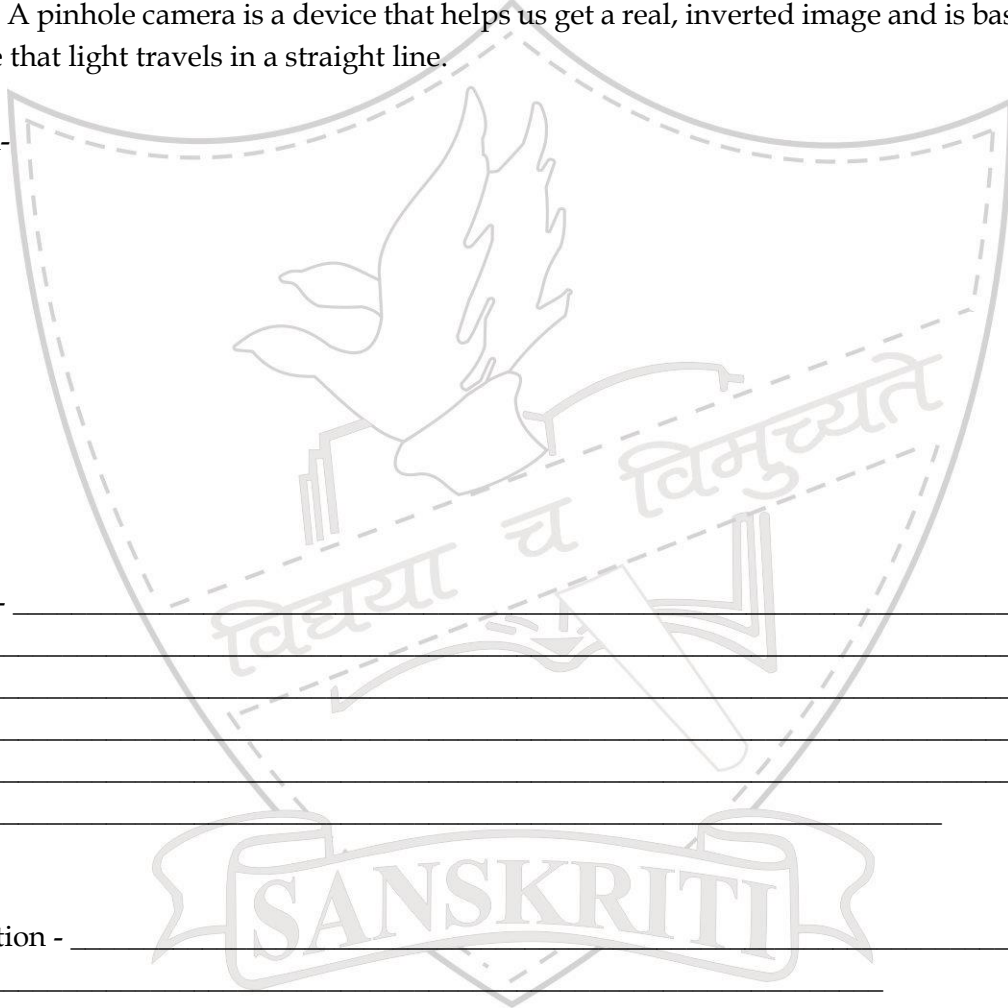
Activities

1. Aim – To construct a pinhole camera and observe it's working.

Materials required – cardboard boxes, tracing paper, pair of scissors, sticking tape.

Theory – A pinhole camera is a device that helps us get a real, inverted image and is based on the principle that light travels in a straight line.

Diagram-



Method - _____

Observation - _____

Precaution - _____

Chapter- 12

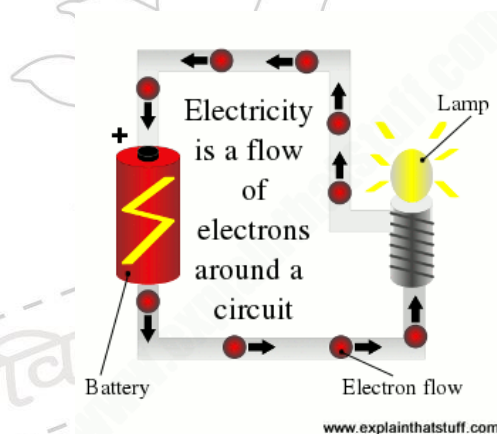
Electricity and circuits

Learning objectives-

At the end of this topic, the students would be able to-

- Understand electricity as a form of energy.
- Identify the symbols of common electrical components
- Define a circuit.
- Draw a closed and an open circuit.
- Observe precautions while using electricity.
- Understand the working of a torch
- Draw the diagram of a bulb and explain its working

Notes



Q.1.What is the importance of electricity in our lives?

Ans. _____

Q.2. Name a few sources of electricity.

Ans. First source of continuous flow of electricity was a 'cell' (by Alessandro Volta) - Voltaic Cell. But these cells can provide electricity for a limited period of time and in small amounts.

For devices that need higher flow of current and for a longer time, electricity is generated at electric power plants. Electricity can be produced from different sources like:-

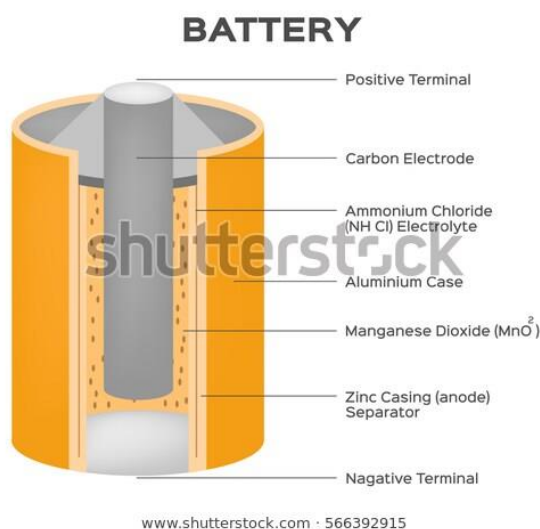
→Wind energy power plant that uses wind energy

- A hydropower plant uses that uses energy of flowing water
- Thermal power plant uses heat produced by burning coal
- Nuclear Power plant uses the energy stored in the nucleus of the atom..

Structure of an ELECTRIC CELL

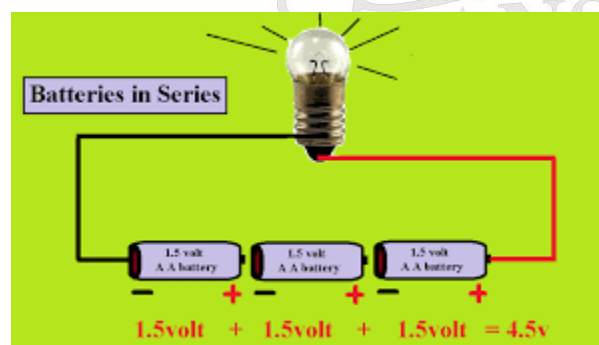
The top of the cell has a metallic cap in the centre. This is the positive terminal of the cell. The metal disc-shaped bottom end of the cell is the negative terminal of the cell.

- All electric cells have two terminals – positive and a negative.

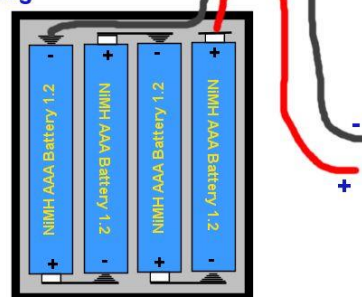


Q.3. What is a battery?

Ans. The combination of two or more cells is called a battery.



Internal Battery Box Wiring



Batteries are end to end, positive to negative in a battery box.

Structure of an ELECTRIC BULB

(Label the parts)



An electric bulb also has two terminals.

→ One of the terminals can be seen as a black spot at the bottom of the bulb and the other is the metal ring structure at its lower end.

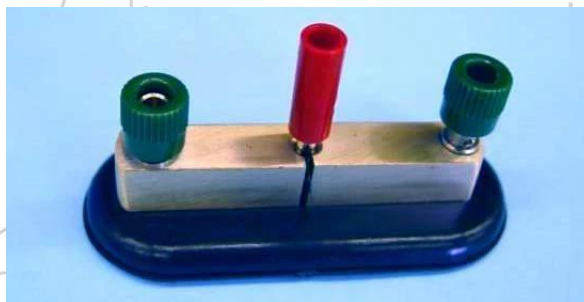
→ Filament is a spring-like structure, made up of a very thin tungsten wire, which glows when current passes through it.

It is filled with an inert gas to increase the life of the bulb.

→ The two terminals do not touch each other.

Q.4. What is the purpose of an 'Electric switch'?

Ans. An electric switch is a device which can start or stop (discontinue) the working of an electrical device, without disturbing its connections.



Q.5. What is an electric circuit?

Ans. An electric circuit is a closed path of flow of electric current from one terminal of the cell to its other terminal through some necessary electric components (like switch, battery, bulb, wires, etc.).

Q.6. What happens when the bulb gets fused?

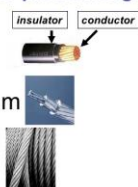
Ans. A fused bulb does not glow. This is because the broken filament causes a discontinuation in the path of flow of electric current.

Electric conductors and insulators

Conductor –

Any material that allows electric current to pass through it

- copper
- aluminum
- steel



Insulator –

Any material that does not allow electric current to pass through it
*like the protective coating on wires

- plastic
- rubber
- glass



Materials which allow the flow of current through them are called conductors, while those materials which do not allow the current to pass through them are called insulators.

Examples of conductors - _____

Examples of insulators - _____

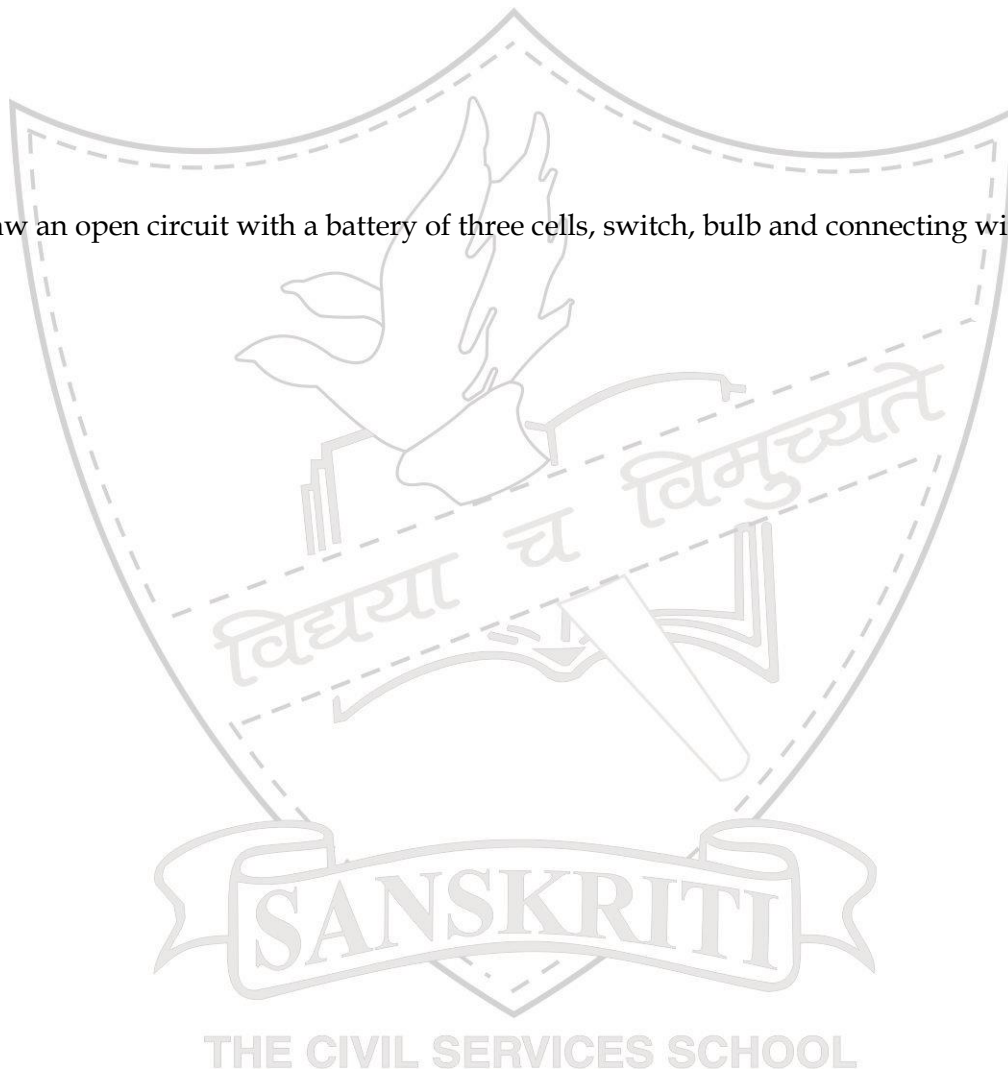
Q.8. Draw the circuit symbols of the following circuit components:

Circuit component	Symbol
Connecting wire	—
Cell	
Battery (with three cells)	
Switch / plug key	
Electric bulb	

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Q.9. Draw a circuit diagram with components like an electric bulb, a battery of two cells, an electric switch and connecting wires.

Q10. Draw an open circuit with a battery of three cells, switch, bulb and connecting wires.



Chapter- 12
Electricity and circuits
Assignment 12.1

Q.1. Fill in the blanks-

- a) The current flows from _____ to _____ terminal.
- b) _____ is an optional component in an electric circuit.
- c) _____ are substances which allow current to flow through it.
- d) The metal cap serves as the _____ terminal in a dry cell.
- e) A complete circuit is also called _____ while a broken or incomplete circuit is also called _____.

Q.2. Given a battery and a light bulb, show how you would connect these two devices together with wire so as to energize the light bulb:

Q.3. Classify the following examples as conductors and insulators:

Plastic, iron, copper, tap water, wood, aluminium, cotton, rubber, pure water

Conductors	Insulators

Q.4. Tick the correct answer:

- a) The bulb glows when
 - i) circuit is complete.
 - ii) circuit is not complete.
 - iii) current is flowing in the circuit.
 - iv) none of these.
- b) Which of the following can act as a source of current?
 - i) Bulb
 - ii) Cell
 - iii) Battery
 - iv) Key

Q5. Which of the following can be used to test the passage of current in a circuit-

- i) Bulb
- ii) magnetic compass
- iii) cell
- iv) Key

Chapter- 12
Electricity and circuits
Assignment 12.2

- Q.1. The electricity of your room suddenly goes off while the rest of the house is amply lit. What could be the possible reason?
- Q.2. Can a dry cell be reused? Why? Why are they replaced with rechargeable batteries?
- Q.3. What will you observe if in an electric circuit, the switch is replaced with -
Plastic scale , metal Key.

H.O.T.S

- Q.1. An electrician must wear rubber gloves while working. Also, he must switch off the MCB before starting his work. Why?
- Q.2. You are using a bulb whose filament is broken. Will the bulb glow when connected to the battery? Give reasons for your answer?.

Q.3. What will you do if your friend has caught an electric shock?

- Q.4. Given below is the conversation among various components/ phenomena found in an electric circuit. Read the conversation carefully and recognise these various speakers:

Speaker A: Hello friends! Let us get together to make our beautiful and fragile friend 'B' glow.

Speaker B: Oh yes friends, I too want to light up this room. Will you please help me?

Speaker C: Ok! Let me help you all to connect with each other. Then our dear friend 'D' can easily move from one of you to another.

Speaker D: Certainly, but I need to be controlled by 'A'. Friend 'A', please let me move through 'C' only when required. Will you please do that?

Speaker A: Oh sure! But where is our friend 'E'? It is one of the most important and necessary parts. None of us will be able to work without 'E'.

Speaker 'E': Sorry friends! I got late. Actually, I was lying idle for a very long time inside a toy car. But, now I am ready to work.

All of them got together to form an _____.

Name each component/ phenomenon below:

Speaker 'A' _____

Speaker 'B' _____

Speaker 'C' _____

Speaker 'D' _____

Speaker 'E' _____

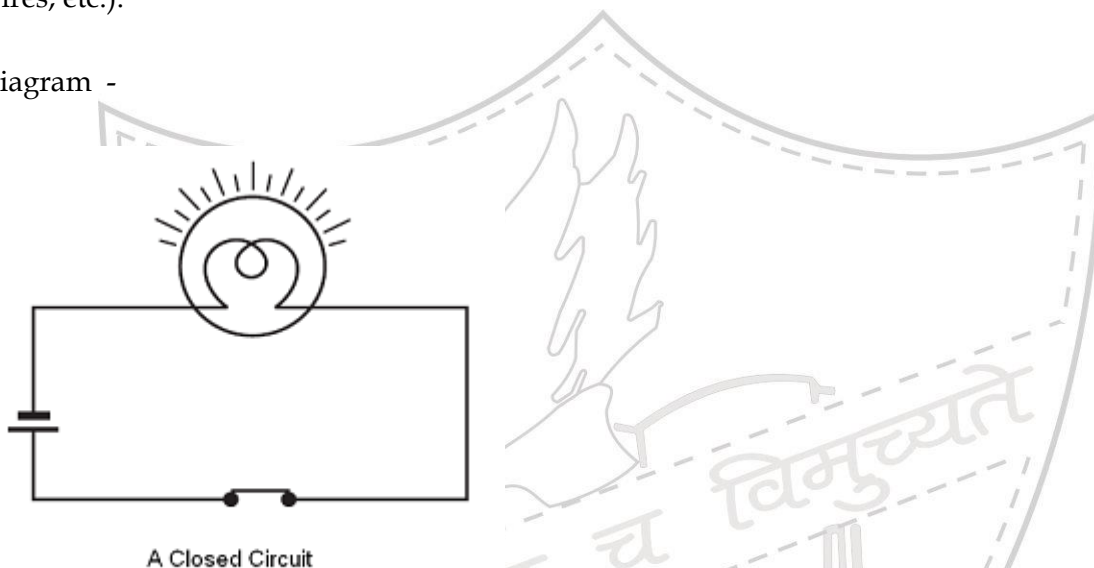
Chapter- 12
Electricity and circuits
Activity

Aim - To construct a simple electric circuit.

Materials required - connecting wires, a bulb, an electric cell, a switch.

Theory -An electric circuit is a closed path of flow of electric current from one terminal of the cell to its other terminal through some necessary electric components (like switch, battery, bulb, wires, etc.).

Diagram -



Method

Observation -

Conclusion-

Precaution -

Chapter– 13
Fun with magnets

Learning objectives-

At the end of this topic, the students would be able to-

- Define ‘magnetism’
- Identify the various magnets on the basis of their shapes
- Explain the properties of a magnet.
- Explain why a freely suspended bar magnet points towards the north- south direction.
- Store magnets with care,

Smart notes

Materials can also be classified as:

a. Magnetic materials – Those materials which get attracted towards a magnet are called magnetic materials.

e.g. _____

b. Non magnetic materials - _____
_____. e.g. _____

Types of magnets :

a. Permanent magnets – Those magnets which retain their magnetic properties for a longer period of time are called permanent magnets. e.g. _____

b. Temporary magnets - _____
_____. e.g. _____

Shapes of magnets : (Draw the magnets)

a. Bar magnet

b. U shaped magnet

c. Ball ended magnet

d. Ring shaped magnet

e. Horse shoe magnet

Properties of magnets:

- Every magnet has _____ poles, North pole and South pole.
- Poles of a magnet exist in _____, i.e., poles can never be isolated.
- Magnetism is maximum at the _____.
- Like poles _____ whereas unlike poles _____.
- _____ is the sure test for magnetism.
- If a bar magnet is suspended freely, it aligns itself along the _____ - _____ direction.
- Magnetism can be induced in _____ materials.
- Magnetism can _____ through water.

Demagnetisation : Magnets lose their magnetic properties when:

- hammered
- heated
- dropped from a height
- not stored properly

Storing magnets : Magnets should be stored with their unlike poles facing each other, separated by an insulator (eg. _____) and keepers (soft iron piece) on their sides.

Diagram :

Methods of making a new magnet:

- Magnetic induction - By stroking a magnet repeatedly on a piece of iron , in the same direction and with a the same pole, for about 30-40 times, we can make a magnet on our own.

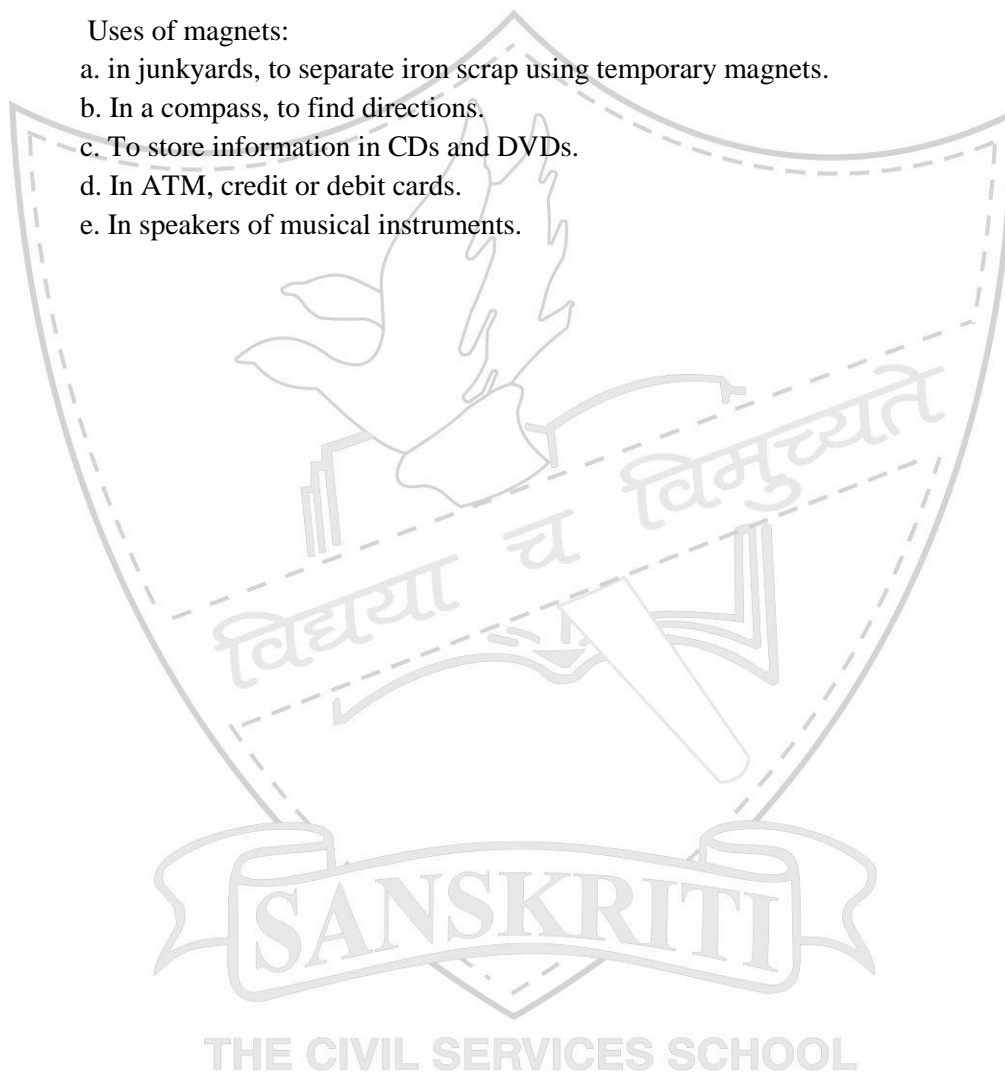
Diagram :

- b. Electromagnets - By passing electric current through a copper wire coiled around a piece of iron, we get an electromagnet.

Diagram

Uses of magnets:

- a. in junkyards, to separate iron scrap using temporary magnets.
b. In a compass, to find directions.
c. To store information in CDs and DVDs.
d. In ATM, credit or debit cards.
e. In speakers of musical instruments.



Fun with magnets Assignment 13.1**Fun with magnets
Assignment 13.1**

Q.1. Fill in the blanks

- a) _____ are used to prevent magnets from demagnetization.
- b) _____ is a natural magnet.
- c) A toy boat is placed in a tub full of water with an iron nail in between. A magnet was kept under the tub. The boat will _____ (float/sink).

Q.2. Circle the non-magnetic materials:

Iron Paper Leather Cobalt Glass Nickel

Q.3. State True or False

- a) A cylindrical magnet has only one pole. _____
- b) Artificial magnet is discovered in Greece. _____
- c) A compass can be used to find east-west direction at any place. _____
- d) A magnet always has two poles. _____

Q.4. Describe the construction of a magnetic compass? -----



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Chapter– 13 Fun with magnets**Assignment 13.2**

- Q.1. A tailor was mending a shirt. The sewing needle accidentally fell from his hand on the floor. Can you help him find it?
- Q.2. A magnet fell into fire. When it was taken out, it did not attract iron nails. Why?
- Q.3. Apart from rubbing method, can a magnet be made by any other way? If yes, how?
- Q.4. Why does a freely suspended bar magnet point towards north-south direction?
- Q.5. Draw a neat labelled diagram to show a magnetic compass made using a cork and needle, floating on a cup of water?

H.O.T.S

- Q.1. What will happen to the magnetism if a bar magnet breaks? Why?
- Q.2. An Emperor in China had a chariot which could locate the directions. On what property of magnetism was the chariot based? Explain with the help of an activity.

FUN ACTIVITY

MAKE A SNAKE USING A CHART PAPER . PAINT IT USING THE APPROPRIATE COLOURS. USING A MAGNET, THUMB PINS AND ALPINS, THINK OF A WAY BY WHICH YOU CAN MAKE THE SNAKE RISE UP AND DOWN AND SWAY SIDEWARDS. DEMONSTRATE IT IN YOUR CLASS.



Laboratory Activities

Activity 1:

Aim - Sorting magnetic and non-magnetic materials using a magnet.

Materials required – a magnet and objects to be sorted.

Theory – Materials/objects attracted by a magnet are called ----- Materials/objects not attracted by a magnet are called _____ Method - _____

Observation table:

Magnetic materials/objects

Non-magnetic materials/objects Conclusion – Magnetic materials/objects are made up of _____, _____ or _____.

Activity 2:. Aim - To magnetize a safety pin using the single stroke magnetic induction method.

Materials required - _____

Theory – Magnetism can be induced.

Diagram –

Method – _____

Observation - _____

Conclusion - _____

Precaution - _____

Activity 3:

Aim - To magnetize an iron nail by electromagnetism.

Materials required - _____

Theory – An electromagnet is a temporary magnet that behaves as a magnet when electric current is passed through a wire coiled around a magnetic material (like an iron nail).

Diagram –

Method - _____

Observation - _____

Conclusion - _____

Precaution - _____



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Chapter - 14

Water

Learning objectives-

At the end of this topic, the students would be able to-

- Understand the structure and properties of water molecule
- Calculate the amount of water used by a person every day
- Understand the importance of water
- Explain water cycle
- Appreciate the need to conserve water and make their contribution towards the same

Notes

Water is a wonderful liquid. It is very essential for life to sustain.

It is a compound made of two elements – oxygen and hydrogen(H_2O).

About three-fourths of the earth's surface is covered with water. About 97.4% of the total water available on the earth is in oceans and seas, which is salty and cannot be used. Most of the freshwater on earth is frozen in glaciers and ice-caps.

Only 0.01% of the total earth's water is available for our use.

Importance of Water

- Water is an essential part of the body of all living organisms.(about 75% of the body mass of most animals is due to the presence of water in their tissues.
- Water acts as a medium of _____ of material in the body.
- Water _____ the body temperature by the process of sweating and evaporation.
- Water is essential for the _____ of seeds and growth of plants.
- It is essential for all biochemical reactions, like digestion, absorption, etc. in our body.
- Water is a habitat for many plants and animals.
- Energy of flowing water can be used to produce _____ in hydroelectric power plant.
- Water helps in the dispersion of seeds of some plants like _____.

Water cycle – The continuous circulation of water in nature is called water cycle.

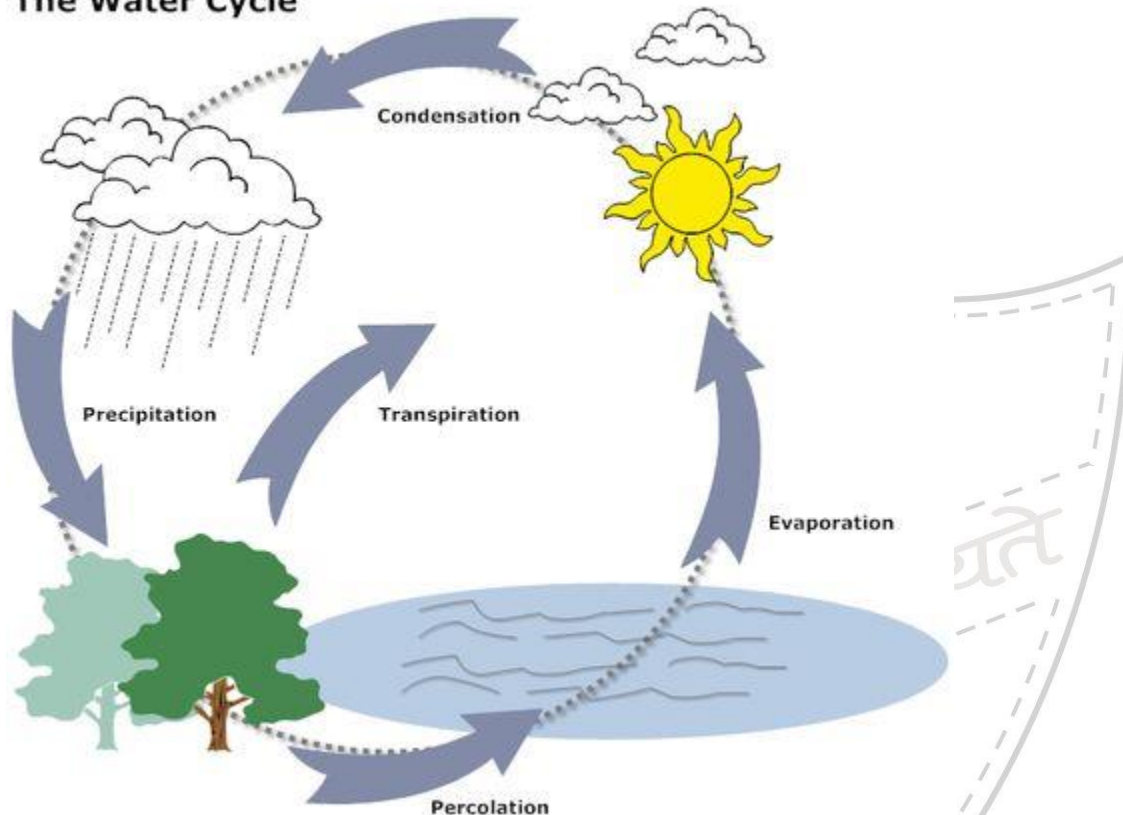
Important terms:

Transpiration: _____

Evaporation _____

Precipitation_____

The Water Cycle



Conservation of water- Careful, economical use and avoiding the wastage of water is called water conservation.

Methods of conservation of water:

- Use only required quantity of water (use judiciously)
- Do not allow water to drip from defective taps.
- Plant more trees as they help in water cycle.
- By collecting rainwater in tanks, ponds or by constructing check dams.
- By Rain water harvesting – in this method the rain water from the rooftops is collected in suitable pits or dried up wells and allowed to penetrate in the soil.

Chapter - 14

Water

Activity

Aim: To show that rate of evaporation depends on temperature.

Material required: Two identical glass tumblers or beakers, water and a marker.

Basic Principle: Evaporation is faster at high temperature (in the sunlight).

Procedure: Take both the beakers and make a mark on them at the same height with the marker.

Fill water in the both beakers upto that mark.

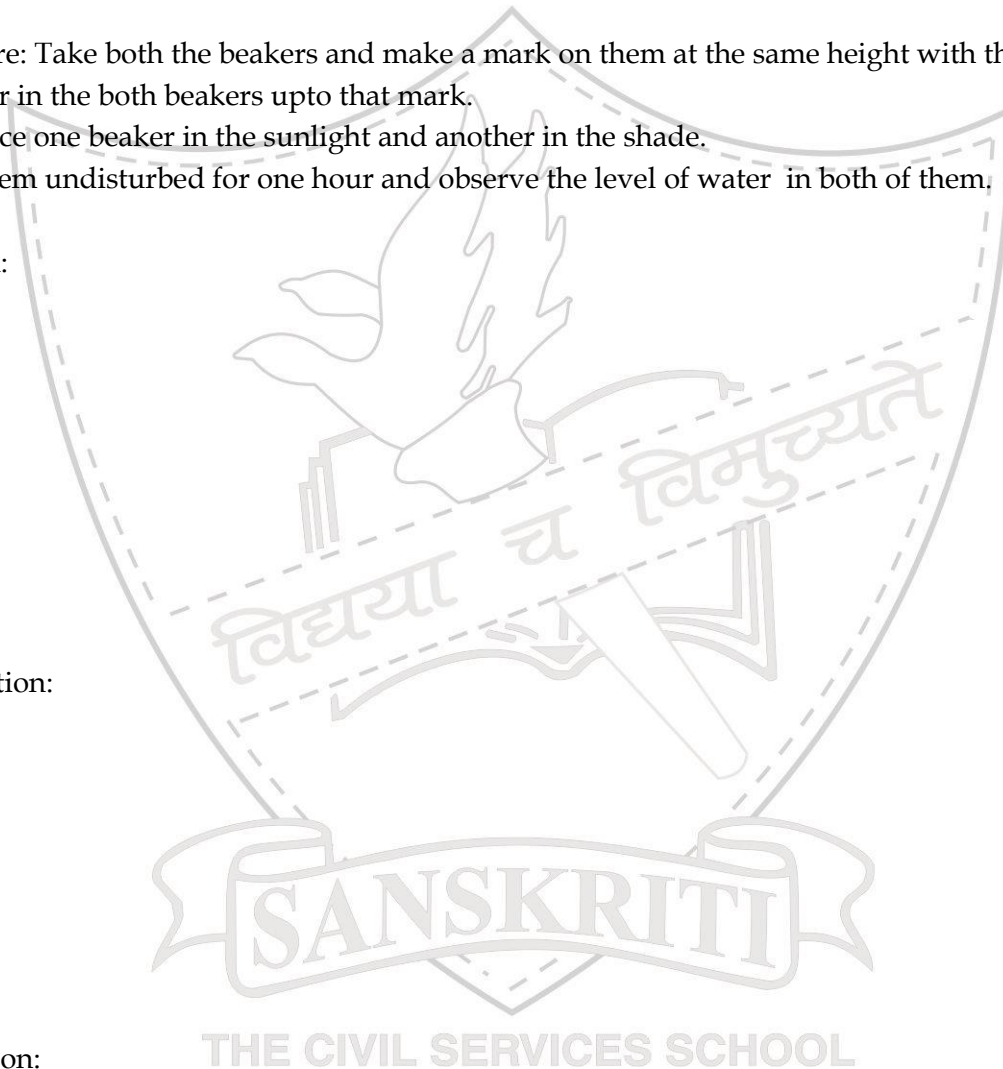
Now place one beaker in the sunlight and another in the shade.

Leave them undisturbed for one hour and observe the level of water in both of them.

Diagram:

Observation:

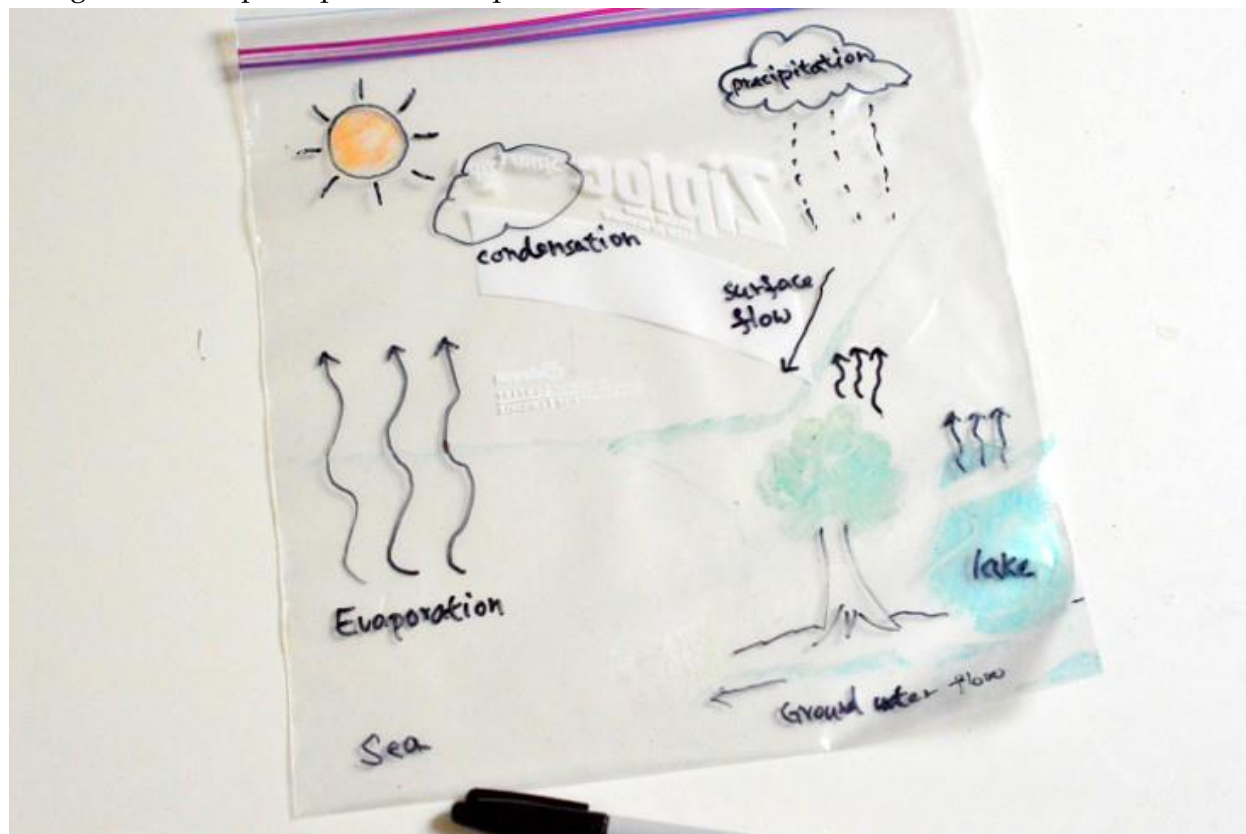
Conclusion:



Activity 2

Aim: to make ziplock pouches to understand water cycle

Things needed- ziplock pouch, black permanent marker and blue food colour, water



Chapter - 14

Water

Activity 3

Aim: To estimate how much water we need for our daily activities.

Procedure:

List the activities for which you need water.

Measure the amount of water used for each activity by you in a day.

(take 1 bucket = 10litres, 1 mug = $\frac{1}{2}$ litre, 1 glass = 300ml = 0.3litre)

Observations:

Activity	Quantity of water used (in litres)
Brushing	
Bathing	
Flushing(in toilet)	
Drinking	
Washing clothes	
Cooking	
Total	

Conclusion:

Chapter 15**Air around us****Chapter 16****Garbage in, garbage out**

These chapters are not assessed. The topic would be discussed through videos followed by class discussion.



Question bank**Very Short answer type**

1. Name the kind of animals which eat only plants.
2. Which nutrients provide energy to our body?
3. Name a metal which is in liquid state.
4. What is a natural magnet called?
5. Give an example of an object which exhibits periodic as well as rotatory motion.
6. Name the plants with green and tender stems.
7. Name the part of the plant which produces its own food. Name this process.
8. Is butter a translucent material?
9. Name the part of a plant which bears leaves, flowers and fruits.
10. List some reasons which may cause demagnetisation of a magnet?
11. From where do bees collect nectar?
12. In your garden, you find a plant which has a long but a weak stem. In which category would you classify it?
13. Write two soluble and insoluble solid substances in water.
14. To measure the length of a curved object, we can use a _____ and a ruler.
15. Which vitamin is good for healthy eyesight?
16. How is Beri-Beri caused?
17. How can roots be recognised without seeing them?
18. The height of a person is 1.76m. Express it in mm.

Short answer type

1. Write any two properties of a magnet. Can these properties be lost?
2. Write the similarities and differences between the motion of a pendulum and of earth.
3. What are fibres?
4. Name five objects that can be made from wood.
5. Draw the diagrams of leaves in parallel venation and reticulate venation.
6. Roughage does not provide any nutrient, but still it is an essential component of our diet. Why?
7. What is a balanced diet?

8. What would happen to the person whose diet lacks both carbohydrates and proteins?
9. Differentiate between natural and synthetic fibre.
10. On what basis do we choose a material to make an object?
11. Why do we need to group materials?
12. What happens when we heat water in a pan?
13. Draw a flower and label all its parts.
14. How is photosynthesis different from respiration in plants?
15. A stem acts as a two way street. Justify the statement.
16. What would happen if two opposite poles of two magnets are brought closer?
17. Give examples where objects undergo combinations of different types of motion?
19. How should the eye be positioned for taking reading of a scale?
20. Gita always reminds her younger brother to wash his hands as soon as he comes home after playing. Why?

Long answer type

1. Explain with the help of an activity, how can you test for proteins in a food sample?
2. How do we make yarn from fibre?
3. With the help of an activity, show that stem conducts water.
4. Differentiate between taproot and fibrous roots.
5. Can you measure the exact length of your desk using a string? How?
6. Name a few body units. Are they still used for measuring length? Why?
7. What precautions do we need to keep in mind while measuring the length of a given object?
8. Differentiate between circular and rotatory motion, giving examples.
9. How can you make your own magnet? List two ways.

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Question Bank

Very short answer type

1. By which process, is the pebbles and stones removed from sand?
2. Can sand and black gram be separated by sieving?
3. Wood is a luminous object. True or false?
4. Is candle a man made source of light?
5. Does light travel in a straight line?
6. Name the two components of a habitat
7. In what type of change, no new substance is formed?
8. Give an example of heterotroph.
9. How do plants reproduce?
10. What is an electric circuit?
11. What gives the different parts of the body their shape?
12. Both conductors and insulators have useful applications. True or false?
13. _____ are the point of attachment of two or more bones.
14. Write one example of a hinge joint.
15. What is wind?
16. Soil organisms use air present in _____ for their survival.
17. Write one use of windmill.
18. What will sink to the bottom of the vessel – rice or dust?
19. Is burning of a candle a reversible change?

Short answer type

1. Why does a lump of cotton wool shrink in water?
2. Why is oxygen important to us?
3. Define adaptation. Give an example.
4. Give two examples to explain the difference between changes that are slow or fast.
5. Are a- biotic factors important for all living organisms?
6. Do all living things need food?
7. Bones cannot be bent. So how do we bend our elbow?
8. How is the movement of a pivotal joint different from that of a hinge joint?
9. What would have happened, if the backbone was made up of only one long bone?

10. How does an earthworm fix parts of its body to the ground?
11. Why do we find different kinds of plants and animals in deserts and sea regions?
12. How do we know that something is living?
13. How are we able to see objects like chair, a painting or a shoe?
14. Shadows give us some information about the objects. Justify the statement.
15. Which method of separating tea leaves from tea is better, decantation or filtration? Why?
16. Why water is called a universal solvent?
17. Where does the torch get electricity from?
18. A bulb does not have its filament intact. Will the bulb glow? Why?
20. Differentiate between conductors and insulators.
21. When we dissolve salt in water, what kind of change will occur?
22. During summer, Zubeida keeps a bowl of water and grains in the balcony of her house. Why do you think she does so?

Long answer type

1. Explain with the help of an activity if rubber is an insulator or not.
2. For what all purposes do you use electricity?
3. How can you show that a mirror changes the direction of light that falls on it?
4. Explain with the help of a diagram, the working of a periscope.
5. Do plants excrete? Explain.
6. How are trees adapted to the conditions prevailing in their habitat?
7. What makes the bones move the way they do?
8. Differentiate between sieving and filtration taking an example.
9. How is cottage cheese prepared?
10. How would you separate a mixture of two liquids that mix with each other? Give an example.
11. Why are tools often heated before fixing wooden handles? Is this a physical or a chemical change? Why?

Revision assignments

Electricity and circuits

1. Match the following:

A	B
a. On- off device in electric circuits filament	conductor
b. Wood	positive
c. Spring like wire in bulb	terminal
d. Wet cloth	switch
e. Upper end of carbon rod in dry cell	insulator

2. The closed path of electricity is called

- a. Orbit b. circuit c. filament d. flow

3. The type of cells that can be charged again on being discharged are called _____.

4. A bulb with broken filament wire is called _____.

5. Can we replace electricity supplied by the mains instead of an electric cell?

6. Name two electrical devices that are used for :

- a. Cooking b. lighting c. producing sound

7. Why is an electric cable made of both metal and plastic?

8. Mention any two properties of the filament of an electric bulb.

9. Which object you can use in place of a switch – a safety pin, pencil lead, a wooden scale, aluminium foil?

10. Label the following diagrams and name them:

- a. b. c.



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11. Write T for true and F for false statements.

- In thermal power stations, coal is used to produce electricity.
- Both terminals of the cell are positively charged.
- Unreactive gas is filled in the bulb to prolong its life.
- Flow of protons causes electric current.
- Battery is a combination of two or more cells.

12. What do you mean by open and close circuit?

13. Fill in the blanks with suitable words.

- do not allow electric current to pass through them.
- The bulb glows only when ----- flows through the circuit.
- Copper wire is a good ----- of electricity.

Living organisms and their surroundings

1. Match the following:

- | A | B |
|-----------------------|----------------------|
| a. Camel | webbed feet |
| b. Touch me not plant | desert plants |
| c. Duck | long legs |
| d. fleshy stem | mountains |
| e. cone shaped tree | response to stimulus |

2. On being pricked with a pin, we quickly withdraw our hand. Which of the following is a stimulus here?

- (A) Pin (B) Pricking with the Pin (C) Hand (D) Withdrawing hand

3. Frogs breathe through _____ and _____.

4. Sunflower plant move towards sunlight. This is called _____.

5. Which of the following is not a 'biotic' component?

- A. Plants B. Animals C. Water D. All are biotic

6. Whales use gills for breathing. True or False?

7. Shape of the body that tapers at ends and helps in movement in water is called _____.

8. Why is respiration necessary in living organisms ?

9. How are plants and animals adapted to survive in desert regions? (Take one example each)

10. Write T for true and F for false statement.

- Camels excrete less quantity of urine.
- Cockroach is a nocturnal animal.
- Plant intake carbon dioxide during respiration.
- Movement is the characteristic feature of all living organisms.

11 List the common characteristic of living things.

12. Classify the habitats of these organisms as ponds, seas or deserts.

Octopus, cactus, frog, Hydrilla, camel, starfish, shark, lotus.

13. Fill in the blanks with suitable words.

- Pine trees are found in ----- places.
- Biotic components include all ----- things of the environment.
- Green leaves contain ----- to absorb solar energy.
- The transfer of pollen grain from anther to stigma is called -----.

14. What is different between submerged and floating plants? Give an example.

15. What may happen if:

- A fish is taken away from water and placed on land.
- A lotus plant is removed from water and planted on land.
- Insect living in soil placed in a pond.
- Mango sapling is planted under water.

16. Write T for true statement and F for false statement.

- All animals are Autotrophs.
- Light, temperature, soil, water are called abiotic components.
- Organisms living in water are called terrestrial animals.
- Habitat is the habit of living and non-living things.
- Crocodile is an example of an amphibian.

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

18. Write the importance of habitats?

19. Classify the following components of an environment as biotic and abiotic.

- a. Plants b. Bacteria c. Sunlight d. Fungi e. Soil f. Temperature.

Light, shadows and reflections

1. Match the following:

A	B
a. Non-Luminous	Lateral inversion
b. Natural source of light	Butter Paper
c. Translucent	Lunar eclipse
d. Left appears right in mirror	Water
e. Opaque	Sundial
f. Rectilinear propagation	Star
g. Shadow	Moon
h. Transparent	Wood

2. Can we surely deduce the actual shape of the opaque object from its shadow? Why or why not?
3. Comment on the heights of the images of two plants in a plane mirror, where one is 2 metre shorter than the other.
4. What does a mirror do to a ray of light falling on it?
5. A non-luminous natural body that shines in the absence of the sun:
A. Earth B. Moon C. Water D. Plants
6. Write T for true and F for false statements.
 - a. Light is a form of energy which can not be seen.
 - b. The image formed by pin-hole camera is inverted.
 - c. We see the moon because it is a luminous body.
 - d. Colour of a shadow depends on the colour of the object.
 - e. Plane mirror is used in periscope.
7. What happens when light strikes a transparent body like glass?

Body movements

1. Number of vertebrae in backbone is _____.
2. Spine is protected from external injuries by _____.
3. A cockroach has _____ pairs of legs and _____ pairs of wings.
4. Where is a pivotal joint present in the human body? _____
5. A joint is the meeting point of two _____.
6. Pattern of movement of a snake is by making _____.
7. An earthworm moves by continuous _____ and _____ of muscles.
8. Fills the blank with suitable word.
 - a. The backbone is composed of ----- vertebrae.
 - b. The upper arm has a strong bone called -----.
 - c. The breaking of bone is called a -----.
9. How are bones of birds adapted well for flying?
10. Earthworms are called farmer's friends. Why?

11. Write the functions of a skeleton in the human body?
12. Solve the puzzle by filling suitable letters.
- These make up the human skeleton. B—N---.
 - The red fluid in the body. —L—O ---D.
 - Respiratory organ in our body. ---U ---G---.
13. Write T for true and F for false statements.
- Bones are harder than cartilages.
 - Finger bones do not have joints.
 - Movement and locomotion are same in animals.
 - The forearm has two bones.
 - Muscles help in movement of bone.
18. What is a ball and socket joint? Give an example.
19. What would have happened, if the backbone was made up of a single long bone?
20. Bones are hard structures, which can not be bent although we are able to move our hands, knee, elbow etc. comments.
21. Unscramble the jumbled words.
- TNEMEVOM -----.
 - LESKETON -----.
 - EPAHS -----.
 - LSECSUM -----.
 - BOBACKNE -----.

Changes around us

1. Fill in the blanks.
- The solubility of a solvent ----- on heating.
 - Metals ----- on heating.
 - No change in composition of the substances takes place in ----- change.
 - Germination of seed is ----- change.
 - Change of milk into curd is a ----- change.
2. Give two examples of changes in which energy is given out?

3. Classify the following changes in at least two ways.

- a. Growth of baby
- b. Formation of curd

4. What are undesirable changes? Give two examples of it.

5. Classify the following as physical and chemical changes.

Melting of glass

Burning of incense stick

Tearing of cloth Formation of seed from flower

Cooking of food

Formation of cloud

6. Write T for true and F for false statements.

- a. Cooking of rice is a physical change
- b. Rotation of a fan is a fast change
- c. Eruption of a volcano is a desirable change
- d. Heat is absorbed or liberated during a change involving energy.
- e. A change which produces new substance is a chemical change.

7. What is solubility? Write the constituent of solution?

8. Name a natural substance that is found in all three states in nature.

9. Write characteristic of chemical changes?

10. Iron rim is made slightly smaller than a wooden wheel. How is his rim fitted on a wooden wheel?

10. Fill in the blanks.

- a. Changes in which a new substance is formed are called -----.
- b. Rotation of a fan is a ----- change.
- c. Dissolving salt in water is a ----- change.
- d. Eruption of a volcano is ----- change
- e. The glowing of a tube light is a ----- change.

11. What are reversible changes? Give two examples.

12. What is sublimation? Write two examples of sublime substance?

13. Write some characteristics of physical changes?

14. Classify the following a reversible or irreversible change.

- a. Growth of a plant.

- b. Ploughing of a field
- c. Melting of Wax
- d. Breaking of glass
- e. Pulling of rubber string
- f. Burning of paper.

Consolidated Science Revision Assignment

1. Mention one function for each:

- a. Skeleton - _____
- b. Switch - _____
- c. Ball and socket - _____
- d. Muscles - _____
- e. Light energy - _____

2. Will there be a solar eclipse on planet mercury? Why?

3. At night, in a stadium, during a cricket match, we see more than one shadow of ourselves/ players. Why? _____

4. a. Classify as luminous and non-luminous objects:

torch, book, moon, table, sun, stars, earth

- b. Which of these are natural sources of light? _____
- c. What happens when moon reflects sunlight? _____

5. a. Draw a circuit diagram using an electric bulb, a switch, an electric cell and connecting wires.

b. Mark the direction of current flow.

c. What type of circuit is it – open or closed?

d. How can this circuit be used to check if aluminium foil is a good conductor of electricity?

6. Mention the adaptations for:

- a. fish - _____
- b. rats in deserts - _____
- c. mountain goat - _____

7. Which of these is not a natural habitat? Sea, desert, zoo, mountains

8. Find errors in the following passage (each line has an error):

Rohan wanted to drink a cup of milk, full of iodine ,calcium

and fluorine, to keep his _____ muscles strong. For reaching the cup kept on the table, from his sofa, he bent his backbone and stretched his ball and

socket joint in the _____ right elbow. He held the cup with his hand using his fixed joint in his fingers _____ and hinge joint in his wrist.

9. Give reasons for the following :-

- a. Electrical appliances and tools have their handles covered with insulating materials.
- b. A gap is left between two rails.
- c. The leaves of a *Mimosa* plant droop down when touched.
- d. What happens to cooked food when it is kept for 2 days without refrigeration?

10. What is the difference between living things and non-living things?

11. Write the scientific terms for the following :-

- a. To produce more of one's own kind
- b. Spring like metal wire inside bulbs, which glows when current passes through it
- c. An unwanted change brought about naturally or by us. _____
- d. Increase in volume due to a raise in temperature. _____

12. Define the following :-

- a. Stimuli
- b. Circuit

13. Differentiate between :-

- a. Physical and chemical changes
- b. Closed circuit and open circuit
- c. Evaporation and condensation



ACTIVITY

It has been proven over and over, that young children learn languages, formulae, concepts and other information much quicker in a fun and interactive way rather than slogging through heaps of textbooks. This year's science project aims at achieving this objective. The topic that has been chosen will be assessed only as a project and will not form a part of the term examination syllabus

Topic - Fibre and fabric (Chapter 3 of the textbook)

Since time immemorial, natural fibres have been used for apparel and home fashion. Today, many man-made fibres have been developed into beautiful fabrics that are being used by major designers. This summer break, have a great time sorting out your clothes and engaging with the given activity. Hope you enjoy doing this!

- A. *Reading and Understanding* – Begin with reading the chapter in the text book.
- B. *Research* - Collect as many different pieces and scraps of fibres and fabrics. Gather information on the fabrics under the following heads:

- (i) Fabric and its source (Plant/ animal/ man-made)
- (ii). Fabric and relevance of the region where it is used within India (cold and hot climate)
- (iii). Fabric and relevance to the use(its purpose – like for making bags, clothes, mats,etc)
- (iv). Properties of the fabric like strength, durability, absorption of water, etc.

- C. *Fabric assemblage /Collage* -Now think of how you would like to present your collected fabrics as a collage.

- Take an A4 sheet of paper.
- Prepare a collage on one side of the paper using the fabrics collected.
- Use the other side to present the information that you collected under the Research head.

Make the collage on an A4 size sheet with the research (information) at the back of this page.

References

→Class VI, NCERT Text Book; <http://42explore.com/fibers.htm> ;
<http://www.fabrics.net/projects.asp>