MODERN SCIENCE - 6

CONTENTS

1. Food

(I) Answer the following questions :

1. Why do living things need food ?

Ans. Living things need food for the following reasons :

i. Food helps us to grow.

ii. Food gives us energy to carry out a numbers of activities.

iii. Food provide us necessary strength in order to keep our body in good health and protects from various diseases and helps to over come wear and tear. Food is needed for repair of damaged or injured body parts.

2. Classify the animals according to their food habits.

Ans. On the basis of food habits animals are classified in three parts :

i. **Herbivores :** Plant eating animals are called Herbivores . Cow, Sheep

ii. **Carnivores :** Animals which eat only meat of other animals are called Carnivores.

iii. **Omnivores :** These are the animals who eat both plants and animals.

3. What are the main sources of food ?

Ans. Both plants and animals are important sources of food.

4. What are food producers ? Why are they called so ?

Ans. Plants are called the food producers because they prepare and provide food. All green plants and trees are producers .

5. Mention some steps to avoid wastage food.

Ans. Following step should be taken to avoid wastage of food :

i. Food should not be allowed to get spoiled or eaten away by animals.

ii. We should eat only that much quantity of food which is required by our body. Excess eating will lead to obesity and other diseases.

iii. In parties or even in our homes we must not leave food uneaten in our plates.

II Differentiate between the followings :

1. Apiculture and Pisciculture :

Ans. Apiculture : The rearing of honey bees on a large scale is known as Apiculture.
Pisciculture : Rearing and management of fish on a large scale is called Pisciculture.

2. Herbivores and Carnivores :

Ans. Herbivores : Plants eating animals are called herbivores. Such as Cow, Sheep.
Carnivores : Animals which eat only meat of other animals are called Carnivores. Such as Tiger, Lion

3. Milk providing animals and poultry animals :

Ans. Milk Providing Animals : Animals provide us food in the form of milk.
Poultry Animals : Animals which provide meat and eggs are called poultry animals. Such as Hen, Duck.

4. Carbohydrates and Proteins .

Ans. Carbohydrates : Energy giving nutrients

Proteins : Body building nutrients.

III Select whether the following statements are true or false :

Ans. 1. T. 2. F. 3. T. 4. F. 5. T.

IV Match the statements of the following columns :

1.	All are animals products	-	Milk, curd, ghee, paneer.
2.	A complete diet	-	Pulses, rice, milk, chapatis, vegetables and fruits.
3.	All are vegetables	-	Spinal, radish, carrot.
4.	Animals providing both meat and eggs	-	Poultry animals.
5.	Honey bees	-	Beehives.

V Fill in the blanks :

1. *Cereals* constitute the staple diet of human beings.
2. Birds have no *teeth* but they have *beaks*.
3. Animals which provide both meat and eggs are called *poultry* animals.
4. Pulses are rich in *proteins*.
5. The place where rearing of honey bees is done is called *apiary*.

VI Define the following terms :

1. **Apiculture :** The rearing of honey bees on a large scale is called apiculture.
2. **Pisciculture :** The rearing and managing of fish on large scale production is known as pisciculture.
3. **Cereals :** The edible grains obtained from cultivated grasses are called cereals.
4. **Food :** Any substance that provides an organism energy and nourishment is called food.
5. **Carnivores :** Animals which eat only meat of other animals are called carnivores. Tiger, lion .etc.

VII Give two examples of each of the following:

1.	Herbivores	-	Cow, sheep
2.	Cereals	-	Wheat, maize
3.	Poultry animals	-	Hens, duck
4.	Spices	-	Ginger, Turmeric
5.	Sugar producing plants	-	Sugarcane, Sugar beet
6.	Carnivores	-	Tiger, Lion.

2. Components of Food

I Answer the following question :

1. List different components of food and their importance.

Ans. Food consists of five major components called nutrients these as follow : (1) Carbohydrates, (2) Fat (3) Proteins (4) Mineral salts and

(5) Vitamins :

i. **Carbohydrates :** Carbohydrates are the common energy giving compounds which are stored in the liver and muscles of our body.

ii. **Fats :** Fats are also energy giving substances and give more energy than carbohydrate. Fats get stored beneath our skin and protect our body against rapid loss of heat.

iii. **Proteins :** Proteins are body building food they help the body in its growth and repair the body cells and tissues. They also protect and help the body to fight against diseases and infections and regulate body functions.

iv. **Mineral salts :** They are needed for the normal working of our body. Salts of Calcium and Phosphorous are required for making bones and teeth strong and for promoting blood clotting in our body. Iron is a constituent of blood and forms haemoglobin.

v. **Vitamins :** These are the chemicals which help to maintain a healthy body.

2. Why roughages are important to us ?

Ans. The indigestible portion of food consisting mainly of plant cellulose is known as roughage or fibre. It has no nutritive value but prevents constipation and keeps digestive system in order.

3. What is the importance of water for human beings ?

Ans. A water constitutes almost 70% of our body weight. It helps the body to perform various functions properly. Function of water are as follows :

i. It is a means of transporting substances in the organisms.

ii. It helps to maintain a constant body temperature.

iii. It helps in the absorption of food and excretion of waste products from the body.

iv. It acts as a solvent in the body for many substances.

4. Name two protein deficiency diseases with their symptoms.

Ans. Deficiency of proteins leads to serious diseases Kwashiorkor and Marasmus in children.

Symptoms of Kwashiorkor :

i. Protruding belly.

ii. Brownish hair, dark and scaly skin.

iii. Stunted growth, usually underweight.

iv. Loss of appetite.

v. Anaemia.

vi. Mental retardation.

vii. Swollen legs due to accumulation of water.

viii. Reduced resistance to diseases.

Symptoms of Marasmus :

i. Poor muscle development.

ii. Bones showing through the skin.
iii. Weak legs.
iv. Loss of appetite.
v. Anaemia.
vi. Grossly underweight.
vii. Mental retardation.
viii. Reduced resistance to diseases.

5. Why should we include vitamins in our body ?

Ans. Vitamins are required in small quantities for proper functioning of our body. It helps in keeping our eyes, bones, teeth and gums healthy. It deficiency in our diet leads to serious diseases. Such as night blindness etc.

6. What test will you perform to test the presence of protein in food item ?

Ans. Take egg white in a test tube and put some water in it now add. 2 drops of copper sulphate solution and 10 drops of caustic soda solution to it after a few minutes the violet colour in the test tube indicates the presence of protein in the food item.

7. What are the ill effects of the deficiency of facts in our body ?

Ans. Deficiency of facts causes rough skin weak eye- sight and thinness of the body.

II Mention the food constituents which may be lacking in diet, in case of the following :

1. A children suffering kwashiorkor - Protein.
2. A person suffering from poor sight - Fats.
3. A person suffering from anaemia - Iron.
4. A child suffering from night blindness - Vitamin A.
5. A person suffering from goitre - Iodine.

III State whether the following statements are true or false.

1. T. 2. F. 3. T. 4. T. 5. F. 6. T.

IV Match the statements in column a with those in Column B.

Ans.

A	B
1. Minerals	Calcium
2. Sugar	Glucose
3. Fat	Butter
4. Protein	Pulses
5. Starch	Potato.

V Fill in the blanks with suitable words :

1. *Protein* are the blood building foods.
2. Iron is the constituent of *blood.*
3. Nitrogen is the most essential element in *Protein.*
4. Fruits provide carbohydrates and *Protein* in large to quantities.
5. Over eating causes a disease called *obesity.*
6. Pulses are a good source of *Proteins.*

VI Choose the correct option from each of the following.

1. - C, 2. - C, 3. - F, 4. - C, 5. - F.

3. Fibres Our Clothing Materials

I Answer the following question :

1. Write about the different type of cloth materials.

Ans. Clothing materials include both natural and artificially made substances. Leather, fur and clothes made from plants fibres are natural materials, where as artificially created materials include all types of synthetics.

2. How will you test the different absorbing capacities of different kind of materials ?

Ans. To list the absorbing capacity of different kinds of dress materials Take pieces of cotton, wool, silk and nylon measuring 6cm x 6cm and of same thickness a bangle of diameter 5cm, a glass of water, an eye dropper, digital watch with seconds. Spread the piece of cotton flat on a table and place the bangle over it. Mark the center of the bangle with ink. Fill the eye dropper with water and allow a few drops of water to fall from just above the marked centre. Note the time when these water drops get absorbed pour more water drops till the water spreads to the rim of the bangle. Note the time again. Repeat this activity with woolen, silk and nylon clothes. You will notice that the wool requires the maximum number of drops to soak followed by Cotton, Silk and finally Nylon. This activity shows that different types of dress material have different water absorbing capacity.

3. What are the clothes made from? Name two natural and two man made clothes materials.

Ans. All clothes are made from fabric which are obtained from plants, animals or made synthetically. Natural clothes material are cotton, wool. Two man made clothes are nylon, polyester.

4. Name the processes involved in serial order for making cotton fabric from raw cotton.

Ans. Processing of Cotton is :- i. Ginning, ii. Spinning, iii. Weaving.

5. How is the jute fibre removed from dried jute stalks ?

Ans. The stems of the harvested plants are immersed in water for a few days. The stems rot and the fibres are separated by hand.

6. Differentiate between natural and synthetic fibers ?

Ans. i. Natural Fibers are obtained from plants and animals but the synthetic fibers are man made.

ii. Natural fibres are cotton, flax, jute, wool and silk. Synthetic fibers are nylon, rayon, terylene, polyester,. Synthetic fibres are stronger then natural fibres. Clothes made from synthetic fibres are durable and do not wrinkle and dry quickly.

7. Write a short note on the beginning of cloth.

Ans. Cotton was known to the prehistoric people long before the written records were made. In India cotton has been in use since 1800 B.C. Cotton plant is native to India, Europe first came to know about cotton through Greek historian Herodotus. Who lived in 500 B.C. These day cotton is mainly grown in United States of America, Egypt, Russia and India. In India cotton is grown in Maharashtra, Gujarat, Tamil Nadu, Madhye Pradesh, Andhra Pradesh, Rajasthan and Punjab. Cotton is grown best in fertile and well drained soil that get plenty of moisture during the growing season. It is an annual plant. A nature cotton plant ranges form 0.6 - 1.5 meters in height. It is mainly grown in tropics which have warm to hot temperature through out the year. It is grown in deep black soil of Deccan and Malwa platean of Gujarat. It also grow well in light and alluvial soil of Satluj, Ganga basin. It need plenty of Sunshine and mild cool and dry climate with a temperature of 21^0 to 27^0C. It needs 60 cm. to 80 cm. of moderate rain falls. Excessive rain and stagnaul water are harmful to it.

8. What are the reasons for wearing clothes ?

Ans.
i. Clothes protect us from heat, cold, winds and other adverse climate conditions.
ii. Clothes help us to maintain our suitable body temperature.
iii. Clothes protect us from minor injuries.

9. What are the uses of cotton?

Ans. Uses of cottons :-
i. Cotton is mostly used in manufacture of cotton textiles and undergarments.
ii. Superior grade cotton is used in the manufacturing of rayon and superior paper used for printing currency notes and government stamp paper.
iii. Inferior grade cotton is used in the manufacture of high quality printing paper.
iv. As cotton can absorb a large quantity of moisture, inferior grade cotton fabrics are used as maps in the house hold cleaning.
v. Cleaned and carded cotton is used as fillers in pillows, quilts and mattresses.
vi. Cleaned and carded raw cotton is sterilised and then used as absorbent in hospitals.

10. Give a short account of processing of wool.

Ans.
i. **Shearing :** Removing fleece from a sheep's body is called shearing. Sheep reares remove fleece in one piece so that the various parts can be easily identified for sorting and grading. The best quality wool is obtained from the shoulders and sides of the sheep.
ii. **Sorting and Grading :** The quality of wool fibres is judged on the

basis of their strength, fineness, length, colour and crimp workers remove any stained, damaged or inferior quality wool from each fleece and sort the best of wool according to the quality of fibres.

iii. **Making Yarn :** The wool is cleaned with detergent by removing the dust, sand and yolk from it. When the wool dries, it is passed through rollers that have thin wire teeth. The teeth arrange the fibres into a flat sheet called a web. From this web narrow ropes are formed which are stretched and slightly twisted into yarn with the help of spinning machines.

iv. **Making fabric :** Wool manufactures weave yarn into fabrics. These fabrics then under go finishing processes and give them desired touch and look.

11. Write a short note on the beginning of clothing.

Ans. During the stone age, the humans used to cover their bodies with big leaves of trees, bark of trees or animal skins to keep them warm. In winter they used to wear animal's fur. They used to join these furs by making holes near the sides and then passed through them leather strips to hold them together.

With the development of agriculture the humans learnt to weave grasses and twings into mats and baskets. They learn how to twist animal's hair and wool into tong strands and weave clothes out of them.

Early Indian use to wear light cotton fabrics of cotton which grew in Gangatic Valley. For stitching key tool was invented in 40,000 BC - 50,000 BC. This tool or sewing needie helped people to stitch fabrics by cutting them in desired shape.

II State whether the following statements are True or False.

1. T. 2. F. 3. F. 4. F. 5. T. 6. F. 7. F. 8. T. 9. F. 10. F.

III Fill in the blanks with suitable words :

1. *Coir* is a fibre obtained from the husk of coconut fruits.
2. Nylon fibres are the first *Man-made* fibres.
3. Rayon is produced from wood or *Cotton*.
4. The practice of rearing silkworms is called *Sericulture*.
5. The *Pashmina* wool is considered to be the best type of wool in India.
6. Fibres from the stem of the flax plant are woven into *linen*.
7. The process of removing *seed* from the cotton fibres is called ginning.
8. In Sikkim women wear long skirts called *baku*.
9. Cattle hide is the source of most *Curing* .
10. Removing *fleecs* from a sheep's body is called shearing.

IV Solve the cross word puzzle using the following clues :

Ans. **Across :**

1. Deseeded raw cotton - LINT,
2. A product obtained on spinning fibres - YARN

Down :

3. Yarn arranged length wise on a loom - WARP,
4. The process of twisting fibres - SPINNING,
5. A natural fibre which grows on its seed - COTTON.

V Match the statements of column A with these in column B :

Ans.

	Column - A		B
1.	The process of making cloth from yarn	:	Weaving.
2.	The process of making yarn from fibres	:	Spinning.
3.	Compressing of raw cotton in bundles	:	Relting.
4.	Rotting of gummy skin of jute stalks in water	:	Bating.
5.	The process of removing cotton seeds from cotton	:	Ginning.

VI Give one use of each of the following :

1. Terylene - Clothes, 2. Polyester - Clothes
3. Rayon - Decorating, 4. Acrylic - Clothing
5. Nylon - Carpet, tyers.

VII Choose the correct option :

1. A, 2. C, 3. A, 4. A, 5. B, 6. D.

4. Grouping of Different Kinds of Materials

I Answer the following question :

1. What are important properties of materials ?

Ans. Some of the important properties of materials are as follows :-

i. **Appearance of materials or tustre :-** Some materials shine and have tustre while some are dull

ii **Hardness :-** Some are hard and some are soft.

iii. **Odour (Smell) :-** Some materials have peculiar odours so they can be recognized whole some have no smell such as hydrogen.

iv. **Solubility in water :-** Some materials dissolve completely in water. These substances are called soluble and this is called solubility. If a substance does not dissolve in water. It is called insoluble substance.

v. **Floating or sinking of materials in water :-** Some solids are lighter than water and float on its surface. Some solids are heavier and sink in water.

vi. **Transparency :-** We can see easily through some materials . Such materials are called transparent. Conversely we cannot see through some materials. These materials are called opaque.

vii. **Conduction of heat :-** Some materials which allow heat energy to flow through them are called good conductors of heat .

viii. **Combustibility in solids :-** The property by which some substances catch fire when heated in air is called Combustibility.

ix. **Magnetic attraction :-** Some materials are not attracted by the magnet but some are attracted by the magnet these materials are called magnetic substances.

2. How will you determine the hardness of substance ?

Ans. When the surfaces of two different materials are rubbed against each other then the surface which scratches is said to be hard. Scratch the wood against the stone, so the stone is harder than the wood.

3. What is the matter ? What is the difference between mass and weight ?

Ans. Matter is anything that we can see, touch smell or feel. Matter is anything that has mass and occupies Space. The quantity of matter in an object is called the mass of the object. Weight is defined as the measure of the earth's pull of gravity on an object.

4. What are soluble and insoluble substances ? Give two examples of each.

Ans. Substances which disolve in liquids are soluble substance and which does not disolve in liquid are called insoluble such as salt, sugar, are soluble and wood stone are unsoluble.

5. Distinguish between Solids, liquids and gases ?

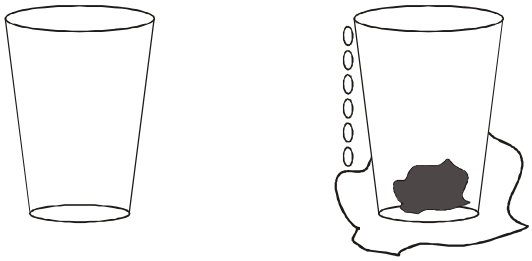
Ans.

Solids	Liquids	Gases
The molecules are arranged very closely to each other. So it is rigid.	They are not rigid	They are not rigid at all.
Solids do not flow.	Liquids flow from a highes level to a lower level.	The can flow easily in any direction.
They have definite size and shape.	They have a definite volume but do not have a definite shape of their own. They take the shape of the container they are placed in.	They have neither a definite shape nor a definite volume.
Molecules are very closely arranged. So attraction among them is more.	The molecules of liquids are not very close to each other hence attraction is lesser.	The molecules of gas are very-very far from one another hence attraction is very little.

6. With the help of an activity show that the matter occupies space?

Ans. To show that matter occupies space. Fill a tumbler with water and place a stone in it. You will notice the stone pushes some water out of the tumbler.

It means that the stone has occupied same space in the tumbler. This shows that matter occupies space.



7. From the following list of materials classify them into naturally occurring and man-made materials :

Ans.

Naturally occurrance	Man-made materials
Milk	Glass
Water	Nylon
Mercury	Plastic
Wax	Nylon
Wool	Paper
Copper	Silk
Brass	Paint

8. When air is filled in a balloon,, the size of the balloon increases why does it happen?

Ans. Ballon is made of elestic. So it has a properly of elesticity. When air is filled in the ballon the Size of the ballon is increased.

9. When a piece of stone is dropped in water, some water spilles out of the tumbler? Why does it happen.

Ans. Because all matter occupies space. So the stone has occupied the space in the tumbler and the water spills out.

10. Differentiate between transparent and opaque material.

Ans. The material which allow the light to pass through them are called transparent material and which do not allow light to pass through them are called opaque material.

II State whether the following statements are True of False :

1. T 2. T 3. F 4. T 5. F 6. F 7. T 8. T 9. F 10. T.

III Fill in the blanks :

1. Materials which have a special shine on them are said to be *lusture*.
2. *Diamond* is the hardest naturally occurring substance.
3. Talcum prepared from *Soapstone* is the softest substance.
4. Materials which allow light to pass through them partially are called *translucent* materials.
5. Anything that has mass and occupies space is called *Matter*.
6. Pleasant smells are described as *Fragrant*.

7. Hydrogen sulphide gas has the smell of *rotten* eggs.
8. All solid materials have definite size and *shape*.
9. The quantity of matter in an object is called its *Mass*.
10. Solids which are lighter *floats* on the surface of water.

IV Match the following :

Ans.

A	B
Pen	Plastic
Nail	Iron
Book	Paper
Bat	Wood
Brick	Clay

V Solve the crossword puzzle by using the following clues :

Down : **1.** CHARCOAL **2.** LUSTRE **3.** HARD
Across : **4.** CONDUCTOR **5.** SOLUBLE

VI The statements given below are incorrect. Write the correct statement :

1. Talcum is the softest substance in nature.
2. Diamond is a lustrous substance.
3. Alcohol is a combustible substance.
4. Rubber is a bad conductor of heat.
5. Metals are insoluble in water.

5. Separation of Substances

I Answer the following questions :

1. What are the characteristics of a pure substance ?

Ans. Characteristics of a pure substance :

i. Pure substance is made of only one kind of particles.
ii. A Pure sulphate has a definite composition.
iii. It has a definite melting point, boiling point, and density.
iv. It is homogeneous in nature i.e.it has the same composition through out.

2. What are the difference between a pure substance and a mixture ?

Ans.

	Pure	Mixture
i.	Pure substance consists of praticles of only one kind.	It consists of two or more types of particles.
ii.	They are homogeneous.	They are heterogeneous.
iii.	They have definite melting point, boiling point and densities	They have no difinite physical properties such as boiling, melting point, density etc.

3. How is coman salt obtained from the sea water ?

Ans. Water is gathered in a big open tank then the water evaporates and salt is left behind.

4. How will you seprate a mixture of comman salt, sand and iron fillings ?

Ans. Spread the mixture of comman salt, sand and iron filling on a sheet of paper. Bring a bar manget near the mixture. You will see iron filling are stick to the magnet. By repeating this process several times all the iron fillings in the mixture are removed disolve the remaining mixture in water and stir the solution well. The salts get disolved but the sand does not. Filter the solution and collect the filtrated in a beaker. The sand is left in the filter paper. The filtrate is a clear solution of comman salt. Put the filtrate in a chinadish and heat it over a flame. The water evaprates leaving the comman salt in dish.

5. How will you seprate water and kerosene from the mixture ?

Ans. The mixture of oil and water is allowed to stand for some time it forms two layers that can be seprated by decantation.

6. What Method would you apply for seprating mixture of salt and sand?

Ans. Take a mixtue of salt and sand in a beaker containing water with the help of a glass rod stir the content. The salt gets dissolved in water, where as the sand remains suspended. Now make a cone of the filter paper. Fit this folded filter paper cone in a funnel and place the funnel in a funnel stand. Put a clear beaker below the funnel pour the mixture on the filter paper with glass rod slowly so that the liquid stand below the edge of the cone. The liquid collected in the beaker is salt water free from sand. The salt water is called the filtrate and the solid sand left on the filter paper is called the residue. From the funnel, the filter paper is removed and in dried to remove sand. Pour the filtrate in a wide mouthed bottle heat the content over a wire gauzeon a tripod stand. You will see after somtime, water evaporates leaving behind a white residue. This solid white residue is a pure sample of comman salt.

7. What are the methords of seprateion of gains after harvesting the wheat crop?

Ans. The methords of sepration of gains after harvesting the wheat crops are threshing and winnowing.

Thershing :- Threshing is the process of seprating grains from the stalks Each. Stalk has many grains. To remove the grains from the stalks, the stalks are cut and made into bundles. These bundles are allowed to dry for a few days. When the stalks are dried, grains are separated from them either manually or with the help of a machine. In manual threshing stalks are beaten on a plank or stone to free the grians.

Winnowing :- This method is usually used by the farmers to separate husk from the grains. The grains separated by threshing need to be winnowed. In winnowing, the mixture of grains and husk is allowed to fall down from a certain height. The wind carries the lights husk with it. The grain being heavier fall vertically downward on the ground and form

a heap. The husk also forms a heap, a short distance away from the heap of grains.

8. What are the stages in which the river water is purified and made fit for drinking?

Ans. The purification of river water is done in the folowing stages :

i. **Sedimentation :-** The water is allowed to stand in big tanks where the heavier suspended impurities settle down, the rate of sedimentation is increased by adding some alum to it. The impurties settle down at the bottom.

ii. **Filltration :-** The semi clear water is allowed to pass through beds of sand, charcoal and gravel to remove suspended inpurities.

iii. **Sterilisation :-** The harmful bacteria present in filtered water can Cause very serions diseases such as typhoid, cholera, jaundice, dysentery etc. So, to the filtered water bleaching power or chlorine gas is added. This kills the micro organisms and makes the water fit for drinking this water is pumped into overhead tanks for supply.

9. Why is it necessary to separate different components from a mixture?

Ans. Some times naturally ocurring substance in nature may contain many harmful substances. These substances if taken as food, can cause serious diseases such as mustad oil may contain any more oil. This oil causes nervous disorders.

10. How the water is made safe for drinking with the help of aqua guard?

Ans. Aqua gurad is a filter in which a special kind of filter resins is used for filtering solid particles present in water. The filtered water then passed through another cylinder lighted with ultraviolet rays. These rays kill germs and harmful bacteria present in the water. Thus the water becomes safe for drinking.

II Match the statements in column A with those of column B :

Column - A		Column - B.
1. The process of separation of chaff from wheat flour.	:	Sieving
2. The process of making particles of wind heavy with alum	:	Loading
3. The process of obtaining butter from curd.	:	Churning
4. The process of obtaining soluble salt from its solution.	:	Evaporation
5. The process of removing insoluble particiles of suspenstion by passing it through filter paper	:	Filtration

III. State whether the following statement are ture or false :

1. F, 2. T, 3. T, 4. T, 5. T, 6. F, 7. F, 8. F.

IV. Fill in the blanks with suitable words :

1. *Ultra voilet* rays kill the harmful micro-organisims present in the water.

2. The material from which home water filter is made is *resins.*
3. Cream is separated from milk by *Centrifugation.*
4. Iron articles are removed from metal scrap by *magnectic* sepration.
5. Two immiscible liquids are separated from each other by *Decantation.*
6. Cooking oil is separated from water by *decantation.*
7. *Winnowing* is used to separate husk from wheat grains.
8. The process of transferring clear liqid without disturbing the sediment is known as *decantation.*
9. The process in which a liquid changes into its *gases* state is called evaporation.
10. The clear liquid obtained after filtertion is caled the *residue.*

V. Define the following terms :

a. Loading :- The process of increasing the rate of sedimentation in a suspension by adding some chemical to it is called loading.

b. Decantation :- The process of transferring the clear liquid (after sedimentation) without disturbing the sediment is called decantation.

c. Sedimentation :- The process of setting down of heavier and insoluble particles in a mixture of water and insoluble substances is called sedimantation.

d. Evaporation :- When the water evaporates on heating the process is called Evaporation.

e. Filteration :- The process of Separating the insoluble and suspended solids of carious sizes from liquid, using a filter is called filtration.

VI Differentiate between :

1. A pure substance and a mixture.

Ans.

	Pure Substance	**Mixtures**
i.	Pure Substance consists of particles of only one kind.	Mixtures consist of two or more types of praticles.
ii.	Pure Substance are homogeneus	Mixtures are heterogeneous.
iii.	Pure Substances have a definite melting point, boiling point and deusities.	A mixture has no definite physical properties such as boiling poin, meeting point deusity etc.

2. Filtrate and residue.

Ans. Filtrate :- The substance we got after filteration is called filtrate.

Residue :- The solid left on the filter paper is called the Residue.

3. Magnetic and non-magnetic substances.

Ans. Magnatic substances :- The substances which can be altracted by a magnet is called magnatic substance.

Non-magnatic substances :- The substance which can not be attracted by a magnet is called non-magnetic substances.

4. Sedimentation and decantation.

Ans. **Sedmentaion :-** The process of settling down of heavier and insoluble particles in a mixture of water and insoluble substances is called sedmentaion.

Decatation :- The process of transferring the clear liquid without disturbing the sediment is called decantation.

5. Sieving and winnowing.

Ans. Sieving :- The method to separate the various component of a mixture with the help of sieve is called sieving.

Winnowing :- The method to separate a husk from the grains is called winnowing.

VII Tick the correct option in each of the following :

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

6. Changes that we See Around Us

I Answer the following questions :

1. What do you understand by physical and chemical changes?

Ans. **Physical Change :-** A physical change is a temporary and reversible change, in which the composition of the Substances remain unchanged.

Chemical Change :- A chemical change is a permanent change in which a new substance is formed with different properties.

2. With the help of an activity show that the solubility of substances increase with increase in temperature.

Ans. Dissolve copper sulphate powder in water you will see that the solubility of copper sulphate increase with the rise in temperature.

Similarly take some water in a tumbler and add a pinch of sugar to it. stir the content till, sugar disappears. Add another pinch of sugar to it and stir well. The sugar gets dissolved in water repeat the process till no more sugar gets dissolved in water. Now heat the content add some sugar to it. you would find that more sugar can be dissolved in water. This shows heat increase the solubilily of substances in water.

3. Differentiate between reversible and irreversible changes.

Ans. **Reversible Changes :-** A change which can be reversed on removing the cause is called a reversible change. In this type of change the products formed after the reaction can be converted into their original form.

Irreversible Changes :- A change which cannot be reversed even on removing the cause is called an irreversible change. In such reaction the new products formed cannot be converted back into their original form.

4. Give two examples of each of the following changes :

a. Reversible Change **b. Irreversible Change**

c. Slow Change **d. Fast Change**

e. Desirable Change **f. Undesirable Change.**

Ans a. **Reversible Change :-**

i. When a twig of mimosa (touch me not) plant is touched its leaflets are closed. After sometime they open again.

ii. An electric bulb gives light when an electric current is passed through it. The bulb returns to its original state and does not give any light when the electric plug is switched off.

b. **Irreversible Change :-**

i. A fully grown up boy cannot be changed into a baby again.

ii. When a paper is burnt it changes into ash and smoke. These products cannot be converted back into paper.

c. **Slow Change :-**

i. Change of Season. ii. Rusting of iron.

d. **Fast Change :-**

i. The lighting of a matchstick, ii. Bursting of a balloon.

e. **Desirable Change :-**

i. Formation of day and night, ii. Formation of curd from milk.

f. **Undesirable Change :-**

i. Spoiling of food stuffs. ii. Floods

5. Give two example of each of Physical and Chemical changes.

Ans. Physical Changes :-

i. Tearing off a sheet paper, ii. Grinding of substances.

Chemical Changes :-

i. Cooking food, ii. Burning of paper.

6. How would you prove that burning of paper is a chemical change ?

Ans. Burning of paper is a chemical change. When we burn paper smoke, carbon-di-oxide and other gases are formed and the ash is left behind. This properties of ash and carbon-dioxide are totally different from the properties of paper.

7. Define the following terms : Solution, Solvent, Solute, Saturates, Solution, Solubility of Solute.

Ans. i. **Solution :-** A homegenous mixture obtained by dissolving a solvent is called Solution.

ii. **Solvent :-** A liquid which dissolves another substance in it is called Solvent.

iii. **Solute :-** A substance which dissolves in a liquid is called solute.

iv. **Saturated solution :-** A solution which cannot dissolve more of a substance at a given temperature is called saturated solution.

v. **Solublity of the solute :-** The amount of solute which dissolve in 100 gm of water at a given temperature is called the solubility of the solute at that temperature.

II State whether the following statement are true or false :

Ans. 1. T, 2. T, 3. F, 4. F, 5. T, 6. T.

III Fill in the blanks with sutable words :

1. Burning of coal is a *irreversible* change.
2. No new substance is formed during a *physical* change.
3. A liquid which dissolves another substance is called a *Solvent.*
4. Solubility of substance *changes* with the rise in temperature.
5. Changes which *benefit* us are called desirable changes.

IV Tick the right option in the following :

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

V Match the statement in Column A with Column B :

1. A solution which cannot dissolve more solute at a room temperature.	:	Saturate solution
2. A substance which dissolves in a liquid	:	Solute
3. New substances are formed in this change	:	Chemical change
4. A liquid which dissolves a solute in itself	:	Solvent
5. A material made of two or more elements or compounds	:	Substance

VI Solve the crossword puzzle by using the following clues :

1. Solvent, 2. Solute, 3. Slow Change,
4. Fast Change, 5. Solution.

7. Things Around Us

I Answer the following questions :

1. How the balance of oxygen and carbon-di-oxide is maintained in the nature ?

Ans. Plants are the most important component of the enviroment. Plants manufacture their own food with the help of Carbon-di-Oxide, water and sunlight and release Oxygen and help in maintaining the balance of oxygen and carbon-di-oxide in the nature.

2. What are micro-organisms ?

Ans. Micro-organisms are very small organisms which cannot be seen with a naked eyes.

3. Write about interdependence between plants and animals ?

Ans. All animals depend on plants for food and shelter. Some animals and birds make home in the holes of the trees. Insects like ants, bettles, grasshoppers etc. also live on trees.

During breathing animals release carbon-di-oxide gas which is used by plants to make food by photosynthesis, pollination for fruit formation is done by insects, moths, butterflies and birds etc.

Animals also help in dispersal of seeds and fruits. Birds eat seeds

which come out with their excreta and the seeds are transported to other places. The excreta of animals acts as a manure for plants. It provides nutrients to plants. There are seeds with special mechanism to attach themselves to the bodies of animals and are thus, transported to other places.

4. What are the main charactersitics of living things ?

Ans.
i. All living things need food to grow.
ii. All living things move from one place to another.
iii. All living things have a definite life span.
iv. Respond to external stimuli.
v. Reproduce their own kind.
vi. Respire.
vii. Excrete their waste products.
viii. All living thing are made of very tiny cells.

5. What is habitat ? What does an organism's environment consist of?

Ans. The place where living things live is called their habitat. A habitat consists of two components : Biotic (living) and Abiotic (Non-living).

6. What are the abiotic components of the habitat ?

Ans. The abiotic components of the habitat includes physical features, such as temperature, light, soil, water pressure.

7. What do you mean by aquatic habitat ? What are the types of aquatic habitat ?

Ans. Organisms living in water are called aquatic habitat.
On the basis of the types of water we find two types of aquatic habitats. They are a follows.

i. **Fresh water habitat :**
   a. Running water habitat.
   b. Still water habitat.
ii. **Marine water habitat :**
   a. Coastal Sea.
   b. Open Sea.

8. Write a short note on desert habitat ?

Ans. In deserts and dry areas conditions for both plants and animals are very difficult to adjust. Due to scarcity of water only a very few varities of plants and animals are found in this region camels are very well adapled for this type of habitat. Spiders, snakes and scorpions are also found in deserts. Among plants cacti are mainly found in these dry areas.

9. What is meant by adaptation ? Classify plants on the basis of their habitat with examples.

Ans. Plants and animals show features which help them to survive in specific habitats. This is called adaptation. On the basis of desert, land and water habitats plants can be classified into xerophytes, mesophytes and hydrophytes.

i. Desert adaptaions : Plants that live in dry places such as desert are called xerophytes. They are exposed to a very high temperature and

low water conditions. To survive under such circumstances they have adapted the following features :

a. They have extensive root system with long roots to draw water from the deep ground.

b. Their stem becomes thick, fleshy and green to store water and to perform photosnthesis.

c. Their leaves are reduced to spines or thorns to minimize water loss through transpiration.

ii. Terrestrial adaptations : Plants growing on land are called mesophytes Cedar, mango, neem, pine, gulmohar etc. are some examples of mesophytes. Mesophytes grow in moderate conditions of temperature and water.

iii. Aquatic adaptations : Plants which live in water are called hydrophytes. Submerged leaves and stems of aquatic plants do not have a thick fibre to prevent evaporation as land plants do.

Many submerget plants do not have roots. They absorb water and minerals through the leaf surface. Lotus, water lily, water hyacinth and water chestnut (singara) are some common examples of hydrophytes.

II. Writer whether the following statements are true or false :

1. T, 2. F, 3. F, 4. T, 5. T, 6. F, 7. T, 8. F, 9. T, 10. F.

III. Fill in the blanks with suitable words :

1. The soil is a very important *abiotic* factor.
2. Running water habitat is also known as *Lotus* habitat.
3. Movement of animals from one place to another is called *Locomotion*.
4. *Coniferous* forests are the chief sources of timber.
5. The earth's 3/4th part is covered with *water*.
6. Xerophytes are plants that live in the *desert*.
7. Temperate deciduous forests grow in regions with a *moderate* to climate.
8. The breathing organs of fish are called *gills*.
9. The place where an organism lives is called its *habitat*.
10. Plants found on the land are caled *mesophytes*.

IV. Define the following terms :

1. **Decomposers :-** Decomposers break down the complex organic compounds into simple substances. These are the micro organisms. Known are decomposers.
2. **Adaptation :** The presence of specific features or certain habits, which enable the organisms to live in their surrounding is called adaptation.
3. **Hydrophytes :** Plants which live in water are called Hydrophytes.
4. **Global Warning :** The increasing concentration of carbon-dioxide in the atmosphere is leading to rise in the temperature which causes warming of the earth is called Global Warming.

5. **Photosynthesis :** Green plants make their own food with water and carbon-di-oxide in the presence of sunlight is called Photosynthesis.
6. **Respiration :** All living things need energy to perform different activities. They obtain this energy from food. The food inside the body is broken down into energy, carbon-di-oxide gas and water-vapors. This process is called respiration.

V Match the statements in column A with those in colomn B :

Ans.

Column A	Column B
1. Aerial	Monkey
2. Amphibians	Frog
3. Mesophytes	Sunflower
4. Xerophytes	Cactus
5. Hydrophytes	Lotus

VI. Differentiate between :

1. Hydrophytes and xerophytes

Ans.

Hydrophytes	Xerophytes
i. Plants which live in water.	i. Plants that live in dry places such as desert.
ii. They have extensive root system with long roots to water from the deep ground.	ii. Many submer get plants do not have roots they absorb water and minerals through the leaf surface.
iii. Their stem becomes thick, fleshy and green to store water and to perform photosynthesis.	iii. Stems of aquatic plants do not have a thick fibre to prevent evaporation.

2. Biotic and abiotic components of the environment.

Ans. Biotic :- i. Plants, ii. Animals, iii. Micro-organisms.
Abiotic :- i. Temperature, ii. Light, iii. Soil, iv. Water, v. Pressure.

3. Plants and animals.

Ans.

Plants	Animals
i. Most plants prepare their own food.	i. Animals cannot prepare their own food.
ii. They cannot move from one place to another.	ii. They can more from one place to another.
iii. They keep on growing till their death.	iii. They grow up to a cartain age in their life.
iv. They have external as well as internal growth.	iv. They have only internal growth.
v. Growth is not uniform.	v. Growth is uniform.
vi. They respond very slowly to external stimuli	vi. They respond very quickly to external stimuli.

4. Excretion and respiration.

Ans. Excretion :- The body of all living things perform a process through

which all harmful and useless products are removed out of it.

Respiration :- All living things need energy to perform different activities. They obtain energy from food. The food inside the body is broken down into energy, carbon-di-oxide gas and water-vapour.

5. Autotrophs and heterotrophs.

Ans. Autotrophs :- the process of manufacturing of foods is known as photosynthesis and the mode of nutrition is called autotrophic.

Heterotrophs :- Animals depend on plants or on other animals for their food so the animals are called consumers and their mode of nutrition is heteraphic.

VII. Tick the correct option in the following :

1. a, 2. d, 3. d, 4. a, 5. a, 6. b, 7. c.

8. Parts of A Flowering Plant and their Functions

I. Answer the following questions :

1. Classify plants on the basis of their size, shape and life span. Give examples.

Ans. On the basis of size, shape and life span plants are classified as herbs, shrubs and trees.

Herbs :- Herbs are small plants with a green, soft stem. they are normally 3-4 feet in height. They have often juicy and fleshy stems. Common examples of herbs are mint, balsam, wheat, mustard, corn, paddy and coriander.

Shrubs :- Shrubs are medium sized plants with hard and woody stems. Many branches are seen rising just above the gorund. They are less than 3 metres tall but some shrubs may grow as tall as a small tree. Shrubs survive for many years yet their life span is less than the trees. Common examples of shrubs are Rose, China Rose, lemon.

Trees :- Trees are tall plants with hard and woody stem. They have a main trunk from which branches and leaves arise. Trees survive for a number of years. Common examples of Trees are Mango, Neem, Peepal.

2. What are the functions of the roots ? How would you prove that roots anchor the plants to the soil ?

Ans. Roots perform several functions for the plant. They fix the plant firmly with the soil, absorb water and minerals from the soil and also bind the soil particules tightly together. Roots help in holding the soil particles together thus, preventing erosion or blowing away of the soil particles. In some plants, roots are modified to perform additional function of storage and respiration.

The root system is the underground part. It fixes the plant in the soil. The root system has a main root going deep inside the soil and

from it many side pranches arise. They spread in the soil and provide extra support to the plant in the soil. That is why it is not easy to pull out a complete plant from the soil.

3. What are the main pars of a flowering plant ? Draw a labelled diagram of a flowering plant.

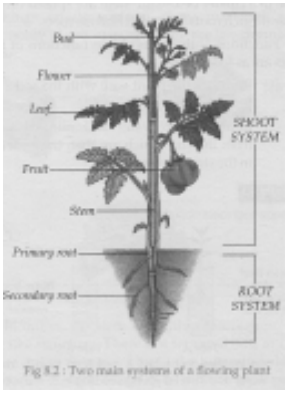


Fig 8.2 : Two main systems of a flowering plant

Ans. Parts of flowing plants are : root, stem, fruit, leaf, flower and bud.

4. What does the shoot system consist of ? What are the different functions of the stem ?

Ans. The shoot system consists of stem, branches, leaves, flowers, fruits and seed. The stem performs the following functions :

i. The stem keeps the plant erect.

ii. The stem bears leaves, flower and fruits. It serves as a link between the roots, the leaves and flowers.

iii. The stem and its branches hold the leaves in such a manner that the leaves get maximum amount of sunlight.

iv. When young, the stem is green and helps in the process of photosynthesis.

v. It carries water and mineral salts from the roots to the leaves and flowers.

vi. It carries the manufactured food from the leaves to the roots and other parts of the plant body.

vii. In some cases, the stem may be modified to perform the functions of storage, food manufacture (photosynthesis) and support.

5. How stems carry outsome additional functions in some plants ? Explain with examples.

Ans. Stem carries out the following additional functions in some plants :-

i. **Modification of stem for storage :-** Their structure becomes modified some stems store food and become swollen. This stored food is used by the plant during unfavourable conditions. Examples are potato, onion, ginger etc.

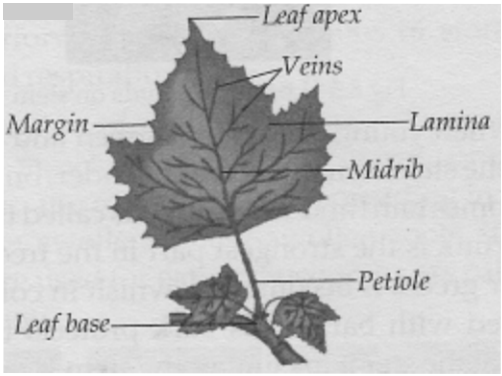
ii. **Modification of stem for support :-** In climbers like cucumber, gourd etc. The stem is very weak and need support. Some thread like structures called tendrils arise from the stem of these plants. These tendrils coil around the neighbouring object and thus help the plant to climb up. These tendrils are formed by the modification of the terminal or auxiliary bud.

iii. **Stems modified for photosynthesis :-** In deserts, water is scarce. The stem prepares food for the plant. So, the leaves of these plants are modified into spines to prevent the loss of water.

iv. **Stems modified for protection :-** In some plants, thorns develop in the axils of the leaves or at the apex of a branch. So, they are stem structures. Thorns are hard, straight and sharply pointed structures developed for the protection of the plants. Examples of such plants are lemon and bougainvillea.

6. With the help of a diagram write about the different parts of a leaf.

Ans. The leaf has three main parts.. The broad, flat green part of the leaf is called the lamina or leaf blade, its top is called leaf apex. The edge of the lamina is called the margin. The part joining the leaf to the stem is called petiole. The petiole continues in the leaf as mid-rib. The mid-rib branches into thread like structures are caled viens. Veins transport water and minerals to the leaf. the design made by veins in a leaf is called Leaf-venation.



Parts of a typical leaf

7. How many types of leaves are there ? Write with examples.

Ans. There are two types of leaves :

i. **Simple leaf :-** In a simple leaf the lamina is not divided into segments. So, the lamina is entire and whole. A simple leaf has an auxiliary bud in its axil. The leaves of hibiscus, mango, dahlia, sunflower etc. are some examples of simple leaf.

ii. **Compound leaf :-** In a compound leaf, the lamina is divided into segments called leaflets. The leaves of rose, tamarind, gulmohar, neem etc. are examples of compound leaves.

8. How do leaves perform additional functions in some plants ? Explain.

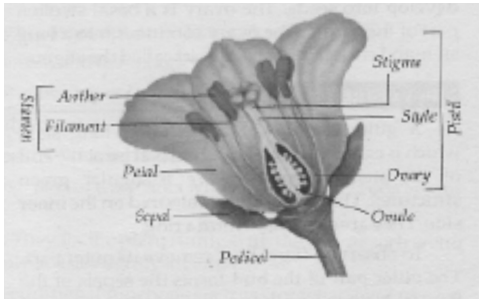
Ans. In some plants leaves get modified to carry additional function. They are as follows :

i. **Leaves modified for vegetative propagation :-** In bryophytes, buds develop along with the leaf margin. These buds give out fibre roots. Roots on the lower leaves strike the soil and give rise to new plants.

ii. **Leaves modified for climbing (support) :-** In some weak stemmed plants leaves are modified into tendrils. Tendrils help plants to climb up the supports. For example the upper leaflets in sweet pea, the petiole in clematis, the aplex of the lamina in gloriosa and stipules in smilexare modified into tendrils.

9. What are the main parts of a flower ? Explain with the help of a l belled diagram.

Ans. Each flower has a stalk called pedicel. But some flowers do not have pedicel. Such flowers are called sessile. Besides the stalk a flower, in general shows four sets of whorl parts arranged in rings.



Parts of a flower

The outermost ring or set is composed of green, leaf like protective structures called sepals. They protect the flower while it is a bud. Usually a flower contains five sepals but their number may differ. Just inside the sepals are brightly coloured corolla or petals. Inside the petals are stamens. Stamens consist of anther and filaments. The central part of the flower is the female part, consisting of a flask-shaped organ called pistil or carpel. The carpel is the female reproductive part of the flower. The carpel consists of a stigma, a style and an ovary. The ovary contains one or more ovules, which later develop into seeds. The ovary is a basal swollen part of the carpel.

10. What are fruits and what are their main functions ?

Ans. All flowering plants produce fruits . A mature ovary with its seeds becomes fruits. Oranges, cherries, apples etc. fruits are called fleshy fruits. Nuts, corn and beans are called dry fruits.

Functions of fruits :-

i. Fruits enclose the seeds and thus, protect them from injury and unfavourable conditions.
ii. Some fruits like mangoes, chickoo, pear, apple etc. store food.
iii. Some fruits are very goods source of iron, protein and vitamins.
iv. Fruits are eaten by men and animals and thus, help in dispersal of seeds.

II. Write whether the following statements are true or false :

1. T, 2. T, 3. F, 4. F, 5. F, 6. F, 7. F, 8. F, 9. T, 10. T.

III. Match the statements in column A with those in column B :

1.	Stamen	Flower
2.	Stomata	Leaf
3.	Leaf modification	Support
4.	Stem tendril	Grapevine
5.	Rhinzome	Pitcher plant
6.	Prop root	Ginger
7.	Tuberous root	Storage
8.	Fibrous root	Maize
9.	Tap root	Mango
10.	Long stalk of a flower	Pedicel

IV. Define each of the following :

1. **Shrub :-** Shrubs are medium sized plants with hard and woody stems. Many branches are seen rising just above the ground. They are less than 3 metres tall but some shrubs may grow as tall as a small tree. Shrubs survive for many years yet their life span is less than the trees. Rose, lemon, pomegranate, henna are some examples of shrubs.
2. **Stamen :-** Stamens are found inside the petals. Stamens consist of anther and filaments. The stamens are the male reproductive part of the flower. Anthers are swollen structures present at the tip of filaments. They produce a powdery substance called pollen grain.
3. **Petals :-** Petals are found in just inside the sepals and are bright in colour. It is also called corolla. They attract the insect and birds to the flower for pollination.
4. **Lamina :-** The broad, flat green part of the leaf is called lamine or leaf blade. Its tip is called leaf apex. The edge of the lamina is called the margin.
5. **Pedicel :-** Each flower has a stalk called pedicel.

V. Fill in the blanks with the suitable words :

1. The *stamen* is the male reproductive part of a flower.
2. Onion is a modified *Stem*.
3. Leaves are green because they have *Chlorophyll*.
4. The part of a plant under the soil is called *root* system.
5. The ovaries are transformed into *stigma*.
6. The *stem* hold the plant erect.
7. The embry has one or two leaves called *Colyledons*.
8. The design made by veins in a leaf is called *Leaf-venation*.
9. Thick and swollen roots are called *tuberons* roots.
10. *Petiole* is the corner place between the stem and the leaf-stalk.

VI. Tick the correct option in the following :

1. c, 2. b, 3. d, 4. a, 5. d, 6. a, 7. d, 8. c.

9. Movement in Livings

I. Answer the following questions :

1. What is skeleton ? What are the different parts of human skeleton ?

Ans. Bones form the general framework of the body, is called skeleton. The human skelaton is divided into two parts called the axial skeleton and the appendicular skeleton. The axial skeleton has mainly three parts the skull, the spinal column or backbone and the ribcage.

2. Write a short note on the spinal column or backbone ?

Ans. The spinal column forms an axis that supports the other parts of the body. The skull is at the top of the backbone. The backbone consists of

separate bones called vertebrate with fibrous discs between them. The cervical vertebrate (neck bones) are made up of seven bones. The twelve thoracic vertebrate are at the back of the chest. The spine protects the delicate spinal cord. The main function of the backbone is to make the human stand erect. A large number of movable joints in it help the man to bend backward, forward and side ways.

3. Write a short note on the appendicular skeleton of human beings.

Ans. The bones of arms and legs and their supports make the appendicular skeleton. The shoulder gridle consists of a triangular shoulder blade called scapula and a collar bone called clavicle. The skeleton of the arms is divided into humerus (upper arm), radius and ulna (forearm), carpus (wrist bones), meta carpus (palm) and phalanges (fingers).

The bones of leg consist of femur (thigh), tibia and fibula (leg), tarsus (back of the foot, metatarsus (forefoot) and phalanges (toes), Pelvic girdle or hip gridle whichis made up of two hip bones attach the leg to the trunk. Each of these bones consists of three bones : the ilium, the ischium and the pubis. These bones are fused in adults.

4. What is meant by a joint ? What are the functions of joints ? How many types of joints you know about ?

Ans. The place where two bones meet is called a joint. The skeleton together with muscles enables the body to move. The bones of the arms and shoulders serve as levers against which the muscles that move the arm can pull. Joints are divided into two parts : Movable and Immovable joints.

Freely movable joints are :

i. Ball and socket joint, ii. Hinge joint iii. Pivot joint.

Immovable Joints :- These joints do not allow any movement of the bones. The bones of the skull except of the Jaw bones, meet in fixed joints.

5. Define muscles. What do you understand by the skeletal or voluntary muscles ? Give examples of a few voluntary muscles.

Ans. A muscle is a tough and elastic tissue that makes the body parts move. Muscles also help in performing different activities necessary for the growth and for maintaining a strong and healthy body.

Skeletal muscles :- These muscles help to hold the bones of the skeleton together and give the body its shape. Most skeletal muscles are joined to bones by a tough and flexible connective tissue called tendon.

Skeletal muscles are also called voluntary muscles because we can consciously control these muscles. Jaw muscle, Pectoral muscle, Abdominal muscles and calf muscle are the example of skeletal muscles.

6. How do the muscles perform their functions ?

Ans. The body muscles are like rubber bands. They can pull and not push the bones. They contract and relax when they work. Each movable joint has two sets muscles, one to pull the bones up and other to pull the bones down.

The arm has a set of muscles, the biceps above the arm and the triceps below the arm. When the biceps contract, the arm and hand get lifted up and when the triceps contract, the hand moves downward and gains its original position. Thus, the upward and downward movement of arm are brought about by the contraction and expansion of biceps and triceps.

7. What is the mode of locomotion in fishes ?

Ans. Fish swim in water with the help of fins and tails. To move forward by swimming their tail from side to side while curving the rest of their body alternately to the left and to the right. Their vertebral column has to be bent, to allow the fish's body to curve like this.

Fish have a swim bladder. This is an air filled sac just below the vertebral column. By adjusting the amount of air in the swim bladder, a fish can float at the right depth in the water. The streamlined body of the fish allows to slide easily through water.

8. What is the difference between movement and locomotion ?

Ans. The act of moving from one place to another is called locomotion. It involves the movement of the whole body. Movement is the change in position of only a part of the body without changing the position of the whole organism as the movement of stem towards light in plant. Fixed animals such as sponges, corals and sea anemones also show this kind of movement. Locomotion is found only in animals. They locomote by walking, running flying, swimming and jumping activities.

9. What are the flying organs of birds ? How do the birds fly in the sky ?

Ans. There are special muscles attached in the birds. The fore limbs of birds are modified into wings for flight. There are special muscles attached to bones that are adapted for flight in the birds. Birds also have hollow, light and strong bones, easily supported in the air.

The body of a bird is covered with feathers. The feathers on the tail and wings give a large surface area, which helps to lift the birds upward and keep the bird flying in the air.

The fore limbs of birds are modified wings. They fly by flapping their wings up and down. Each flapping includes a down stroke and a upstroke.

To start, the wings are held vertically and fully spread in the down stroke they move obliquely forward, downward and backward. In the upstroke wings are rotated and partly folded to let the air slip through, thus making it easier to lift themselves and propel forward in the air.

II. Write whether the following statements are true of false :

1. T, 2. T, 3. F, 4. T, 5. T, 6. F, 7. T, 8. T, 9. T.

III. Fill in the blanks with suitable words :

1. *Fish* have stream lined body.
2. The skull is a part of *axial* skeleton.
3. Snakes crawl with the help of *loop*.

4. The joint where our neck joints the head is a *pivot* joint.
5. The *fore* limbs of birds are modified into wings.
6. Amoeba shows locomoton with the help of *pseudopodia*.
7. Fish swim in water with the help of *fins* and tail.
8. The elbow straightens when the *striated* muscles contract.

IV. Match the statement in column A with those in column B :

1.	Locomotion	:	Moving from place to place.
2.	Movement	:	Change in position of only a part of the body.
3.	Insects	:	Exoskeleton
4.	Birds	:	Endoskeleton
5.	Cilia	:	Paramaecium
6.	Pseudopodia	:	Amoeba

V. Name the type of muscles that :

1.	are found in the heart	:	Cardiac
2.	are found below the arm	:	Muscles
3.	gibe the body shape	:	Skeleton
4.	have striations	:	Striated
5.	are not under concious control of the brain	:	Involuntary

10. Moving Things and Measuring Distances

I. Answer the following questions :

1. What is measurement and what is its importance ? What were the modes of measurement in older times ?

Ans. The comparison of an unknown quantity with a known fixed quantity of the same kind is called measurement. It is impotante because without measurement we cannot get the correct position. In ancient time men did not have any measuring device. So he used to measure things with the help of other object of by using hand spans.

2. What do you understand by unit ? What is the unit of length and why has it been chosen as the standard unit ?

Ans. The known fixed quantity of measurement is known as unit. The unit of length is metre. For the sake of uniformity, Scientists all over the world have been accepted 'metre' as the standard unit of length. Symbol for metre is 'm'.

3. What are the multiples and sub-multiples of metre ? What are the various devices for measuring length ?

Ans. Multiples of Metre :- One kilometre stands for one thousand metres. Symbol for kilometre is 'km'. 1 kilometre (1km) = 1000 metre (m).

Sub-multiples of metre :- To express length shorter than metre a sub-multiple of a metre is used. It is called a centimetre (in short form cm).

The word milli means one thousandth part (1/1000). Thus, one millimetre is one thousandth part of a metre. In other words, one metre is equal to 1000 millimetres.

Various device for measuring length we use a scale for measuring length. A tailor uses a measuring tape. A cloth merchant uses a metre rod. In a school libraty we use a wooden metre scale.

4. What percaution should be taken while measuring the length of an object and why is it necessary to take these precautions ?

Ans. While taking measurement, we must be very careful. We have to take certain precautions while using devices for measuring are as follows :

i. Place the scale in contact with the object along its length.

ii. The eye must be positioned in front of and in line where the measurement is to be taken.

iii. The ends of the scale (or the rod) must not be damaged. If the ends of the scale are broken and the zero mark cannot be read clearly then use the mark 1 cm or any other.

iv. Subtract the mark you use (1 cm) from the reading at the other end.

v. The scale should be placed correctly along the length to be measured. There are certain things such as cloth, pipe or lace which are sold in terms of length. If you go to buy them, you must ensure that the metre scale is correct.

5. What do you understand by rest and motion ? What is the main difference between these two terms ? Explain with the help of example.

Ans. Body is in rest when its position does not change with time as compared to the things around it or when the position of a body with respect to its surrounding does not change with time, the body is said to be at rest.

When the position of a body with respect to its surroundings, changes with time is said to be in motion. Example :- When a boy runs down a street, its position changes continuously and thus, the boy is said to be in motion. The motion of an object should always be throught of with respect to a fixed point. for example, when a train passes a platform the train is in motion with respect to the platform. The rest and motion are quite opposite to each other and thus, these two terms are relative to each other.

6. What are the different kinds of motion ? Write in detail about any one of them.

Ans. Different kinds of motion are :

i. **Translatory motion :-** These motion is also called linear motion because in this type of motion an object moves in a line, either straight or curved. Linear motion is of two type :

A. **Rectilinear motion :-** If an object moves in a straight line it has rectilinear motion. Examples of rectilinear motion are

a. A ball rolling on a plane ground. b. Opening of a tables drawer.

B. **Curvilinear motion :-** If an object moves in a curved line, it has curvilinear

motion.

ii. **Circular motion :-** Some object move in circle and their motion is said to be circular motion. Circulating motion is of two type :

A. Revolving motion. B. Rotatory motion.

iii. **Vibratory motion :-** In vibratary motion the object undergoes a change in shape and size.

iv. **Oscillatory motion :-** Some objects move as a whole to and fro or back and forth along the same path without any change in their size and shape. The motion of such object is called oscillatory motion.

v. **Periodic motion :-** A repetitive motion which repeats itself after a fixed interval or regular interval of time is called the periodic motion.

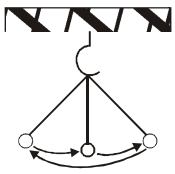
vi. **Non- periodic motion :-** A repetitive motion, which repeats itself, but not at fixed intervals of time is called non-periodic motion.

vii. **Uniform motion :-** When an object covers equal distances in equal intervals of time along a straight line, the object is said to move in uniform motion.

viii. **Non-uniform motion :-** When an object does not cover equal distances in equal intervals of time along a straight line, the object is said to move in non-uniform motion.

7. What do you mean by an oscillatory motion ? How will you show that a ball tied to a spring shows oscillatory motion ?

Ans. Some objects move as a whole to and fro or back and forth along the same path without any change in their size and shape. The motion of such objects is called oscillatiory motion.



Take a metallic ball and tie it to one end of a string. Tic the other end of the string to a support. When you move the ball to the right side and release it the ball moves from the right to the left and then back to the right. It does so repeatedly. This type of motion of the ball is called oscillatory motion.

8. What do you mean by uniform and non-uniform motion ?

Ans. Uniform motion :- When an object covers equal distances in equal intervals of time along a straight line, the object is said to move in uniform motion.

Non-uniform motion :- When an object does not cover equal distances in equal intervals of time along a straight line, the object is said to move in non-uniform motion.

II. Write whether the following statements are ture of false :

1. T, 2. T, 3. F, 4. F, 5. F, 6. T, 7. F, 8. T, 9. T, 10. F.

III. Fill in the blanks withe the suitable words :

1. *Metre* is written as 'm' in short form.
2. Rectilinear and curvilinear motion are two types of *translatory* motion.
3. The distance between two cities is measured in *Kilometre*.

4. The motion of a simple pendulum is *oscillatory* motion.
5. When the position of a body changes with time, with respect to its *surrounding* the body is said to be in motion.
6. A multiple of metre is called *Kilometre*.
7. One thousandth part of a metre is called one *millimetre*.
8. A boy on a swing describes *oscillatory* motion.
9. *Rest* and motion are two relative terms.
10. The fundamental unit of length according to SI unit is *metre*.

IV. Match the statements in column A with those of column B :

1.	A length equal to 1000 m.	: Kilometre
2.	A length which is equal to 1/1000 the part of a metre	: Millmetre
3.	A repetive motion in which the moving object undergoes a change in shape	: Vibratory motion
4.	A motion in which a body moves about a fixed axis, without changing its position	: Rotatory motion
5.	The motion which occurs again and again at irregular intervals of time	: Non periodic motion
6.	The motion in which the particles of a body travel through the same distances	: Translatory motion

V. Slove the crossword puzzle using the clues given below :

Ans. Across :

1. Motion
2. Rectilinear
3. Meter
4. Length

Down :

5. Oscillatory
6. Vibratory
7. Millimetre

VI. Following statements are incorrect. Write the correct statements :

Ans. 1. The motion of a string of a sitar is Vibratory Motion.
2. One millemetre is equal to 1000 metres.
3. Metre is the S.I. Unit of length.
4. The revolution of the earth around the sun is Circulatory Motion.
5. The motion of describes by the needle of a sewing machine is Oscllatory Motion.
6. The motion on of a bus going around a curved track is Curvilineas.

VII. Differentiate between each of the following :

1. Periodic and non-periodic motion.

Ans. Periodic Motion :- A repelitive motion which repeats it self after a fixed interval or regular interval of time is called the periodic motion.

Non Periodic Motion :- A repetitive motion which repeats itself but at fixed intervals of time is called non-periodic motion.

2. Uniform and non-uniform motion.

Ans. Uniform Motion :- When body covers equal distance in equal interval of time is called Uniform.

Non-Uniform Motion :- When an object does not cover equal distance in equal interval of time is called Non-Uniform Motion.

3. Rectilinear and corvulinar motion.

Ans. Rectilinear Motion :- If an object moves in a straight line it has Rectilinear Motion.

Curvilinar Motion :- If an object moves in a curved line it has Curvilinear Motion.

4. Rest and Motion.

Ans. Rest :- A body is in a rest when its position does not change with line as compared to the things around it.

Motion :- When the position of a body with respect to its surroundings. Changes with time, the body is said to be in motion.

5. Centimetre and millimetres.

Ans. Centimetre :- To express length shortes than metre, a sub-multiple of a metre is used it is called centimetre.

Millimeters :- Some lengths are even shorter than one centimetre. To express such length we use another sub multiple of metre called millimetre.

VIII. Write the type of motion of the following :

1.	A vehicle moving straight on a road	:	Rectilinear Motion
2.	The motion of the wheel of your bicyle	:	Revolving
3.	Motion of the earth around the sun	:	Periodic
4.	Motion of a potter's wheel	:	Rolatory
5.	Motion of your chest	:	Periodic
6.	Motion of a ceiling fan	:	Rotatory Motion
7.	Motion of the swing	:	Periodic
8.	Motion of an ant	:	Rectitinear Motion

11. Light and Shadows

I. Answer the following questions :

1. What is light ? What are the main sources of light ?

Ans. A light is an invisible source of energy which causes sensation of vision in us. The main sources of light are Sun, Moon and man made sources of light like Candles, Lamps, Electric light etc.

2. Write some everyday phenomena which prove that light travels in a straight line.

Ans. **There are many phenomena in everyday life which suggest that light travels in a straight line. They are as follows :**

i. Formation of shadows suggests that light travels in a straight line.

ii. The light coming from smaller laser torches, used as pointers.

iii. **The beam of light coming from the projection room in the cinema hall.**

iv. **The beam of search light used in a light house or airport.**

v. **When the head light of a car is switched on.**

vi. **If we almost close our eyes and look at the burning candle flame, it appears as if it is giving out a few beans of light which are travelling in a straight line.**

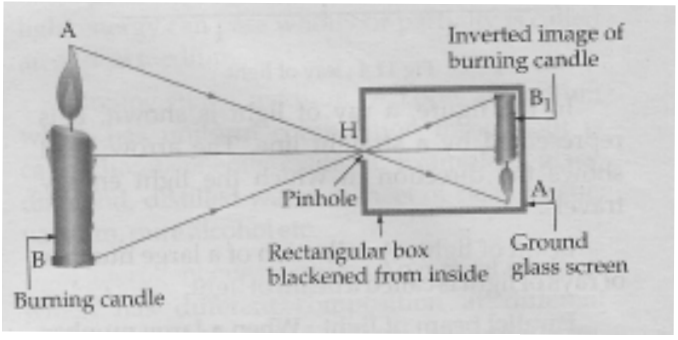
vii. **When a beam of light enters a dark room through a ventilator, we can see the light travelling in a straight line.**

viii. **Formation of day and night suggests that light travels in a straight line. If this were not so, then light would have curved around the earth and there would have been seen light during night too.**

3. How will you construct pinhole camera ? Explain the working of this camera with the help of a diagram.

Ans. **Construction of a pinhole camera :- It consists of a rectangular cardboard box in such a way that its one side is made of ground glass screen. The side opposite to the ground glass has a hole in the middle, whose size is equal to the pin head of common pin. The box is blackened from inside so as to absorb any light which falls on the walls of the box directly or indirectly.**

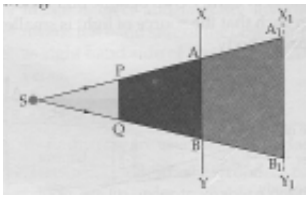
Working of a pinhole camera :- Consider a lighted candle AB, infront of the pinhole camera. The rays coming from different points of the candle, travel in all directions. A ray of light starting from point A,



along AH, after passing through the pinhole falls on the ground glass screen at point A. Another ray starting from point B, along BH, after passing through the pinhole falls on the ground glass screen at point B. Thus, all the rays starting in between the point A and B, after passing through the pinhole camera will meet at screen in between point A, B. Thus A, B, is the image of the candle AB.

4. **What is a shadow ? Write about the formation of shadow when source of light is a point. Take the help of a diagram.**

Ans. Shadow is a dark patch formed behind an opaque body placed in the path of light.



Formation of shadow when the source of light is point :- As shown in the figure S is the point source of light PQ an opaque body and XY the screen placed in a dark room. The rays start from the point source S along SP and SQ and reach the screen XY at points A and B. The region between point A and B does not receive any light and hence, is umbra region. The size of the shadow increases when the screen is moved backward to position X_1Y_1. Conversely, the size of the shadow decreases when the screen is moved towards the opaque region.

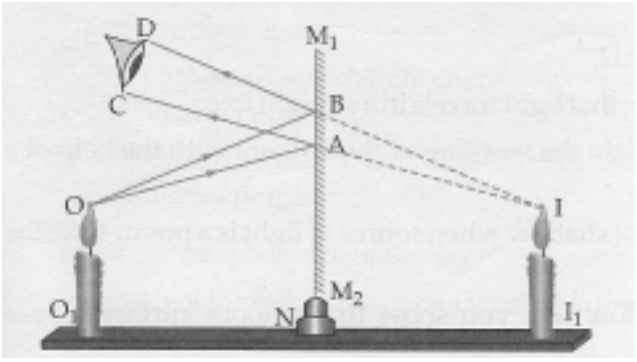
5. What is meant by the reflection of light ? How will you show that smooth surfaces cause reflection of light ?

Ans. The phenomenon due to which a ray of light travelling from one optical medium to another optical medium, bounces off the surface, with the change of angle is called reflection of light.

Smooth surfaces cause reflection of light :- Take a smooth surfaced plane mirror. Allow the sun rays to fall on it. Turn the mirror through various angles such that light of the sun on striking it, falls on a wall. You will motice that as the angle of the mirror is changed, the position of the light on the wall also changes. Thus, we can say that a smooth surfaced mirror reflects light.

6. Explain with the help of a diagram about the formation of image by a mirror. What are the characteristics of an image formed by a plane mirror ?

Ans. Formation of image by a plane mirror :- Take a plane mirror and place it upright with the help of a stand. Place a lighted candle before it. The light will be thrown in all directions from the flame of the candle O. To understand how



the image is formed, take two points A and B on the mirror on which the incident rays OA and OB fall respectively. These rays get reflected from the mirror. We see reflected rays AC and BD respectively. The reflected ray appears to reach the eyes from the point behind the mirror.

Characteristics of image formed by a plane mirror :-

i. The image formed is virtual. It cannot be taken on screen.

ii. Image is formed as far behind the mirror, as the object is infront of it.
iii. Image is of the same size as that of the object.
iv. Image is erect and laterally inverted. It means left hand side of the object appears as right hand side of the image and vicevarsa.

7. How long will it take the light from the moon to reach the earth, if distance of the moon from the earth is 4,00,000 km and light travels at a speed of 3,00,000 km/s.

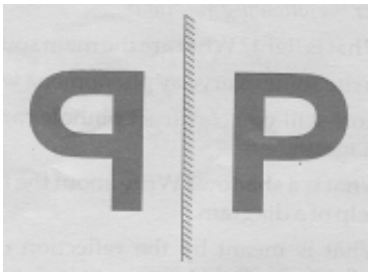
Ans. In 3,00,000 km light travels = 1 sec.

$\therefore$ 1 " " $= \frac{1}{3,00,000}$

4,00,000 " " $= \frac{1}{3,00,000} \times 4,00,000$

$= \frac{4}{3} =$ 1.33 sec. (aprox.)

8. What do you mean by the term lateral inversion ? How will you show that a plane mirror produces lateral inversion ?



Ans. The phenomenon due to which left hand side of the image and the left side of the object appears to be the right side of the image and vice verso is called Lateral Inversion.

Lateral Inversion :- In a plane mirror the right side of an object appears to be the left side of the image and the left side of the object appears to be the right side of the image. To understand this effect stand infront of a mirror and raise your right hand. You will observe that your left hand is seen raised in the image.

Similarly if you write litter P on a paper and hold the paper infront of a mirror, you will observe that 'P' appears as 'Ꝑ'. Thus images formed by a plane mirror show left right inversion known as Lateral inversion.

II. Write whether the following statements are true or false :

1. T, 2. F, 3. F, 4. F, 5. T, 6. F, 7. F, 8. F.

III. Fill in the planks with the suitable words :

1. Objects that emit light of their own are called *Luminious* objects.
2. Light is an *Invisible* energy which causes in ussensation of vision.
3. A region of partial darkness is called *Penumbra*.
4. A pinhole camera is based on *Straight line* propagation of light.
5. The angle between the reflected ray and the *normal* is called the angle of reflection.
6. The distance covered by light in one *second* is called the speed of light.
7. The perpendicular drawn at the point of incidence to the surface of the mirror is called *Normal*.
8. *Shadow* is formed when the path of light is obstructed by an opaque body.

IV. Match the statements in column A with those in column B :

Ans.

1.	A body emitting light on its own	:	Luminous
2.	The speed of light	:	$3x10^8$ m/s
3.	A body which does not allow light to pass through it	:	Opaque
4.	The path along which light energy travels in a given direction	:	Ray of light
5.	An optical medium which has different composition at different points	:	Heterogeneous.

V. Tick the correct option of the following :

1. b, 2. d, 3. b, 4. d, 5. a.

12. Electricity and Electric Circuits

I. Answer the following questions :

1. What is an electric cell ? Describe it with the help of a well-labelled diagram.

Ans. Electric cell is a source of electric energy produced from the chemicals within the cell.

An open up dry cell has a jelly like substance composed of ammonium chloride and starch. The positive terminal (+) consists of a carbon rod which is surrounded by a mixture of manganese dioxide and carbon. This is placed inside a can made of zinc. The zinc acts as the negative terminal (-). The top of the cell is sealed with a metallic disc. When the positive and negative terminals are connected in a circuit and electric current flows through it. This current is produced from the chemicals inside the cell. The cell stops producing electricity, when the chemicals are used up.

2. What is an electric circuit ? What are its components and how does an electric current pass through it ?

Ans. The complete path from one terminal of an electrial cell through the bulb and back to the other terminal of the electric cell is called an electric circuit. The closed path of an electric circuit is commonly called a circuit. The different parts of the circuit are called the components of the circuit. The circuit contains a single cell, a bulb and a switch. These components are connected together by wire leads. In an electric circuit, particles flow from the negative terminal of the cell through the wire and the bulb and again enter the cell through its positive terminals. If any of the terminals is disconnected from the cells or from the bulb, the circuit is broken and the current stops flowing.

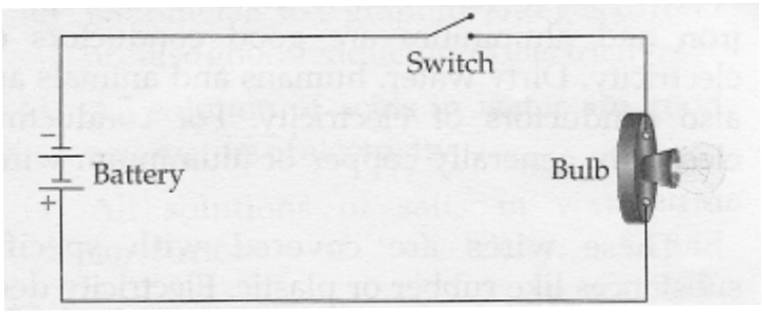
3. What is the requirement of a closed conducting path ? Explain.

Ans. The closed conducting path extends from the positive terminal to the negative terminal. It is not enough that there is simply a closed conducting loop; the loop itself must extend from the positive terminal to the negative terminal of the electric cell. An electric circuit is like a water circuit at a

water park. The flow of charge through wires is similar to the flow of water through the pipes and along the sides at a water park. If a pipe gets plugged or broken such that water cannot make the complete path through the circuit, them the flow of water will soon stop. In an electric circuit, all connection must be made by conducting materials capable of carrying charge.

4. Describe the circuit inside a torch and make its labelled diagram.

Ans. There are two cells inside the torch. When we push the switch energy from the cells makes the bulb light up. The switch completes the circuit. So that the current can flow round the bulb. The circuit inside the torch connects the cells, bulb and switch. The current flows through all the components in turn. So we call it a series circuit. By symbols, the circuit can be shown as follows :



5. What is electriciy ? How many types of transformations of electricity are there ? Give examples of each type of transformation of electricity.

Ans. Electricity is the energy associated with charged particles.

There are 5 types of transformation of electricity :-

i. **Heat energy :-** Used for heating and for cooling. Such as Room heater, Hot air blowers, electric iron and refrigerators, air conditioners etc.

ii. **Light energy :-** Devices used are electric bulbs and fluorescent tube.

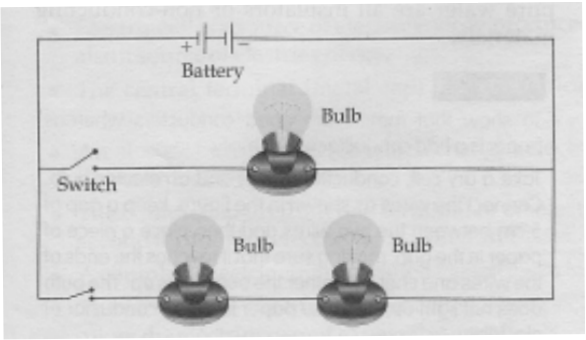
iii. **Sound energy :-** Devices used as radios, transistors, loudspeakers and tape recorder.

iv. **Mechanical energy :-** Electric motors, mixers and grinders, vacum cleaners, lifts etc.

v. **Magnetic energy :-** Electromagnets electric bells, transformers etc.

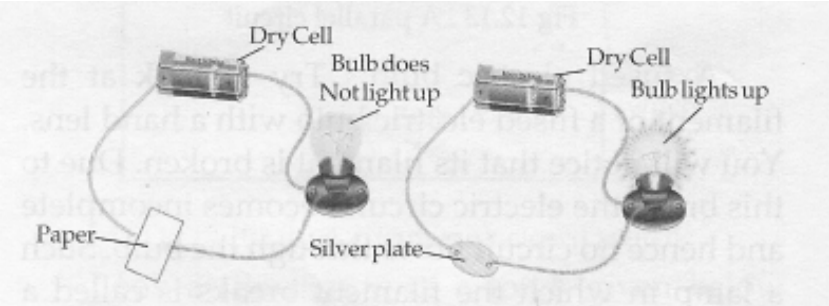
6. Draw a parallel circuit diagram composing two bulbs, a cell and switch.

Ans.



7. Discribe a simple experiment to differentiate good conductors from bad conductors.

Ans. Metals are good conductors where as paper is a bad conductor of electricity. Take a dry cell, conductivity wires and an electric bulb connect the wires keep a gap of 5 cm between the two wires and then place a piece of paper in the gap making sure that it touches the ends of the wires and check whether the bulbs lights up. The bulb does not light up, because paper is a bad conductor of electricity.



Now place a solid metal like iron, silver etc. between the gap of two ends. The bulb lights up, because metal is a good conductor of electricity.

8. Explain with the help of a diagram how to construct a simple electric switch.

Ans. To construct a simple electric switch :- To construct a simple electric switch you need a small piece of soft wood or thermocol, a safety pin, two thumbtacks (drawing pins). Three plastic coated copper wires with bare ends, a torch bulb, an electric cell and cellotape. Take one thumbtack and tightly wire to its pin. Pass the loop at the end of the safety pin through the thumbtack. fix the thumbtack in the soft wood lightly in such a way that the safety pin can just turn around.

Now take the second thumbtack and in it tightly wind up the end of another plastic coated copper wire fix the thumbtack in the wooden board in such a way that the safety pin can easily make contact with it. The switch is ready for use.

II. Write whether the following statements are true and false :

1. F, 2. T, 3. T, 4. F, 5. F, 6. F, 7. T.

III. Fill in the blanks with suitable words :

1. A device that is used to break an electric corrent is called a *switch*.
2. In a dry cell, the positive terminal is made of *carbon*.
3. Electric current passes through *conductors*.
4. The *positive* terminal of an electric cell is always positive.
5. An electric *circuit* is a continuous path along which the current flows.
6. The dry cell was invented by *Geogre leclanchi*.

IV. Match the statements in column A with those in column B :

Ans. 1. A material which allows electric current to flow through it : Conductor

2. The energy which flows in a circuit : Electric current
3. The path along which electric current flows : Electric circuit
4. A device which converts chemical energy into electrical energy : Cell
5. A material which does not allow electric current to pass through it : Insulator

V. Difine each of the following :

Ans. 1. **Electric current :-** Electricicty is a kind of energy associated with charged partictes moving charged particles cause an electric current.

2. **Electric circuit :-** The complete path from one terminal of an electric cell through the bulb and back to the other terminal of the electric cell is called an electric circuit.
3. **Electric switch :-** A device by which an electric circuit can be easily completed or broken is called an electric switch.
4. **Electric bulb :-** An electric bulb is a simple device consisting of a filament attached to two wire's. When the electric current passes through the filament of the bulb through the terminal, it gets hot and produces light.
5. **Terminals of an electric cell :-** In a dry cell there are two elemants or connection points marked '+' and '-'. There terminals are connected by a metal wire to make the electric charge flow through the wire constiluting an electric circuit.

VI. Differentiate between :

1. Conductors and insulators.

Ans. Conductors :- Materials which allow an electric current to pass through them are called conductors.

Insulators :- Materials which do not allow an electric current to pass through them are called insulators.

2. Battery and cell.

Ans. Battery :- When two or more cells are joined together such that the nagative terminal of the first cell is joined to the positive terminal of the second cell and so on Such combinations of cells is called Battery.

Cell :- It is a dry cell which has two terminals or connection points, marked '+' and '-'. These terminals are connected by a metal wire to make the electric charge flow through the wire constituting an electric circuit.

3. Closed electric circuit and open electric circuit.

Ans. Closed electric circuit :- A complete electric circuit is called a closed electric circuit and electric current flows through it.

Open electric circuit :- The incomplete electric circuit is called open electric circuit. It is broken at some point and does not allow the electric current to pass through it.

4. The positive terminal of a cell and the negative terminal of a cell.

Ans. The positive terminal of a cell (+) consists of a carbon rod which is surrounded by a mixture of manganese-di-oxide and carbon placed in side a can made of zinc negative terminal of cell.
The zinc acts as the negative terminal (-).

5. Series electric circuit and parallel electric circuit.

Ans. **Series electric circuit :-** When all the components of the electric circuit are connected in one loop, they form a series circuit.
Parallel circuit :- Circuits which have branches and each branch has a component the circuit is called parallel circuit.

VII. Tick the correct option in each of the following :

1. d, 2. b, 3. a, 4. d.

13. Magnets

I. Answer the following questions :

1. What is a magnet ? How many types of magnets are there ?

Ans. The black rock was infact an ore of iron. It was caled magnetite from the name of the town magnesia. Magnetite (Fe_3O_4) was the world's first magnet. It was also called a natural magnet.
Magnets are of two types :-
i. Natural magnets ii. Artificial magnets.

2. Differentiate between magnetic and non magnetic substances. Give example of each ?

Ans. Material that are attracted by a magnet are called magnetic materials such as iron nails, needles etc. Materials that are not attracted by a magnet are called non-magnetic materials such as plastic, gold, silver etc.

3. Explain the different properties of magnets.

Ans. **Properties of magnets :-**

i. **A freely suspended magnet points towards north-south direction :-** If a magnet is suspended by a thread it will always come to rest to a position close to the north-south direction. The ends towards the north is there fore, called the north pole or north secking pole. It is denoted by the letter 'N'. The other end pointing towards the south is called the south pole or south secking pole. It is denoted by the letter 'S'.

ii. **The attraction of a magnet is greatest at the poles :-** When a bar magnet is dipped into a box of iron filling the tiny bits of iron cling to its ends. These preferred regions of attraction are magnetic poles. The force of attraction between two magnetic poles increases with the strength of poles and decreases with distance between them.

iii. **Magnetic poles alwas exist in pairs :-** If a magnet is broken in the middle, new poles are formed at the broken ends. If one of these pieces is again broken then each piece is again found to contain two

poles of opposite nature.

4. What is a magnetic compass ? What is its composition and what it is used for ?

Ans. A magnetic compass is a freely suspended magnetic needle placed in an aluminium box, at the base of which geographic directions are marked. From its centre, there rises sharp needle, over which a magnetic needle is placed. This needle is completely free to move in any direction on the top of the box, a circular glass plate is fixed.

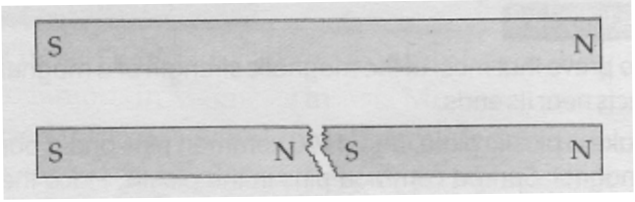
This device is used by the pilots and navigators to find the direction in which the aeroplanes or ships are going.

5. How will you prove that earth also behaves like a huge bar magnet ?

Ans. A freely suspended magnet always points in the north-south direction. It is because towards the geographic north pole is the magnetic south pole of the earth. Similarly towards the geographic south pole is magnetic north pole of the earth. The opposite poles of the magnets attract each other. Thus, when a bar magnet is suspended freely, the south magnetic pole of the earth attracts the north pole of the magnet. It is, because of this attraction of earth's magnet that north-pole of a freely suspended magnet points in the north direction.

6. Explain with the help of an activity that magnetic poles always exist in pairs.

Ans. If a magnet is broken in the middle, new poles are formed at the broken ends. If one of these pieces is again broken then each piece is again found to contain two poles of opposite nature. As long as the process is repeated the same result is obtained i.e., a magnetic pole of one kind is always accompanied by a pole of opposite polarity. Thus, it is clear that a magnet cannot be broken into north and south pole separately and the magnatic poles exist in pairs.



7. What are the different methods of making magnets ? Explain.

Ans. There are two methods of making magnets. They are as follows :-

i. **Single touch method :-** The iron bar AB to be magnetized is kept on a table. A powerful bar magnet is kept vertically with its pole touching one end of the iron bar. The magnet is moved along the iron bar to the other end. Then it is raised and brought back to the starting position.

This process is repeated 10-12 times, moving the magnet always in the same direction. The bar is then moved upside down and treated similarly. The bar is tested by bring it near some iron fillings. If the bar attracts then, it shows that it has been magnetized. Thus

the iron bar becomes a magnet.

ii. **Double touch method :-** The bar to be magnetized is kept on a table. Two powerful magnets of equal power are taken and their opposite poles are placed inclined at the centre of the bar. They are drawn apart stroking the bar. On reaching the ends, the magnets are raised, brought again to the middle of the bar. This process is repeated 10-20 times.

The other side of the bar is also treated similarly. By bringing the bar near iron filing, you will find it to be magnetized. The end of the bar stroked by the south pole of the magnet becomes the north pole; the other end stroked by the north pole becomes the south pole.

8. What are the important use of magnets ?

Ans. Magnets are used to make electric motors and generators. Some items that use magnets are tape recorders, doorbells, computers, telephones, car crushers, scrap metal, sorters etc. Some trains use super conducting magnets in the track and on the underside of the train to float above the track. These trains use magnetic repulsion. Many times magnets are used to sort out magnetic and non-magnetic materials.

II. Write whether the following statements are trun or false :

1. F, 2. T, 3. T, 4. F, 5. T, 6. F, 7. T, 8. T.

III. Fill in the blanks with the suitable words :

1. A freely suspended magnet always rests in *north-south* direction.
2. The attraction of a magnet is maximum at the *ends*.
3. A magnetic *compass* is used for finding geographic directions.
4. The similar poles of two magnets *repel* each other.
5. If a magnet is cut into two halves, then each half behaves like a *reprate* magnet.
6. *Magnetite* is the only natural magnet known to man.
7. The two ends of a magnet are called magnetic *poles*.
8. Magnets are used to make electric motors and *generators*.

IV. Match the statements in column A with tose in column B :

1.	An artificially made magnet bent in the form of U	:	Horse-shoe magnet
2.	A magnet which occurs naturally	:	Natural magnet
3.	A magnetic device used for finding geographic directions	:	Magnetic compass
4.	A naturally occurring magnet	:	Lode stone
5.	The end of a freely suspended magnet which points towards north	:	North pole

V. Define each of the following terms :

Ans. 1. **Magnetic induction :-** When a piece of iron is kept near a bar magnet, it is found to become magnetized and to exhibit polarity. This

phenomenon of magnetization under th inflnence of a magnet is called magnetic induction.

2. **Directive property :-** If shaped in a from of a needle and then suspended freely, it always points in the north-south direction. This property is called directive property.
3. **Natural magnet :-** The magnet which occurs naturally is caled a natural magnet. Magnatite is the only natural magnet known to man. It is an ore of irom (Fe_3O_4).
4. **Magnetic poles :-** The ends of magnets where most of its magnetic power is acting are called magnetic poles.
5. **Magnetic substances :-** The substances which are strongly attracted by a magnet and can be easily magnetized are called magnetic substances.

VI. Solve the cross-word puzzle by using clues below :

Down

1. Magnetite 2. Poles 3. Magnet

Across

4. Compass 5. North Pole

14. Water-Nature's Precious Gift

I. Answer the fllowing questions :

1. What are the different sources of water ?

Ans. The main sources of water :- i. Rain water; ii. Rivers and lakes; iii. Sea water; iv. Ground water.

2. What are the various uses of water ?

Ans. Some of the important uses of water are as follows :-

i. Water is essential for life. Every organism consists mostly of water. Even human body is about 70% water by weight.
ii. The vegetables and fruits we eat contain water about 10% of water by weight.
iii. Water plays an important role in various life processes such as digestion circulation of blood and excretion of waste products from the body.
iv. Water helps in dispersal of seeds and fruits.
v. Water is used in many day-to-day activities such as bathing, cleaning utensils, washing and most necessarily drinking and cooking.
vi. Water is used for irrigation.
vii. Water is used to generate electricity.
viii. Water is used as a universal solvent.

3. In how many states can water exist ? What is evaporation ? Explain.

Ans. In nature water exists in three states :- Solid (ice), Liquid (water) and gaseous (Water vapous). Evaporation is the process by which water changes from liquid state to gaseous state or water vapour. Heat is necessary for

evaporation. The sun heats up water from the water sources and the water turns into vapour. This vapour goes into the air. About 90% evaporation is done by oceans, seas, rivers and lakes and the remaining 10% is contributed by plant transpiration.

4. How people make use of evaporation for making common salt from sea water ?

Ans. Sea water is collected in evaporation pond. Where water is heated in Sun and evaporated and Salt is left behind.

5. What is condensation ? How can you see condensation on your glasses ?

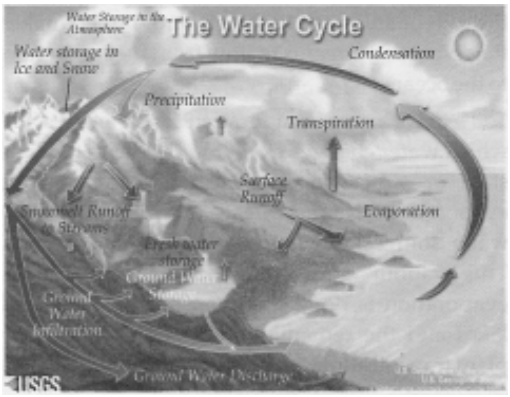
Ans. Condensation is the process by which water vapour in the air is changed into liquid water forming clouds. If you wear glasses and go from a cold air conditioned room to outside on a humid day, the lenses fog up as small water droplets coat the surface via condensation.

6. Why do clouds form and why does it rain ? Explain.

Ans. Clouds exist in the atmosphere because of rising air. As air rises and cools, the water in it condenses out, forming clouds. Since clouds drift the landscrape, they are one of the ways that water moves around the globe in water cycle. As air cools the evaporation rate decreases more rapidly than does the condensation rate with the result a temperature comes where evaporation is less than condensation and a droplet can grow into a cloud drop. When the temperature drops below the dew point temperature, the clouds become dense. When the droplets in the cloud get too big to stay up in the air, they come down to the earth in the form of rain.

7. What do you understand by the water cycle ? What is its importance ? Explain withe the help of a labelled diagram?

Ans. The journey of water from oceans to atmosphere and then back to oceans again is called water cycle. Water cycle is necessary because it maintain the balance of water in the atmosphere. If these is no water cycling there will be no rain .because water evaporaes from oceans into atmosphere if this water does not return to oceans, they would dry up. The evaporated water returns oceans in the form of rain by various means.



8. What are drought and floods ? How are they dangerous to mankind and animals ?

Ans. Drought :- Drought is a natural calamity. It occurs where it does not rain in a region for a year or more. The soil becomes dry due to continuous loss of water by evaporation and transpiration. Water supplies for industrial, agricultural and personal uses are greatly reduced. This condition is called drought.

Floods :- Excess rains may lead to flood in when the level of water rises in rivers, lakes and ponds. The water then spreads over large area.

Draught and floods are dangerous to human, animals and plants.

Effects of Drought :- Lack of rain causes crops damage. Extreme drought may lead to many human deaths. In times of draught, people become more vulnerable to diseases and less resistant to illness such as diarrhoea.

Effects of Floods :- Floods are very harmful. They may damage homes and other valuables and even carry off the top soil. They cause extensive damage to crops and domestic animals.

9. What is conservaion of water ? What methods should be followed for the conservation of water ?

Ans. The wise and proper use of water without wasting it is known as conservation of water. We must use water judiciousy. Water can be conserved by the following methods :-

i. Conservation of forests.
ii. Planting more and more trees.
iii. Preventing water pollution.
iv. Building dams.

10. What is thunder and lightning ? What precautions should we take during lightning ?

Ans. Lightning is an electric change that moves from a cloud to the ground, from the ground to a cloud, or from one cloud to another. In humid and windy weather, clouds develop certain types of charges within them. Some clouds get negatively charged and others get positively charged. The oppositely charged clouds get attracted towards each other in the sky and come closer to each other. When this happens, lightning occurs. A large amount of heat energy is also produced in this process. This heat energy causes fire. If a person happens to be near the spot, where a lightning falls, he can be seriously burnt or even killed. The heat energy developed during lightning heats up the cooler air around it. This hot air expands compressing the colder air nearby. Because of this a long sound called thunder is produced.

Precaution during lightning :-

i. Avoid holding or touching metallic objects like T.V. antenna.

ii. Avoid standing near or under tall trees or buildings.
iii. Disconnect your computer, television, telephone etc.
iv. If caught outside, stand in the open, away from trees, buildings etc. Do not use an umbrella.

II. Write whether the following statements are true or false :

1. T, 2. F, 3. T, 4. F, 5. F, 6. F, 7. F, 8. T.

III. Fill in the blanks with suitable words :

1. *Rain water* is the main source of fresh water.
2. The rate of evaporation *decreases* the fall in temperature.
3. Water is *sweet* natural taste.
4. Sea water is *salty* in taste.
5. The water cycle is powered by heat of the sun and *gravity* of the earth.
6. Clouds are formed due to the *condensation* of water.

IV. Match the statements in column A with those in column B :

1.	A gaseous state of water	:	Steam
2.	A solid state of water	:	Hail
3.	A mixture of air, dust particles and water vapour	:	Cloud
4.	Water from oceans to atmosphere and back to oceans again	:	Water cycle
5.	The wise and judicious use of water, witheout wasting it.	:	Conservation of water.

V. Define each of the following :

1. **Water cycling :-** The journey of water from oceans to atmosphere and then back to oceans again is called water cycle.
2. **Conservation of water :-** The wise and proper use of water without wasting it is known as conservation of water.
3. **Evaparation :-** Evaporation is the proces by which water changes from liquid state to gaseous state or water vapour.
4. **Condensation :-** Condensation is the process by which water vapour in the air is changed into liquid water forming clouds.
5. **Natural resources :-** Substances found naturally on the earth that can be used by men are called natural resources.
6. **Lightning :-** Lightning is an electric change that moves from a cloud to the ground, from the ground to a cloud, or from one cloud to another. The opposit charged clouds get attracted towards each other in the sky and come closer to each other. When this happens, lightning occurs.

VI. Tich the correct answer of the following :

1. b, 2. d, 3. , 4. a, 5. b.

15. Air

I. Answer the following questions :

1. What is atmosphere ? What are its uses ?

Ans. The envelope of air surrounding the earth is called atmosphere. Atmosphere is advantageous for all living beings in the following ways :-

i. It protects us from the harmful sunrays. Without atmosphere we can be burnt by the sun's radiations.

ii. The ultraviolet radiations from the sun are very harmful for all living beings. They cause diseases like cancer. These radiations if reach on earth, the survival of life on the earth would be impossible.

iii. It helps to keep heat of the sun near the earth.

iv. Without the atmosphere. the earth would go so cold at night that we could not live on it.

2. What is air ? Name its constituents. What are the uses of air ?

Ans. Air is a mixture of nitrogen oxygen and other gases such as carbon-di-oxide, water vapour, helium, argon etc.

Uses of air :-

i. The envelop of air (atmosphere) protects all living beings from the harmful effects of ultraviolet rays coming from he sun.

ii. Moving air helps in the dispersal of seeds and pollen grains of different kinds of plants.

iii. Oxyen and nitrogen are separated from the air. Oxygin is used in hospitals for respiration and nitrogen is used for making fertilizers for agriculture.

iv. Fast moving air (wind) is used for running windmills. The windmills are used for drawing underground water, runing flour mills and for generating electricity.

v. Fast moving wind helps in the movement of sailing boats and gliders.

vi. Wind is a means of travel for flying birds.

vii. Air helps in the transmission of sound. Without air we cannot hear. It is also useful for wind based musical instruments.

viii. Air is compressed in the tyres of vehicles, which makes their movement smooth.

ix. Compressed air is used in the break-system for stopping trains. It is also used in machines for digging, mining and breaking stones.

x. Air helps in drying agricultural products such as grains, pulses, dry fruits etc.

3. Hos will you prove that carbon-di-oxide is present in the air ? Give the uses of carbon -di-oxide.

Ans. Take a test-tube with a two hold rubber stopper. Fit a long benttube

through one hole and a short bent tube through the other hole. Pour clear lime water (Solution of calcium hydroxside) into the test-tube.

Through the short bent-tube suck out air. Air from outside now bubbles through lime water. The lime water turns milky.

Actually carbon-di-oxide present in the air reacts with lime water to form calcium carbonate which is a white precipitate. This leads to the milky white appearance of the solution in the test-tube. This shows that air contains carbon-di-oxide.

Use of carbon-di-oxide :-

i. The green plants use carbon-di-oxide to prepare their food with the help of sunlight.
ii. Carbon-di-oxide is dissolved in beverages like soda water and lemonad.
iii. It is useful for extinguishing fires.

4. Make a chart of significance of each component present in the air.

Ans.

i.	Oxygen	:	Life supporting gas prominent in respiration.
ii.	Nitrogen	:	Dilutes the effect of oxygen in air. Rapid combustion and respiration is controlled.
		:	Vital for plant growth.
		:	Vital for protein formation in animals.
iii.	Carbon-di-oxide	:	Manufacture of food by the green plants.
iv.	Water-vapour	:	Provides moisture for plant and animal growth.
v.	Helium	:	Used in weather ballons and for deep sea breathing.
vi.	Neon	:	In advertising neon signboards.
vii.	Dust particles	:	Water vapour condenses on dust particles and hence, causes rain.

5. How will you show that solid particles are present in the air ?

Ans. Air contains tiny particles of sand, dust, smoke air, pollen etc. Allow sunlight to enter a dark room by opening the window slightly. You may see dust particles floating in the way. This shows the presence of dust or solid particles in the air.

6. Explain that air is necessary for living beings.

Ans.

i. Oxygen and nitrogen are separated from the air. Oxygen is used in hospitales for respiration and nitrogen is used for making fertilizers for agriculture.
ii. Air helps in the transmission of sound.
iii. Air helps in drying agricultural products such as grains, pulses, dry fruits etc.
iv. The fan or air conditioner circulates air. This helps in rapid evaporation of sweat. They feel cool when sweat evaporates from the body.
v. While winnowing the moving air helps to blow away the lighter husk

and thus helps to separate it from the grains.

7. What is air-pollution ? How are the winds produced ?

Ans. Due to human activites for development the quality of air is deteriorating everyday. Thus the air be comes impure and causes harm to human beings and animals. This process is called air pollution.

Winds are caused due to differences of temperature and pressure the greater the difference of temperature and pressure, the stronger are the winds caused by them.

8. What are the main sources of air-pollution ?

Ans. Main sources of air pollution are :-

i. **Automobiles :-** The most widely wellknown air-pollutants originate from automobiles exhausts. Automobiles contribute 60% of the air pollution. Due to compustion of petrol and disesel poisonous gases are produced together with a large amount of oxygen of the atmosphere depleted. Among the various toxic pollutants of automobile carbon-monoxide, nitrogen-oxide, sulphur-dioxide, ethylene etc. are notable.

ii. **Industries :-** Industries are also a great source of air pollution, Petrol refineries, chemical plants, steel plants and paper and pulp industries are main sources of air-pollution. They release carbon-monoxide (CO), carbon-dioxide (CO_2), sulphur-dioxide (SO_2), nitrogen-dioxide (NO_2), and some hydrocarbons into atmosphere.

iii. **Smog :-** Gases like sulphur-dioxide, nitrogen-oxide and unburnt hydrocarbons are released into the air from aircrafts, when these gases combined with sunlight ultra-violet radiations they form very harmful photochemical smog. In big cities smog formation is very common.

9. What are the adverse effects of air-pollution ?

Ans. Effects of air-pollution :-

i. The deadly poisonous gas carbonmonoxide released from automobiles, aircrafts and space rocket engines reduces oxygen carrying capacity of blood.

ii. Excess of carbon-di-oxide causes suffocation.

iii. Sulphur-di-oxide released from coal and oil combustion causes headache, irritation in the respiratory tract, vomiting and chest constriction etc.

iv. Sulphur-di-oxide and nitrogen-di-oxide when present in higher concentration, react with rain water and produce acid rain. This rain causes damage to the marble buildings and statues. It is also toxic to plant and animal life.

v. Nitrogen oxides released from automobiles affects respiratory system in animals and death of some plants.

vi. Photochemical smog causes loss of vision, eye irritation, abdominal pain and even cancer.

10. What measures should be adopted to minimize air-pollution ?

Ans. Air pollution can be reduced by adopting following measures :-

i. Factoy areas should be some distance away from residential area.

ii. Factories should change the method of manufacture and use fuels that cause lesser pollution.

iii. Smoking should be completely banned.

iv. Exhaust fumes given by automobiles should be controlled by changing the designs of engines, adding special ingredients in fuels and fitting pollution's control device to the vehicles.

v. Environmental awareness should be developed through education to let the people know about the ill-effects of pollution.

vi. Green plants should be planted in the vicinity of crowded cities and factories.

II. Write whether the following statements are true or false :-

1. T, 2. F, 3. T, 4. T, 5. F, 6. T, 7. F, 8. F.

III. Fill in the blanks with suitable words :-

1. The ultraviolet radiations are *harmful* to us.
2. Moving air is called *wind*.
3. Wet collectors must be used for mist and *fogs*.
4. Automobiles alone contribute to about *60%* of the air pollution.
5. CO_2 is proved useful for fire extinguishers.
6. The blanket of air around us is called *enviroment*.

IV. Match the statements in column A with those in column B :-

Ans.

1.	A gaseous blanket surrounding earth	:	Atmosphere
2.	A gas which helps in burning of fuels	:	Oxygen
3.	A gas which is useful for plants in making their food	:	Carbon-di-oxide
4.	A gas present in the air and is used in making fertilizers	:	Nitrogen
5.	A substance necessary for photosynthesis	:	Chlorophyll

V. Tick the correct option in each of the following :-

Ans. 1. c, 2. c, 3. c.

16. Waste Materials and Their Disposal

I. Answer the following questions :-

1. What is waste and what are biodegradable and non-biodegradable substances ? Explain with examples.

Ans. Waste materials are those which are of no use to you and which you throw away. Such as bag of clothes, rubbish, junked cans etc.

The wastes which can be broken down to harmless or non-poisonous substances by the action of micro-organisms are called biodegradable wastes. For example domestic sewage, newspaper, and vegetable matter. Biodegradable waste under go rotting.

The wastes which cannot be broken down to non-poisoninous substances easily are called non-biodegradable wastes. These wastes do not under go rotting or take a very long time for rotting. Example : polythene bags, plastics glass, aluminum cans, iron nail, D.D.T. etc.

2. What are the methods of disposal of solid wastes ? Give a detail description of disposal of solid wastes.

Ans. The disposal of solid waste is carried in the following two ways :

i. **Land disposal :-** Land disposal involves two methods :-

a. **Open dumping :-** In open dumping the waste is drown openly to decay. It is a poor method of waste disposal. The exposed waste gets rot and smells foul. Open dumps provide our home for many animals that spread diseases. If the waste is burnt, it will cause smoke and foul smell in the air rain wast can drain things refuse and carry harmful substances in streams.

b. **Sanitary landfills :-** These land fills cause a little damage to the environment. Deep tranches are dug by the tractors at a place away from the residential areas. The waste is dumped into the trenches. The wastes are packed firmly together by tractors and covered with earth every day. The cover of the earth prevents insects from getting into the refuse when the sanitary landfills fill up, then the sites are covered finally. Then this area is used for recreational or other purposes. This method is used mostly to dispose non-biodegradable or poisonouse substances. The wastes decompose and are used as manure.

ii. **Incrineration :-** Burning of the solid waste products is called incineration. This method is mostly used in big cities and towns because of lack of vacant areas for land disposal. Burning of wastes releases gases and solid particles that may harm human health. Besides, it damages property and kills plants.

3. How and what for does the sewage system work ?

Ans. In sewage treatment, solid wastes, harmful germs and foul smell are removed. The remaining water called effluent goes in the water ways. The system of pipes that carries sewage from houses and other buildings is called a sanitary sewage system. This system acts in the following ways :

i. **Soak pit :-** In areas where sewers are served, soak pit method is used to dispose off the waste water. It is a pit in the ground filled with pebbles or brick pieces. Sewage flows into the soak pit through

pipes or drain. This water is absorbed in the ground.

ii. **Septic tanks :-** Septic tanks are also used for the disposal of domestic liquid wastes. These tanks are concrete containers which are burried underground at homes and other buildings. Sewage flows into a septic tank through a pipe which connects the tanks with the building. Solids in the sewage sink to the bottom of the tank. This liquid then flows from the tank into street drains.

4. Describe reuse and recycling of waste material.

Ans. Some old materials when are of no use for us, thrown as waste. Some of these materials, however, are reused. It is made possible by recycling. Recycling is a process of getting materials from the wastes that can be reused.

Many substances in refuse have value glass, wood, fibres from paper products are such substances. Some metals like silver, iron, aluminium and copper also can be recycled and reused. Recycled wastes provide material for many new products. Recycled paper is used in making news-paper and recycled glass is used to make new glass products etc.

5. What are the agencies responsible for cleanliness of a locality and how are they helpful to us ?

Ans. Agencies responsible for cleanliness. Two local agencies are responsible to look after the sanitation and cleanliness of the locality. One is the municipality and the other is the village or gram panchayat.

i. **Municipality :-** The municipality is a bigger body to help the people in towns or cities. The municipality performs a number of functions :-

a. It looks after the health and cleanliness of the people.

b. It sets up public hospitals for humans and animals.

c. It runs schools, libraries and maintains them.

d. It builds roads, bridges, drains and parks in the towne and maintains them.

e. It maintains the supply of clean drinking water and electricity for streat lighting.

ii. **Village or Gram Panchayat :-** The main functions of the gram panchayat are as follows :-

a. It settles small disputes among the villagers.

b. It looks after the cleanliness of the villages.

c. It constructs and maintains light on these roads.

d. It digs wells and ponds to supply water for the villagers.

6. Mention the advantages of recycling of waste materials.

Ans. Advantages of recycling :-

i. Recycling saves natural resources that would be used to make new products. For example, recycling of paper saves trees.

Metals like iron, aluminium, copper etc. are found in nature and are used in making utensils. These metals are dug out from the earth. Recycling of metals reduces the amount of minerals that have to be dug out. It also saves the land from being hollowed by mining.

ii. Recycling of wastes saves landfill space. Many big towns and cities have shortage of places to dispose of their wastes. Many landfills are being closed because they caused pollution.

iii. Recycling also helps to reduce the pollution that may be caused by disposing of various wastes. For example, paints, motor oil and old batteries contain poisonous substances. Improper disposal of these substances may cause contamination of water.

II. Write whether the following statements are true or false :-

1. T, 2. F, 3. F, 4. F, 5. T, 6. T.

III. Fill in the blanks with the suitable words :-

1. Recycling of paper saves many *trees*.
2. Solid waste is called *refuse*.
3. *Incineration* is the process of burning of waste products.
4. *Recycling* of waste materials saves landfill spaces.
5. Municipal solid waste is also called *Sewage wastage*.
6. Putting waste materials into new use is called *Recycling*.

IV. Differentiate between :-

1. Biodegradable and Non-biodegradable materials.

Ans. Biodegradable materials :- The wastes which can be broken down to harmless or non-poisonous substances by the action of micro-organisms. Biodegradable waste under go rolting.

Non-biodegradable materials :- The wastes which cannot be broken down to non-poisoninous substances easily. These wastes do not under go rotting or take a very long time for rotting.

2. Open dumping and sanitary landfills.

Ans. Open dumping :- Waste is thrown openly is decay. This provide our home for many animals that spread diseases.

Sanitary Landfills :- Waste is dumped into the trenches. It prevents insects from getting into the refuse.

3. Septic tank and soak pit.

Ans. Septic tank :- Disposal of domestic liquid wastes. These tanks are concrets containers which are burried under ground at homes and other buildings.

Soak Pit :- This method is used to dispose off the waste water. It is a pit in the ground filled with pebbles or brick pieces.

4. Sewage and refuse.

Ans. Sewage :- Sewage is a liquid waste. It carries harmful chemicals and disease carrying bacteria.

Refuse :- Refuse is a solid waste. It looks ugly, smells foul and attracts animals that spread diseases.

5. Municipality and Gram Panchayat.

Ans. Municipality :- The municipality is bigger body to help the people in town or cities. It builds road, bridges, drains and parks in the towns and maintain them. it maintains the supply of clean drinking water and electricity for street lighting.

Gram Panchayat :- It helps the people in village. It constructs and maintain roads and make provision for light on these roads. It digs well and ponds to supply water for the villagers.