

Elements of Science - 7

1. Living and Non-living Things

A. Tick (✓) the correct option:

1. (a), 2. (a), 3. (c), 4. (c), 5. (a), 6. (a), 7. (a), 8. (a), 9. (a), 10. (a)

B. Fill in the blanks:

1. sun, 2. iodine solution, 3. symbiotic, 4. algae, 5. fungi, 6. mushrooms

C. Match the following:

1. (e), 2. (d), 3. (b), 4. (a), 5. (c)

D. State True or False:

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

E. Analogy type:

1. saprophytes
2. heterotrophs

F. Give two examples of each:

1. Carbohydrates and proteins
2. Banyan tree and peepal
3. Chlorophyta and Rhodophyta
4. *Candida* and trichophytom
5. Pitcher plant and Venus flytrap

G. Very short answer type questions:

1. Human beings and non-green plants.
2. Carbon dioxide
3. Mutualism
4. Guard cells
5. Bacteria and fungi

H. Short answer type questions:

1. The process by which the organisms obtain their food and utilize it, is called nutrition.
2. Green plants make food through a process called photosynthesis. They make food with the help of water, sunlight, air, etc.
3. Autotrophs or autotrophic organisms make their own food. This type of nutrition is called autotrophic nutrition.
4. The water reaches the leaves through, tube called xylem for photosynthesising food.
5. The lichen shows symbiotic mode of nutrition. Their relationship is called symbiosis.
6. Some plants eat insects to fulfil their need of food. They are called insectivorous. They make their own food by the same way as the other green plants do. But they catch and digest small insects to obtain minerals.

7. Some plants has found special partnership between them. They live together for their substance. This partnership is called symbiosis.

I. Long answer types questions.

1. The leaves and roots play an important role during the photosynthesis. The chlorophyll present in the leaves of the plant traps the solar energy falling on the leaves and uses it to make food. Where the roots send water to the leaves through a tube called xylem.

2. Do yourself.

Same tiny pores are found on the lower side of leaves. These tiny pores are called stomata. The leaves take carbon dioxide (CO_2) from the air through stomata. The stomata are surrounded by the guard cells.

3. With the help of the following activity we can prove that starch is formed during the photosynthesis.

The things we need: green leaf, water, tripod stand, bumed test tube, alcohol, iodine solution, tap water and petridish.

Procedure: Pluck a fealthy green leaf of a plant and keep for about two minutes. This will make the leaf soft and stop any further chemical changes in it. Put the leaf in a test tube containing alcohol. Place the test tube in a beaker of boiling water. The alcohol will bleech the leaf and make it free from the chlorophyll. Wash the leaf in water. Place it in a petri dish and add a few drop of iodine solution.

The leaf turns blue-black. The leaf changes into blue-black due to presence of starch in it. It proves that starch is formed during photosynthesis.

4. saprophytes help in cleaning the environment because they get their food from dead and decaying matter of animals and plants. They change the organic matter into simpler substances which in the end turn into the soil.

5. Symbiotic is a special type of partnership between two different types of plants that live together for their substance. It means living together as in lichen. Lichens are the most amazing forms of life. A lichen is actually composed of two, possibly even three, distinct organisms. One is a kind of fungus, the other is usually an algae, and sometimes it also has a photosynthesising bacterium.

In this amazing association the algae that contain chlorophyll make their own food. The fungus shows the food made by the algae. The fungus provides protection and water and minerals to the algae.

HOTS

1. Aquatic plants may take in carbon dioxide from the air or water, depending on whether their leaves float or all under water, the leaves of

floating plants such as lotus and water lilies, get direct sunlight these types of aquatic plants do not require special adaptations to perform photosynthesis.

2. This statement is true because human beings get their food from plants which are producers and make food for themselves.

Science olympiad

1. Yes, all the conditions for photosynthesis are using met because the leaves of the grass will be remained to allude to do photosynthesis.
2. There is no need to add fertilizers in the soil where leguminous plants are grown because they make the soil fertile with necessary nutrients.

2. Animals and their food

A. Tick (✓) the correct option:

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

B. Fill in the blanks:

1. assimilation, 2. proboscis, 3. wistom, 4. gastric, 5. fatty acids, glycerol, 6. stomach, 7. anus, 8. oxygen

C. Match the following:

1. (f), 2. (h), 3. (a), 4. (e), 5. (d), 6. (c), 7. (b), 8. (g)

D. State True or False :

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

E. Analogy type:

1. Tentacles, 2. 32, 3. juice

F. Find the odd one out and give reasons for the same :

1. Producer, omnivore and carnivore are animals which depend on produces for their food.
2. Adult
All others are different types of teeth.
3. Circulation
All others are different processes of food digestion.
4. Abdomen
All others are part of stomach of a ruminant

G. Short answer types questions:

1. Canine
2. pancreatic juice
3. hile juice
5. cow
6. food vacuole

H. Short answer type questions :

1. An amoeba is a unicellular organism. It has false fact known as pseudopodia which it uses to engulf food particles.

- An adult human, can have a maximum of 32 teeth. Most people have 8 incisors, 4 canines, 8 premolars and 8 molars.
- The names of different organs involved in the digestion system are mouth, oesophagus or food pipe, the stomach, the intestine, small intestine and large intestine, liver, pancreas.
- Gastric juices, pancreatic juices are some important protein digesting juices reacted in alimentary canal.
- After all the useful nutrients from the digested food are absorbed by the small intestine, the remaining material passes into the large intestine. Most of the water and minerals present in the undigested food are absorbed by the large intestine. The remaining part is thrown out of the body through the anus in the form of stools.
- The stomach of the cow is different from that of a man because it is divided into four compartments.

I. Long answer types questions.

- An Amoeba is a unicellular organism. It has false feet known as pseudopodia which it uses to engulf food particles. The pseudopodia join together to form a small cavity known as a food vacuole. The food inside the vacuole is digested by digestive juices. It is absorbed and assimilated there to provide energy and perform other functions.

Ingestion	Egestion
(i) The process by which the food is ingested by the animal into the body is called ingestion.	It is the elimination of undigested waste food from the body after the absorption of all useful entities.
(ii) It is different for different animals.	The undigested waste food is egested in form of faeces in most of the higher animals.

Incisors	Canines
(i) The front four teeth on each jaw are flat and have in sharp edge. They are called incisors.	On the both sides of the incisors on each jaw, is a sharp pointed called the canine.
(ii) They are used to bite or cut food in small pieces.	They are used to tear food.

- Lipase is the digestive juice which acts only on fats.
- Do yourself.

Teeth grow out of the jaw bones. They are present at birth but cannot be seen. The jaw bones are covered by pink-coloured gums. As you

grow your teeth also grow. The part of the tooth that ground and comes out of the gums is called the crown. Below crown, is the long root of the tooth. The root cannot be seen, because it is surrounded by gums. The outer most white part of the tooth is covered with a substance called enamel. A cement like material holds each tooth firmly to the jaw bank.

5. The process by which the food is ingested by animals into its body is called ingestion. It is different for different animals. For examples, an amoeba has false feet known as pseudopodia which it uses to engulf food particles. Hydra is a simple, multicellular animal. It has a number of tentacles around its mouth, which are used for ingestion of food. The frogs use their long and sticky tongue to catch insects. The unicellular paramecium has stiff-like structures called cilia all over its body, which are used for ingestion.
6. In a human, digestion of food begins in the mouth. The teeth chop and grind the food and breaking it into small pieces. From the mouth the food goes into the stomach. The stomach is a bag like organ made up of muscles. Food is churned and made into a paste. The glands present in the stomach walls secrete gastric juices. They help to digest different nutrients present in the food like carbohydrates, proteins, fats, etc. In stomach, the churning changes food into a liquid called chyme. The chyme leaves the stomach and enters the small intestine.

The absorption of nutrients from the digested food take place in the small intestine. The remaining material passes into the large intestine and is thrown out of the body through anus in form of stools.

7. Do yourself.
8. The stomach is a bag-like organ made up of muscles. The inner walls of the stomach are lined with a membrane called mucosa. The mucosa secretes mucus, which protects the lining of the stomach. Food is churned and made into a paste. The glands present in the stomach walls secrete gastric juices.

Gastric juice contains enzymes and hydrochloric acid. The hydrochloric acid in the stomach destroys bacteria and acidifies the food. The gastric juices contain the enzyme pepsin. Here food changes into a liquid called chyme.

9. The carbohydrates are broken down into sugars, the proteins into amino acids and fats into fatty acids and glycerol.
10. In the small intestine different kinds of juices help to digest food completely. The carbohydrates broken down into sugars the proteins into amino acids and fats into fatty acids and glycerol. The absorption of these molecules takes place in the small intestine. The absorbed nutrients then pass through the blood stream to the liver from where

they are transported to all the different parts of the body.

11. Some grass-eating animals such as cows chew half digested food are called ruminants. They bring back the swallowed food to chew it again. All ruminants are herbivores. They do it to digest the cellulose present in the grass which they eat.

HOTS

1. Lactose of the milk is absorbed first.
2. When we are hungry our brain signals are digestive system to prepare for a meal. Grumbling of our stomach indicates this message of the brain.

Find out

Some people get tired very soon because of bodily weakness iron deficiency anaemia.

Science Olympiad

1. Animals show heterotrophic nutrition because they cannot produce food like autotrophs themselves. They are depend on autotrophs for this food.
2. The nutrition is Amoeba is different from that in human beings because it engulfs the food with the help of pseudopodia and traps it in food vacuoles.
3. Human being cannot digest cellulose because there is not enzyme to digest cellulose in human digestive system.

3. Fibre and Fabrics

A. Tick (✓) the correct option.

1. ©, 2. (b), 3. (a), 4. (c), 5. (c), 6. (c), 7. (c), 8. (c), 9. (c), 10. (a)

B. Fill in the blanks:

1. animal, 2. angora, 3. 5500, 4. mulberry, 5. artificial

C. Match the following:

1. ©, 2. (d), 3. (a), 4. (f), 5. (g), 56. (b), 7. (e)

D. State True or False:

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

E. Analogy Type :

1. artificial fibre
2. Pashmina

F. Give reasons.

1. Cotton clothes are prepared in summers because they are able to absorb sweat and keep the body cool from under them.
2. Wool gives us firefly or spongy touch because curls of the wool fibres create packets.

3. Cocoons are steamed to kill the insects inside them.
4. Artificial fibres do not absorb water because these are made by chemicals.

G. Very short answer type questions.

1. cocoon
2. shearing
3. India, Tibet, Turkey, Mustidia, etc.
4. Shearing is the first step involved in wool processing in which fleece is peeled off from sheep's body in one piece.
5. Nylon, torylene and polystyrene.
6. The process by which filaments are taken and from the cocoons is called reeling.
7. It is called caterpillar.

H. Short answer type questions.

1. Fibres that are obtained from animals and plants are called natural fibres.
2. The list of five animals from which wool is obtained are sheep, goat, yak, rabbit and camel.
3. The silk fibre has a high tensile strength with the property of heat insulation which makes it so attractive.
4. Silk is obtained from cocoons by the process of reeling.

I. Long answer type questions.

1. Wool is the natural fibre which is obtained from animals. These are hair of some animals which are twisted and arranged in order to make them into long strands. Some main sources of wool are sheep, goats, rabbits, yak, camels, etc.
2. Some important steps come under the processing of wool are as follows:
 - (i) Shearing : The fleece of the animals along with the thin layer of skin is removed from its body.
 - (ii) Scouring: The fleece is washed in tanks to remove dirt, dust and grease.
 - (iii) Sorting: The hairy skin is sent to factory where hair of different textures are separated. Burrs are removed from the hair.
 - (iv) Carding: This is a process by which fibres are passed through metal teeth to straighten them and remove dirt.
 - (v) Spinning: This is a process to spin strands of wool to make threads.
3. The growing of mulberry trees to grow silk moth is called sericulture. The main steps to come under the silk production are as follows:
 - (i) The eggs of the silkworm moth are incubated until they hatch

and become worms called larvae or caterpillars. The larvae are feed on mulberry leaves for about six weeks. During this period, each larvae sheds its skin four times. This is called moulting.

At the end of this period they are ready to spin cocoons. They climb into branches of trees and start spinning their cocoons. This is called paper stage. They take about eight days for the process.

- (ii) The cocoons are then gathered and bioled or heated in ovens, to kill the insects inside them. The silk fibre is obtained from the cocoons by a process known as reeling.
4. The properties and uses of artificial fibres are as follows:
- Some properties:
- (i) High tensile strength, tough and abrasive.
 - (ii) Highly crease resistant, durable and absorbent of moisture.
- Some uses of:
- (i) They are used for making clothes, ropes, carpets, curtains, etc.
 - (ii) Some artificial fibres used to make bushes, seat belts, light covers, protective clothing, etc.

HOTS

If the saree is made of pure silk, an burning of its one of :

1. The threads the residue is in form of silver beads, which will are powdered easily.
2. Wool creates insulation for the wearer as it helps the air close to the skin. The trapped air gets warm by the body heat (37°C), thus, making the weaver feel warm. The cotton has no this type of galities.

Find out

Australia is the largest producer of wool because it has high number of sheep breed.

Science Olympiad

1. Do it yourself.
2. Caterpillar shed their skin when they grow bigger because it becomes too tight for them.

4. Heat and Temperature

A. Tick (✓) the correct option.

1. (a), 2. (a), 3. (a), 4. (b), 5. (b), 6. (e), 7. (c), 8. (a), 9. (b)

B. Fill in the blanks :

1. insulator, 2. Temperature, 3. Specific latent, 4. 760 tour, 760 tour, 5. 4184 J

C. Match the following :

1. (l), 2. (g), 3. (d), 4. (b), 5. (c), 6. (e), 7. (e), 8. (h), 9. (f)

D. State True or False:

1. False, 2. True, 3. True, 4. True

E. Analogy Type:

1. insulator
2. calorie

F. Convert them:

Do it yourself

G. Give reasons:

1. The handle of a saucepan is made up of plastic because it is an insulator.
2. The nights are colder in warmer regions than days because
3. The flesh is able to retain the original temperature of the substance that is kept inside for a constant period of time.
4. Mercury is the only one in liquid state at room temperature. It is used in the thermometers because it has high coefficient of expansion. Hence slightest changes in temperature is notable when it is used in a thermometer. It has a high boiling point which makes it very suitable to measure higher temperature.

H. Very short answer type questions. Write one word for the following:

- | | |
|----------------|---------------|
| 1. Thermometer | 2. Conduction |
| 3. Convection | 4. Radiation |
| 5. Condition | 6. insulators |

I. Short answer type questions:

1. The heat is a form of energy that gives us the sensation of hotness or coldness.
2. Radiation is the fastest mode of heat transfer.
3. Conduction is a mode of heat transfer when the particles of a medium gain energy and transfer energy to the neighbouring atoms by the fast vibration.
4. Heat causes the molecules to move faster, which means that the volume of the gas increases more than the volume of a solid. However gases that are contained in a fixed volume cannot expand and so increases in temperature result in increases in pressure.
5. The bodies that do not conduct heat are called heat insulators.
6. When we have an ice cube in our hand the direction of heat flows is from our hand to the ice cube because temperature of our body is more than the ice cube.
7. The range of Fahrenheit scale in a clinical thermometer is between 94°C to 108°C . Human body temperature on the Fahrenheit scale is 98.4°F .

Heat	Temperature
(i) It is a form of energy that gives us the sensation of hotness or coldness.	It is the degree of hotness or coldness of a body.

J. Long answer types questions:

- Heat is a form of energy. The earliest scientists believed that heat was a kind of fluid which was gained by a body when it was heated and lost when it was cooled. But in the beginning of the 19th century Count Rumford and James Prescott proved that heat is a form of energy known as thermal energy. Since energy can be converted from one form into another, heat energy can be converted into other forms of energy.

- We can describe the effects of heat as follows:

When an object is heated, there are many changes that take place. To understand these changes, consider the common practice of boiling water.

- Heat causes expansion. To understand this fact we should read the following example:

Suppose a number of children are standing in a corner of a hall. They are moving around a little to talk to each other. Suddenly, music is switched on. The children start dancing and moving around more. Actually, they will spread out more and occupy a larger part of the hall.

Similarly, when we heat a substance, the movement of its molecules increases. This increases the average distance between the molecules therefore, the space occupied by the molecules that is, the volume of the substances, increases. We say that heat causes expansion.

Take two pots, a black and a white filled with water and keep them in sunlight for some time. Now measure the temperature of the water in the both pots using a thermometer. We find that the water which is in the black pot is hotter than the water which is in the white pot. This proves that dark colours like black can absorb a large amount of heat that falls on them.

- Black on the other hand is a composite of all the colours of the spectrum and absorbs them. Absorbing those wavelengths the black surface gains the energy carried by those waves. Because white objects reflect all colours and only absorb a small amount of heat. Black objects absorb all colours of the spectrum and heat.
- Some names of instruments that we use to measure temperature are

thermometer or clinical thermometer, digital thermometer and laboratory thermometer. They are used in different ways.

HOTS

1. Do it yourself.
2. The ice cubes put inside a thermocol box do not melt because the temperature in this box remains low and the ice does not lose its solid form.

Find Out

A laboratory thermometer cannot be used to measure the human body temperature. This is because as soon as we take out the bulb of this thermometer from our mouth, the level of the mercury in its tube will start falling quickly.

Science Olympiad

1. We cannot measure it.
2. The stainless steel pans are usually provided with copper bottoms because the copper is a good conductor of heat.
3. The ice packed in sawdust does not melt quickly because the sawdust is a poor conductor of heat.

5. Acids, bases and salts

A. Tick (✓) the correct option:

1. (b), 3. (b), 3. (a), 4. (c), 5. (a), 6. (b), 7. (c), 8. (c), 9. (a), 10. (c), 11. (c), 12. (a)

B. Fill in the blanks:

1. bitter, 2. tart, 3. salt, 4. roundly spherical, 5. sodium hydroxide.

C. Give reasons:

1. Stone sculptures exposed to rain for many years are damaged because of acids contained in rain water.
2. Curd has a sour taste because lactic acid is contained in it.
3. If we do not brush our teeth at night, we could wake up with a sour taste in our mouth because of acidic materials.
4. A wasp sting is treated with an alkali because it reacts with formic acid and neutralizes it.

D. What happens when :

1. it turns into blue
2. Acid turns blue litmus red.
3. Bases turn red litmus blue
4. A base will not affect a blue coloured litmus.

E. Analogy Type

1. Acetic acid
2. Solution

F. Very short answer type questions:

1. strong acids- HCl , HNO_3
weak acids- acetic acid, lactic acid

2.	Minerals	Organic acids
(i)	The acids which are prepared from the minerals of the earth are called mineral acids.	The acids which are obtained from plants or animals origin are called organic acids.

3. They have sour taste because of acids like tartaric acids, lactic acid, etc.
4. Neutral substances.
5. Chalk.
6. Salts and water.
7. Bases turn red litmus paper blue.
8. The colour of turmeric solution turns into red.

G. Short answer type questions:

1. Substances whose molecules have one or more hydrogen atoms are called acids.

Three properties of acids are as follows:

- (i) They have sour taste.
 - (ii) They turn blue litmus solution red.
 - (iii) They turn methyl orange pink.
2. Bases which are soluble in water are known as alkalis.
The three properties of alkalis are as follows:
 - (i) They are colourless.
 - (ii) They are odourless.
 - (iii) They are corrosive to the skin.
 3. Salts and water are end products of neutralization reaction.
 4. Washing soda
 5. The three indicators used to distinguish between an acid and an alkali are red cabbage, china rose and turmeric.
 6. Some uses of bases in industries are as follows:
 - (i) Calcium hydroxide is used to prepare bleaching powder.
 - (ii) Aluminium hydroxide is used for production of organic chemicals.
 - (iii) Sodium hydroxide and potassium hydroxide are used in manufacture of medicines.

H. Long answer type questions.

1. Take about 10 ml of dilute sodium hydroxide solution in a test tube.

Add to it a drop of methyl orange. The solution will turn yellow. Take a little dilute hydrochloric acid in a dropper. Add the acid to the test tube drop by drop and stir. A stage is reached when an additional drop of the acid turn the colour of the solution from yellow to pink.

This shows that all sodium hydroxide (base) has been reacted upon by the acid, and the solution now contains a little extra acid. Stop adding more acid. Touch the test tube immediately after a reaction. Is it warm?

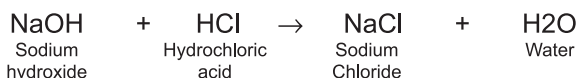
Heat the above test tube water over a flame to evaporate the liquid. The residue left is the salt, sodium chloride as water gets evaporate.

This reaction which took place here is:

Sodium hydroxide solution (Base) turns yellow after adding a drop of methyl orange.

Colour of the solution changes to pink on adding hydrochloric acid.

Reaction of an acid with a base is—



2. The use of sulphuric acid are as follows:

- (i) It is used in car batteries.
- (ii) It is used in the manufacture of dyes, dry plastics, detergents, paints, etc.
- (iii) it is used in manufactured of fertilizers.

Some uses of nitric acids are as follows:

- (i) It is used to make explosives, dyes, drugs, etc.
- (ii) It is used to purification of metals such as gold and silver.

3. When a weak acid reacts with a strong base it forms a basic salt, while acidic salt is formed when a strong acid reacts with a weak base.



4. Alkalies are different from bases because alkalies are the bases which are soluble in water. So, the bases which are not soluble in water cannot be called alkalies.

We can say that all alkalies are bases but all bases are not alkalies.

5. Litmus is an acid-base indicator used in laboratories. It is a dye obtained from living organisms called lichens. Lichens are certain types of fungi and algae living together.

the litmus dye has two forms- red and blue. The litmus paper is prepared by soaking paper in the dye. It is used to know if a liquid is a base or an acid.

Some other indicators are red cabbage, turmeric, China rose, etc.

HOTS

Do it yourself.

Find Out

The acidic gastric juice also kills bacteria. The mucus covers the stomach wall with a protective coating. Together with the bicarbonate, this ensures that the stomach wall itself is not harmed by the hydrochloric acid.

Science Olympiad

1. Do it yourself.
2. (a) Farmer old slaked lime to soil to make it non acidic.
(b) Because soap solution or having soda neutralize the formic acid.
(c) Because antacids neutralise the acid made by our stomach.

6. Change in Matter

A. Tick (✓) the correct option.

1. ©, 2. (a), 3. (a), 4. (a), 5. (a), 6. (b), 7. (a), 8. (a), 9. (c), 10. (b)

B. Fill in the blanks.

1. physical, 2. chemical, 3. liquid, 4. atoms, 5. oil or grease, 6. salt

C. Match the following columns:

1. ©, 2. (a), 3. (b), 4. (e), 5. (f), 6. (d)

D. State True or False.

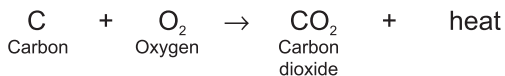
1. True, 2. True, 3. False, 4. False, 5. True

E. Analogy type.

- 1.
- 2.

F. Very short answer type questions.

1. The burning of magnesium is called a chemical changes because it gives a different product.
2. The melting of ice is called a physical changes because water again can be changed into ice.
3. When carbon burns in the air, heat is released.



4. The melting of ice is an example of a physical change in which there is a change state.
5. The two condition necessary for rusting of iron to take place are oxygen and water.
6. This matter is zinc.

G. Short answer type questions.

1. Any change in a body or substance that mostly reversible and which does not involve alternation in chemical composition. Some

examples of physical change are melting of butter, boiling of milk, melting of wax, etc.

2. A change that is irreversible involving an alteration in the chemical composition of a substance due to increase, decrease or rearrangement of atoms within a molecule. Some examples of chemical changes are cooking food items, ripening of fruits, etc.
3. Take a 400 ml beaker and put a small amount of baking soda into it and now add vinegar slowly.

You will find that the vinegar and baking soda reacts vigorously forming a bubbly product with carbon dioxide gas. This proves that chemical reactions are accompanied by evolution of gas.

4. Reactions accompanied with absorption of heat are called endothermic reactions. Absorption of heat is shown by writing— heat on right hand side + heat on left hand side of the equation.
5. A precipitate is formed by a double displacement reaction called precipitation reaction. In this reaction the compounds react in their aqueous state to form an insoluble product which appears in the form of a precipitate.

H. Long answer type questions.

1. The three differences between physical change and chemical change are as follows:
 - (i) A physical change is reversible while chemical change is irreversible change.
 - (ii) A physical change is temporary in nature, whereas a chemical change is permanently in nature.
 - (iii) A physical change involves energy but usually quite small and chemical change involves absorption and evolution of energy take place.
2. Take some fresh iron nails or non-rusted iron nails on a glass plate and put it in a moist atmosphere for few days and observe.
When iron nails are exposed to moist atmosphere they get rusted.
3. We know that the iron objects like iron nails or iron gates are covered with a reddish- brown substance. This substance is rust. When iron is left exposed to moist air, it chemically reacts with oxygen and water in the air to form a powdery substance, iron oxide (Fe_2O_3 , which we call rust.



4.	Exothermic reaction	Endothermic reactions
	(i) Reactions accompanied with release of heat are called exothermic reactions.	Reactions accompanied with absorptions of heat are called endothermic reactions.

(ii) Release heat is shown by writing '+ heat' on right hand side of the equation.	Absorption of heat is shown by writing on right hand side on '+ heat' on the left hand side of the equation.
--	--

5.	Combination reaction	Decomposition reaction
	(i) When a compound is formed from its elements, or from simpler substances, the reaction is called combination reaction. $A + B \rightarrow AB$	Decomposition reaction is one in which a compound breaks up into two or more substances. Decomposition is normally caused by heating or by passing electricity through it. $AB \rightarrow A + B$

6. The process of forming pure solids with geometric patterns from a super saturated solution is called crystallization.

HOTS

1. It is a chemical change.
2. The burning of candle represents both physical and chemical changes. The melting of wax shows the physical change while burning of wax as a flame is showed a chemical change.

Find Out

Gold does not get corroded because it is one of the least reactive metals in the reactivity series and does not react with air or moisture easily.

Science Olympiad

1. The rusting of iron is more frequent in coastal areas than in desert because the air of coastal areas is moist while in desert it is dried.
2. When LPG comes out of a cylinder it is converted from liquid to gaseous state. It is a physical change.

7. Weather, Climate Changes and Adaptations

A. Tick (✓) the correct option.

1. (b), 2. (c), 3. (b), 4. (b), 5. (b), 6. (a), 7. (b), 8. (c), 9. (a), 10. (c)

B. Fill in the blanks.

1. elements, 2. Polar, 3. naughty, 4. hibernates, 5. arctic

C. Match the following:

1. (d), 2. (c), 3. (a), 4. (a)

D. State True or False.

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

E. Analogy time.

1. HOT, 2. Penguin

F. Short answer type questions.

1. A scientist who study and predict weather is known as meteorologists.
2. The days are shorter in winter than in summer because the sun is far away in winter and very close to the region in summer.
3. The three elements are winds, height above sea level and distance from the equator.
4. Weather.
5. Nocturnal animals.
6. Arctic term, snow goose, etc.
7. Cold
8. Polar bear, penguin, seal and arctic term.

G. Short answer type questions.

1. Weather is a change for a short period of time that takes place in the atmosphere at a given place and time.
2. The maximum and minimum temperatures are recorded afternoon and morning respectively.
3. The weather of a place is determined by the conditions of temperature.
4. The ways that make it possible for an animal or plant to live in a particular place are called adaptations.
5. Some anchored animals of tropical rainforests are monkey, red eyed tree frog, lion-tailed macaque, etc.
6. Migration is the movement of animals at certain times of the year or during a phase of their life cycle.
7. Arctic turn and snow goose.
8. hibernation is a state of dormancy or inactivity that some animals enter into when it becomes extremely cold.

H. Long answer type questions.

1. The weather is a change for a short period of time that takes place in atmosphere at a given place and time, whereas climate is the average long term weather condition of an area.
The tropical rainforests have large population of animals because of the warm climate, constant support of water and milability of a wide variety of food.
2. The varying day length and amount of sunlight contribute to the climatic conditions of a region because the region which gets more amount of sunlight experiences hot or warmer climate than the region which gets less amount of sunlight. This region experiences colder climate.
3. The uneven heating of the earth affect the atmosphere because it causes the increase of average temperature of the earth. It may cause of increasing in constant temperature of atmosphere. The uneven heating of the earth causes global warming.

4. The polar bear has dense, fine fur that traps air to keep it warm. It has two thick layers of fur, as well it can close its nostril and remained underwater for long duration. The white fur of it helps it against predators and also helps it catch prey.
5. Some adaptive features of animals in desert are as follows:
 - (i) Most of animals living in a desert are nocturnal animals. They spend the day light hours hiding in shady places such as burrows or behind boulders. They come out at night to look for food.
 - (ii) They have long legs, tails and very large ears. The ears have blood vessels near the surface, the air blowing across the cars cools the blood, which in turn cools the body.
 - (iii) The animals sweat, pant and lick to cool themselves.
6. Some major effects of the seasonal variation in climate on the animals are as follows:
 - (i) Some animals change their body colours to adjust seasonal changes. For example the arctic have responds to seasonal changes by changing its colour to blend with its surrdoundings.
 - (ii) Some animals migrate to face seasonal changes. For example, kinds like the arctic term, snow goose, snow owl that live in arctic region fly away to warmer regions when the weather turns extremely cold winter.
 - (iii) Some animals follow hibernate to face seasonal change. These animals cannot migrate to places with a better climate, hibernate through out the winter. Some such animals are bears, skums, chipmunks, bats, etc.

HOTS

1. The name of this animal is chitah. It is found in Africa.
2. No, the camel would not be able to cope up well in a cold region.

Find Out

The north pole has six months long day

The earth is lifted on its axis, because of which very poor sunlight is allowed to reach the north and south poles. When is north pole is tilted towards the sun it experiences continue day light for six months.

Science Olympiad

1. It has hot and humid climate.
2. The frogs and snakes are cold blooded animals so they cannot bear winter and they hibernate through out the winter.
3. We expect wet clothes to dry faster in dry weather.
4. It affects change of reasons. Most of regions on the earth ever remain hot and others are cold.

8. Soil

A. Tick (✓) the correct option.

1. (a), 2. (c), 3. (b), 4. (c), 5. (c), 6. (b), 7. (c), 8. (b), 9. (c), 10(a)

B. Fill in the blanks.

1. Soil, 2. three, 3. humus, 4. clay particle, 5. rain, wind

C. Match the following:

1. (e), 2. (g), 3. (b), 4. (c), 5. (d), 6. (h), 7. (f), 8. (a)

D. State True or False.

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

E. Analogy Type.

1. clayey soil, 2. sandy, 3. soil erosion

F. Name the horizon of soil each of these features refers to:

1. a-horizon, 2. c-horizon, 3. c-horizon, 4. b-horizon, 5. b-horizon, 6. b-horizon, 7. bedrock, 8. a-horizon

G. Give reason:

1. Water drains quickly from the sandy soil because there is enough space among the particles of this soil.
2. Sandy soil is not suitable for growing crops because it has less humus and moisture. It is not a fertile soil.
3. Chemical fertilizers damage soil as they pollute the soil.
4. Humus is beneficial to plants because it contains plant minerals.
5. Wheat grows very well in alluvial soil because it is fertile soil.
6. Horizon-A of the soil in a desert does not have water because the sandy soil of this region cannot hold water in it.
7. Deep well has clean water because there is not silt or fine soil particle to make water dirty. The bottom of deep well is rocky.
8. The horizon-B is rich in minerals because the water soluble materials or minerals from horizon-A reach and accumulate in this region.

H. Very short answer type questions.

1. Top soil
2. humus
3. Alluvial soil
4. Earthworm
5. Deforestation
6. Soil profile

I. Short answer type questions.

1. The disintegration of rocks on the earth's surface due to exposure to natural forces such as wind, water, frost, roots of plants is called weathering.
2. Soil contains rock particles, humus, minerals, water, air, etc.
3. Soil profile is a section that shows distinct layers of soil when we cut straight down into the soil.
4. Terrace farming is preferred in the hilly areas because it helps to check soil erosion.

5. Fertile alluvial soil is found in Indo-Gangetic plains.
6. Laterite soil is the best soil for cultivation of tea and coffee.

Clayey soil	Loamy soil
(i) This is the soil with fine particles which diameter is less than 0.005 mm	This is the soil formed with particles of sand, silt, clay, etc.
(ii) It has rich water holding capacity.	This is fertile soil.

8. The alluvial soil is considered to be the best for plant growth because it is very fertile or rich in humus.
9. The removal of soil by running water and wind is known as soil erosion.

J. Long answer types questions.

1. Soil is not just what you see on the surface. It stretches upto several foot below the ground level. It is made up of a number of layers. The number and thickness of these layers vary from place to place. Each distinct layer of soil is called a horizon. Some important horizons are:
Do it yourself.
2. The action of natural factors that lead to breaking of rocks into small pieces is known as weathering. Some of the ways in which weathering takes place are as follows:
 - (i) Rain water gets into crevices in rocks and in cold places this water freezes to form ice in winters. It causes breaking of rocks.
 - (ii) Moving water also breaks small pieces of rocks.
 - (iii) The roots of trees that encounter rocks, exert pressure on them. This causes cracks in the rocks.
 - (iv) Difference in temperature during the day and night causes constant expansion and contraction in rocks. This weakens the rocks and they crack.
3. the clayey soil gets water lodged even when the rain is not heavy because the particles of this soil is fine and hold themselves tightly, so they do not allow water to pass across them. That is why the water gets collect in this soil and causes logging.
4. The ability of soil to retain water is known as its water-holding capacity. The water holding capacity of soil depends on its composition. The water holding capacity effects on plant growth because the clayey soil which has rich water holding capacity remains wet and sticky, so plants does not grow well in it. On the other hand the sandy soil is not able to held water in it at all. So, it is very dried and is not suitable for plant growth. Loamy soil is good for

plant growth because the water-holding capacity of this soil is exact to grow plants.

5. The top soil plays an important role in substance of life on the earth, because it provides all the things which man and animals need to be alive. It is main medium on the earth to grow plants which give food to eat, air to breathe and other important things to man and animals. Without top soil we cannot grow anything for our food.
6. To check soil erosion is known as soil conservation. Soil conservation is very important to grow plants or crops. Some important methods to conserve soil are as follows:
 - (i) Deforestation should be stopped and afforestation should be undertaken not only in areas already cut, but additional areas should be brought under plantation.
 - (ii) Thicks plants should be grown around the fields to check soil erosion from winds.
 - (iii) To maintain the soil in its natural conditions, it is important to grow different crops. Crop rotation is the way to maintain the fertility of soil.
 - (iv) Proper drainage and irrigation arrangements should be made in the fields.

HOTS

1. Deepak's teacher uses clayey soil to make pottery. Fine particles or sticky nature of this soil makes it useful for this purpose.

Find out

The tea plants are grown in hilly areas because on slopes of hills the water don't get collected, it flows down, as tea plants cannot grow in water.

Science Olympiad

1. We are then so concerned about soil erosion because the process of formation of soil is very long.
2. The process of mixing of unwanted substances in soil is known as soil pollution. Use of pesticides and fertilizers in farming, dumping of waste on lands with fertile soil are the main causes of soil pollution.

To prevent soil erosion are should:

- (i) Use environment friendly methods of farming
 - (ii) Plant trees to check soil erosion.
 - (iii) Follow good methods to manage solid as well as liquid waste generated in cities.
3. The seashore is sandy because it is made up of minute grains of sand or crushed shells and rock, created by fast winds and sea waves.
 4. The water drains out very quickly from sandy soil. It would be a disadvantage for farmers trying to grow plants is this soil because they

need watering plants again and again. As we know that sandy soil does not retain water.

9. Respiration in Animals and Plants

A. Tick (✓) the correct option.

- (b), 2. (a), 3. (a), 4. (a), 5. (b), 6. (a), 7. (c), 8. (b), 9. (c), 10. (b), 11. (b), 12. (b)

B. Fill in the blanks.

- breathe, 2. continuous, 2. rib cage, 4. glucose, 5. skin, 6. tracheoles

C. State True or False.

- True, 2. False, 3. True, 4. False, 5. False, 6. True

D. 1. (e), 2. (f), 3. (a), 4. (b), 5. (c), 6. (d)

E. Analogy Type:

- Lungs
- Without oxygen

F. Very short answer type questions.

- Inhalation
- Respiration
- Spiracles
- Lungs
- Fish
- Rib cage
- Alveoli

G. Short answer type questions.

1.	Exhalation	Inhalation
(i)	It is the process of giving out air through breathing.	It is the process of taking in air through breathing.

- The inhaled air is full of oxygen or fresh air, whereas exhaled air is dirty or full of carbon dioxide. Therefore the inhaled air is different from exhaled air.

3.	Breathing	Respiration
(i)	The process by which an organism takes in oxygen and gives out carbon dioxide is called breathing.	The vital process in living organisms which produces energy from food is known as respiration.

- The gaseous exchange takes place in lungs in man.
- The respiration which takes place in the presence of oxygen is called aerobic respiration.
- The hair and mucus present in the nostrils prevents dust particles from entering the lungs.
- Gills are the organs in a fish through which it completes respiration.
- Micro-organisms take air through their body surface.

H. Long answer type questions.

1. Do it yourself.
2. when a human or man works hard or he/she does works and runs and he/she need more amount of energy. To obtain more energy, the body has burn larger amount of glucose. To do so, the body needs extra supply of oxygen. This supply of oxygen is by arobic respiration.
3. Lactic acid is produced when human cells respire anaebocically. The person developed cramps and is forced to rest for a while. Cramps are temporary. While the person rests, muscles collect engouh oxygen and hygine to respire normally and in the meantime the lactic acid breaks down and the cramps gradually disappear.
4. The plants respire through stomata, lenticels, intercellular space and root hair cells. Stomata are tiny openings present in leaves. Through these stomata exchange of gas takes place. Lenticels are small opening or slits like eyes in the bark of trees. They allow oxygen to diffuse into living stem tissue and carbon dioxide to diffuse out. Root hair cells also play a vital role in exchange of respiratory gases in respiration system of plants.
5. The first respire through their special organs called gills. In bony fish their are four pairs of fills in the pharynx or throat. Each fill is supported by a bony fill arc along each fill arc is a double row of fill lamellae.
Each gill lamella has gill plates which are actual gas exchange surfaces. When surrounded by water, gill lamellae give a large surface area far gas exchange.

HOTS

1. The hair present in nasal cavity play an important role in the process of respiration, as they prevent dust entering into lungs.
2. In inhaled air, oxygen 20.95% and in exhaled air 16% carbon dioxide.

Find Out

Animals have different types of breathing systems because they live in different regions or habitations.

Science Olympiad

1. Ajay developed breathing problems because he inhales air with smoke which was harmful for respiratory organs.
Somking cigrattes is a bad habit because it is harmful for health.
2. When we are sleepy we don't breathe as deeply as we usually do, so yowning helps us bring more oxygen into the blood and move more carbon dioxide out of the blood.

10. Transportation of materials in plants and animals

A. Tick (✓) the correct option.

1. (a), 2. (c), 3. (c), 4. (a), 5. (b), 6. (b), 7. (c), 8. (a), 9. (b), 10. (c)

B. Fill in the blanks.

1. four, 2. Arteries, 3. red blood cells, 4. oxygen, carbon dioxide, 5. kidney

C. State True or False.

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

D. Analogy type.

1. phloem, 2. veins

E. Match the following:

1. (e), 2. (f), 3. (a), 4. (b), 5. (g), 6. (d), 7. (c)

F. Very short answer type questions.

1. Xylem and phloem
2. Transportation of food
3. Kidneys
4. Right ventricle of the heart.
5. It comes from lungs.
6. Dialysis.
7. Values present in the heart.
8. Left side or left atrium.

G. Short answer type questions.

1. Transportation of materials is necessary in living organisms because it makes them able to survive.
2. The vascular system of plants is made up of two types of narrow tubes called the xylem and the phloem.

3.

Transpiration	Translocation
(i) It is the evaporation of water into atmosphere mostly from the leaves of plants through stomata.	It means a change in location. It often refers to genetics, when part of a chromosome is transferred to another chromosome.

4. Four chambers of human heart are right atrium, left atrium, right ventricle and left ventricle.
5. The red blood cells (RBCs) contain a pigment called hemoglobin, which is red in colour. That is why blood is red.
6. The four major components of blood are red blood cells, white blood cells, platelets and plasma.
7. The process of removal of metabolic wastes from the body is known as excretion.

8. Dialysis is an artificial procedure to remove waste materials from the blood by a machine. A person with kidney failure has to undergo dialysis.

H. Long answer type questions.

1. The plants has a unique system to transport food and water. This system is called the vascular system. The vascular system is made up of two types of narrow tubes called the xylem and the phloem. The tubes that transport water are called xylem and the tubes that transport food are called phloem.

Each of these tubes are organised into bundles called the vascular bundles and form a continuous network in the entire plant.

2. The heart is a fist sized muscular organ that pumps oxygen rich blood throughout the body. The inside of the heart is divided into four chambers. The upper two chambers are the right atrium and the left atrium. The two lower chambers are called the left ventricle and right ventricle.

3. The working of heart is given below:

Blood travels to all parts of the body through a network of blood vessels called arteries and veins. The heart functions as a double pump. When impure oxygen poor and carbondioxide rich blood arrives at the heart from the veins, it first enters the right atrium. From here the blood flaws through an opening into the right ventricle.

The impure blood is transported from the right ventricle to lungs by the pulmonary artery. Gaseous exchange takes place in the lungs. The blood gives off carbon dioxide and is replenshed with oxygen. This blood reaches the left atrium through the pulmonary veins. From here it goes into the left ventricle and it pumps it to all organs of the body through a dense network of arteries.

4. The main organs of human urinary system are kidneys, ureters, urinary bladder, etc. There are two kidneys in human body. They are located in the abdominal cavity. Each kidney contains many tiny tubules which work like filters. The kidneys filter the blood and produce urine. A major component of urine is water.

The urine flows through two long tubes called ureters and collects in the urinary bladder. Urinary bladder is a storage sac for the urine. The urine ultimately is drained out the body.

5. The pacemaker is found in heart. It is a small mass of specialized cells in the heart's light atrium produces electrical pulses that cause the heart beats. It is called natural pacemaker.

Sometimes the natural pacemaker may be defective causing the heart to beat slower, faster or irregularly. For such people, an artificial pacemaker, a small battery-operated device, is planted under the skin of the chest.

- The excretory system of our body is very important because it helps our body to get rid of waste materials generated in it. These wastes produced in our body contain many harmful substances. Accumulation of these substances in our body may cause severe diseases. Therefore, excretion is very much important in our body.
- Kidneys are two wax shaped organs located in lower part of our abdomen. Each kidney contains many tiny tubules which work like filters.
Blood is brought to the kidneys through the arteries. As the blood flows through the capillaries in the tiny tubules, it is filtered the end product of this filtration process is urine.
- Plants have also a well developed system for excrete waste products produced in them. The waste products of plants include the oxygen produced during photosynthesis, and carbon dioxide and water vapours produced during respiration at night. The gaseous waste products are removed through the stomata present in the leaves.
Some waste products are transformed in the form of crystals such as calcium oxalate and calcium carbonate which are stored in their bark, leaves or fruits and are removed when they naturally detach from the plants after their maturity or when these bark naturally peels off.

HOTS

- $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{Glucose} + \text{Oxygen}$
- Do it yourself.
- The maximum amount of excess water is lost through urination. During summer when the surrounding temperature is high, we lose water in form of sweat, direct evaporation considerably. This is the reason for more urine out put and frequent urination under very cool conditions and in winter.

Find out

The reason behind malfunctioning of kidneys is high blood-pressure and diabetes are the two most common cause of kidney failure and it can also damage due to physical injuries, diseases or other problem.

Science Olympiad

- Red blood cells are formed in red bone marrow of bones. Stem cells in the red bone marrow called hemocytoblasts give rise to all of the formed elements in blood.
If a hemoxytoblast commits to becoming a cell called a proerythroblast, it will develop into a new red blood cell.
- Do it yourself.

11. Reproduction in Plants

A. Tick (✓) the correct option.

- (c), 2. (c), 3. (b), 4. (c), 5. (c), 6. (a), 7. (b), 8. (b), 9. (b), 10. (b)

that a new plant can be grown from a single cell.

J. Long answer type questions.

1. Do it yourself.

A flower is the productive part of the plant. All flowers develop from a bud. A bud in the initial stage is usually green and consists of sepals. The sepals protect the parts of a flower before it bloom. The other part of a flower are petals, postmen, pistil, etc.

2. After fertilization the flower loses its shine and shows main four changes that take places are development of endosperm or embro, development or maturation of ovules into seeds and formation of fruit from ovary.
3. some plants can multiply without sexual reproduction. In other words male and female reproductive parts do not contribute in the process of the formation of a new plant. Such a process is called asexual reproduction or vegetative propagation.

Any vegetative part of a plant such as the root, stem, leaf or flower may be propagated into a new plant. New plants can grow by the separation of parts from the original plants.

4. Pollen grains are tiny particles which contain vegetative cells and generative cells. When a pollen grain falls on the stigma of a flower of the same kind, it develops a long tube called the pollen tube.
5. Artificial methods of vegetative propagation are widely used in agriculture and particular. Some popular methods of artificial propagation are cutting budding grafting, layering and tissue culture. Rose, bougainvillea can be propagated through cutting from their stem. Grafting is commonly used for propagating trees and shrubs. In plants, jasmine and grapevine propagate through layering. Tissue culture is an artificial method of vegetative propagation.
6. Tissue culture is an artificial method of vegetative propagation. It is undertaken in specialized laboratories. It is based on the principle that a new plant can be grown from a single cell. A piece of stem, leaf or root is placed under special conditions in a semi-solid solution containing nutrients and plant hormones in closed container. The container with the plant tissue is incubated under specific conditions of light and temperature. The cells of the tissue divide and each gives rise to a new plant.

HOTS

1. Self pollination and cross pollination.
2. Nothing will happen. A pollen tube cannot form. The rose will reconise the hibiscus pollen as a foreign organism and reject it.
3. They cannot be pollinated by wind because the anthers and pistils remain covered by petals.

Find Out

1. Yes, plants have DNA.

2. They cannot be pollinated by wind because the anther and pistil remain covered by petals.

Science Olympiad

1. The potatoes have eyes which can produce a new plants. The buds which sow the lady were new plants grown through eyes of the potatoes.
2. The characteristic of jasmine flowers helps in pollination as because of it's fragrance and color insects get attracted and become agent of pollination for eg. bees, butterflies.

12. Time and Motion

A. Tick (✓) the correct option.

1. (b), 2. (b), 3. (b), 4. (a), 5. (b), 6. (b), 7. (b), 8. (b), 9. (b), 10. (b)

B. Fill in the blanks.

1. The position and the length of the shadow cast by an object changes with the time of the day.
2. periodic
3. periodc
4. speed

C. State True or False.

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

D. Analogy type.

1. sand
2. Speed

E. Very short answer type questions.

1. Sand clock, candle clock.
2. It consists of two rounded glass bulbs connected vertically by a narrow neck of glass, containing sand.
3. The SI unit of time is second.
4. An event that recurs at intervals.
5. the rising and the setting of the sun.
6. Uniform motion.
7. Non-uniform motion.

F. Short answer type questions.

1. Stop watch is a special kind of watch which is used to measure time interval taken by an event.
2. GMT means Greenwich Mean Time.
3. The speed of a long route train is an example of non-uniform motion.
4. Uniform motion : A body is said to have uniform motion when it travels equal distances in equal intervals of time.
Non-uniform motion: When a body does not travel at the same speed, it is called in a non-unifrm motion.
5. The two examples of uniform motion are rotation and revolution of

the earth and hands of a watch.

6. Odometer is a device in vehicle which records the total distance travelled by vehicle.

G. Long answer type questions.

1. In ancient time people had realized the importance of time. They also learnt to keep track of time with the help of certain natural events such as the rising and setting of the Sun, the phases of the moon, and formation of low and high tides. These events were periodic. Since period events repeat after a regular time-interval, people used such events to estimate time.
2. The distance covered by a moving object in a unit time is the average speed of the object. The speed of an object in motion depends in two factors—(i) The total distance travelled and (ii) The total time taken to travel the distance. It is measured in cm/s, m/s and km/h.
3. A body is said to have uniform motion when it travels equal distances in equal intervals of time. We can show uniform motion through the example given below:

A train moves out the platform and it covers a distance of 500 metres in 5 minutes, and the next 2 km are covered in 6 minutes and travels the next 10 km in 15 minutes. Then the train travels at the speed of 80 km in an hour. If we calculate the speed of the train for various distance we will find that in the last phase the train has travelled in uniform motion.

4. There is a certain method to calculate the speed. Let's learn how speed is calculate with an example. The TGV is the world's fastest train. In one of its tests, the train travelled 95 kilometrers in 10 minutes. What was its speed?

Here, distance = 95 km

Time = 10 minutes

= 10/95 hour

Speed = $\frac{95 \times 606}{10} = 570 \text{ km/h}$

Therefore, the speed of the TGV train is 570 km per hour.

5.

Odometer	Speedometer
An Odometer is a device which records the distance travelled by the vehicle. Most cars have two odometers, one records the total distance travelled and the other can be adjusted to record the distance the car travels during a particular journey.	A speedometer measures the speed of a vehicle in motion. It mostly records the speed in km/h. A Speedometer helps to keep a check on speed and drive safely.

3. Fuse
4. Switch
5. Electric heater
6. Negative terminal
7. Tungsten

F. Short answer type questions.

1. The flow of electric charge per unit time is known as electric current.
2. The path along which electric current flows is called an electric circuit.
3. Four conductors of electric current are copper silver, steel, aluminium, etc.
4. The filament of a bulb is made from tungsten, because it is a metal which has a higher resistance and abnormally a high melting point.
5. When an electric current flows through a conductor, it flows as a drift of free electrons in the metal.
6. We use fuse in an electric circuit to protect its and the appliances from being damaged when a large electric current flows through circuit.
7. The name of this type of circuit is a parallel circuit. A single electric power source supplies and the lights and appliances with the same voltage.
8. Electromagnet is in electric wire coiled around a metal core.

G. Long answer type questions.

1. Some advantages of heating effect of electric current are as follows:
 - (i) The electric bulbs heat up due to the heating effect of the electric current.
 - (ii) Electric appliances such as the iron, water heater, toaster, electric oven and room heater all work due to the heating effect of the electric current.
2. A fuse in an electric circuit is very important because it protects it. A fuse is usually made up of a thin copper wire. The wire is used in a fuse is thinner than the main copper wire used in the circuit. It is the weakest point in the electric circuit. The thickness of the wire in the fuse is such that it melts when the current exceeds a certain value. When the fuse wire melts, the circuit breaks and the excess amount of electric current is prevented from flowing through the circuit.
3. A piece of iron can be converted into a temporary magnet. If a wire is wrapped around a piece of iron, and electricity is allowed to pass through it, then due to the magnetic effect of the electric current passing through the wire, the piece of iron becomes temporary magnet.
4. Do it yourself.

When the current of electric door has passed the circuiting is completed. The current flows through the wire and the iron rod becomes an electromagnet. The tiny iron hammer moves towards the bell, the circuit is broken and electricity stops flowing through it

and so the iron rod loses its magnetism. As the rod loses magnetism the hammer returns to its original place. The circuit makes fresh contact again.

Once again electricity flows through the circuit and the rod acquires magnetism and so the hammer strikes again. The cycle repeats itself and the ball continues to sing as long as the switches is kept pressed.

H. Give reasons.

1. When the bulb switched on it becomes extremely hot because of heating effect of electric current.
2. The filament of a bulb does not melt even through it heats to more than 2500°C due to its high resistance.
3. A magnetic needle place near circuit deffects due to change in electric field produced in magnetic field.
4. The fuse of tv got burnt due to excessive current flowing in the wire.
5. Do it yourself.

A bulb consists of an evacuated glass container with conducting supports to hold a coil of fine tungsten wire. This metal has a higher resistance and abnormally high melting point. When an electric current passes through the filament due to its high resistance, it heats up quickly to about 25000°C . At this temperature the tungsten filament begins to glow and emits light.

HOTS

1. I am agree, because this fuse protects the circuit.
2. No, it can use only magnetic material, so it cannot be attracted by an electromagnet. Hence electromagnet cannot be used for separating bags from a garbage heap.
3. The heating effect of electric current results in the wastage of energy in an electric bulb. A part of the electrical energy is converted into heat energy, which cannot be utilised.

Find Out

Melting Point is $3,422^{\circ}\text{C}$

Science Olympiad

1. Tungsten is used in electric bulbs because it has high melting point and does not oxidize. We can not use copper wire filament because it has very low resistance, it will melt the filament and bulb will not glow.
2. (a) To allow more current to pass through we will choose wire A.
(b) To allow less current to pass through we will choose wire B.

14. Light

A. Tick (✓) the correct option.

1. (a), 2. (c), 3. (c), 4. (a), 5. (a), 6. (a), 7. (a), 8. (a), 9. (b), 10. (a)

B. Fill in the blanks.

1. equal, 2. virtual, errect, 3. plane, 4. convex, 5. normal

C. State True or False.

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

D. Analogy Type.

1. refraction, 2. diversion

E. Very short answer type questions.

1. A man's reflection in the mirror.
2. The three uses of concave mirrors as follows:
 - (i) It is used as reflectors in the head lights of cars.
 - (ii) It is used in search lights.
 - (iii) It is used by dentists.
3. Concave lens. 4. Rainbow 5. Left hand 6. Concave mirrors.
7. Diverging.

F. Short answer type questions.

1. The source of light which are not man made like sun and stars are called natural source of light.
2. Light travels in a straight line. This is called the rectilinear propagation of light.
3. The angle between the incident ray and the normal is known as the angle of incidence and the angle between the reflected ray and the normal is called the angle of reflection.
4. When a parallel ray of light falls on a smooth surface like that of a plane mirror, it gets reflected in a definite direction. Such reflection is called a regular reflection.
5. The image formed due to the actual meeting of the rays of light at a point or the image which can be taken on the screen is known as real image.
6. A plane mirror forms a virtual image because of lateral inversion.
7. The concave and convex mirrors have curved surfaces therefore they are called spherical mirrors.
8. A concave lens is called a diverging lens, because it diverges and appear to come from a point known as the focus of the lens.

G. Long answer type questions.

1. The formation of day and night suggests that light travels only in a straight line. If this was not so, then light would have curved around the earth and there would have been sunlight even during night.

2.	Regular Reflection	Diffused Reflection
	When a parallel beam of light falls on a smooth surface like that of a plane mirror, it gets reflected in a definite direction, such reflection is called a regular reflection.	When a parallel beam of light falls on a rough surface, it gets scattered in different directions. This diffuses the reflected light. Such reflection is called irregular or diffused reflection.

3. Some major characteristics of the image formed by a plane mirror are as follows:
 - (i) It is virtual and erect.
 - (ii) It is of the same size as the object.
 - (iii) It appears to be as much behind the mirror as the object is in front of it.
 - (iv) It is laterally inverted.
4. The image formed due to the actual meeting of the rays of light at a point or the image which can be taken on a screen is known as real image. It is different from virtual image as it cannot be obtained on a screen.

H. Illustrate and label the following.

1. Do it yourself.

A concave mirror is a spherical mirror whose inner curved surface is the reflective surface. In a convex mirror, the outer curved surface is reflective surface.

2. The concave lens is a diverging lens, because it causes the light rays to bend away (diverge) from its axis. In this case, the lens has been shaped so that all light rays entering it parallel to its axis appear to originate from the same point of defined to be the focal point of a diverging lens.

HOTS

1. The height of the image will be 4 cm.
2. The nature of the image or retina is inverted.

Find Out

The clear glass is made from a material which consists silica sand, sodium oxide, calcium oxide, dialomite, fieldsper, etc.

Science Olympiad

1. If we look at covers mirror, our image size will be always small and erect. If we look into concave mirror, we can see an enlarged image when placed close and an inverted image. If we look into plane mirror, we will find an image size same that of our size. All this we can do without touching the mirrors.
2. Do it yourself.

15. Natural Disasters

A. Tick (✓) the correct option.

1. (c), 2. (b), 3. (a), 4. (c), 5. (a), 6. (c), 7. (c), 8. (a), 9. (b), 10. (c)

B. Fill in the blanks.

1. heating, 2. High, 3. floods, 4. cyclones

C. State True or False.

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

D. Very short answer type questions.

1. Hot air rises up because when it gets hot it expands and become less dense than the air around it.
2. When we go up in the atmosphere, the air pressure decreases.
3. An eye.
4. Anemometer.
5. Warm waters and warm moist air.
6. yes, it is easier.

E. Short answer questions.

1. Every place on the earth has a column of air over it. Although air is not visible, it has mass like any other matter. That is why the overlying column of air exerts pressure at every place. This is known as atmospheric or air pressure.
2. The air pressure affected with change in altitudes as it decreases with increasing altitude because as we move higher there is less air above us.
3. The difference between the atmospheric pressure causes wind.
4. Storms are created when a centre of low pressure develops with the system of high pressure surrounding it. This combination of opposing forces can create winds and result in the formation of storm.
5. A low pressure area in a region develops when air pressure is lower than it is in the area surrounding it.
6. A cyclone always forms in an ocean, when a vast surface of water heats up. The warm water in turn heats the air above it. This causes a low pressure on a vast area of ocean.

F. Long answer type questions.

1. Method-take a bottle and add a paper ball in it now blow inside the bottle.
Conclusion- The paper ball will be pushed outside, because high speed wind accompanied by reduced air pressure.
2. Clouds formed mostly in the upper regions of the troposphere. Troposphere is a layer of the air from the surface of the earth upto about 15 km above. Clouds form when warm humid air moves upwards. Air with plenty of water vapour, the air can hold depends on the temperature. Warm air can hold more water vapour than cold air. Leave in the humid air cools. Cold air holds less water vapour. So the excess amount of water vapour in the cold air condenses into tiny water droplets or ice crystals and forms clouds.
3. The word cyclone is derived from the Greek word 'cyclos' meaning the coils of a snake. Cyclones are large revolving tropical storms. They always forms in an ocean, when a vast surface of water heats up. Cyclones cause heavy rain and storm surges. A strong storm surge is

an abnormal rise of sea level near the coast. They cause severe floods in coastal areas.

G. Give reasons.

1. When humid air reaches a certain height it forms cloud because this air condenses into tiny water droplets to form clouds.
2. Cyclones form over oceans because they need warm waters and warm moist air to form which they get over vast oceans.
3. Due to the low pressure, the moist air from the ocean surface begins to rise up rapidly. This creates a strong upwards wind that rotates spirally.

HOTS

1. The natural events become natural hazards when they take a dangerous shape to destroy life and property.
2. You should take cover under a strong table or any other piece of furniture and stay put until the shaking stops and always avoid roads, bridges that might have been damaged by the earthquake.
3. In India, cyclones generally occur between April and November each year.

Find Out

Immediately after the flash, the air cools and contracts quickly. This rapid expansion and contraction creates the sound wave that we hear as thunder.

Science Olympiad

1. I think these are designed such a manner to follow Bernoulli's Principle which states that faster moving air has lower air pressure and slower moving air has higher air pressure.
2. We choose roof top.
3. We see lightning first and then we hear thunder because light travels much faster than sound waves.
4. Do it yourself.

16. Water : A Wonder Liquid

A. Tick (✓) the correct option.

1. (b), 2. (c), 3. (c), 4. (b), 5. (a), 6. (a), 7. (b), 8. (c), 9. (c), 10. (c)

B. Fill in the blanks.

1. 2 percent, 2. Rain, 3. dried, 4. rainwater, 5. drip

C. State True or False.

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

D. Very short answer type questions.

1. Water cycle
2. Scarcity of water
3. Heavy rains
4. Percolation
5. Water table
6. Water vapour

E. Short answer type questions.

1. The water table of a regions means the amount of groundwater which is present in that region.
2. The excessive use of groundwater which causes a danger for its availability in an area is known as ground water depleting. Most industries draw water from the ground and depleting the ground sources.
3. The rainwater that has collected in the empty space below the porous layer of rock is known as an aquifer.
4. The distribution of water is uneven in our country because rainfall varies from place to place. A region which receives very little rain has less portable water.
5. The rainwater harvesting is a method of direct collection of rainwater from roof tops of buildings. It can be done both on the roof tops of our houses as well as industrial buildings.
6. Check dams are the solid structure which are made to slow down the flow of water in sexual regions. Rainwater percolates into the soil only if it does not flow away quickly. So the check dams are constructed in path of its flaw.
7. The drop irrigation system supplies the required amount of water only around the roots. This minimize the amount of water required to grow crops. In this way it conserve water.

F. Long answer type questions.

1. Water is important for irrigation because:
 - (i) it helps the seeds to grow in the soil and plants need water to gain a proper growth to give a sufficient produce.
 - (ii) it remain the soil wet which help plants growth.
 - (iii) it helps in increasing of soil fertility when farmers give fertilizer in their crops.
2.
 - (i) The human population is increasing all the time. To meet the needs of an ever increasing human population, more houses, offices, schools, shops, roads are being built. These construction activities need a huge supply of water. The demand of drinking water has also increased. This affects the ground water seriously.
 - (ii) The growing industrial areas are also a great threat for the ground water. In these industries to make almost every item that we use require water. Most industries draw water from the ground and become cause of depletion of ground water.
 - (iii) Most of the water available in our fresh water sources is used by farmer to irrigate their crops in fields. Nowadays, they use large quantities of ground water by sinking keep tubwells to cultivate crops. This causes great loss of groundwater.

3. Water management is a method to conserve water sources for future or a long period of time. The increasing population has put tremendous pressure on the fresh water sources in the world. So, to manage water sources become very important large dams are built on rivers to prevent rainwater from flowing away directly into sea.

Water stored in the dams is supplied to nearby cities and towns through pipelines. Water for agricultural purposes is supplied through irrigation system. All these activities are the parts of water management which is very important to make water available for everyone.

4. The main causes of water pollution are as follows:
 - (i) Many town or cities flow their waste dirty water into rivers or ponds which pollute water present in these water bodies.
 - (ii) Industries make products on a large scale and use a huge amount of water during the production process. It creates waste water and this water is discharged into rivers.
 - (iii) The fertilizers and pesticides which we use in farms remain in the soil and washed into rivers when it rains.
 - (iv) Different social and religious activities also cause water pollution.
5. Check dams help in raising the water table of a region as they slow down the flow of water and increase the process of percolation which play an important role in increasing water table. By constructing check dams the water can be prevented from flowing away, it slow down the flow of water and allow it to percolate into the soil.

Check dams have been constructed in certain villages of Rajasthan to increase the water table of their areas.

HOTS

1. The top priority of natural water policy in India is to make drinking water available for everyone.
2. No, it cannot be possible.

Find Out

The sea water is salty because it contains a huge amount of salt that comes from two sources-run off from land and openings in the sea floor.

Science Olympiad

1. We should use a very small amount of water in cleaning and washing during a severe water scarcity.
2. This is happened, because Gopal drawn water from the well for a long period of time and the water table in the well went down and dried up.

3. The water table all around the earth is not similar amount of water because the nature of soil and rainfall varies from region to region.
4. Do it yourself.

17. Forests : Our Lifeline

A. Tick (✓) the correct option.

1. (a), 2. (c), 3. (c), 4. (c), 5. (a), 6. (c), 7. (a), 8. (b), 9. (b), 10. (a)

B. Fill in the blanks.

1. rainforest, 2. cones, 3. natural, 4. oxygen, 5. tiny droplets

C. State True or False.

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

D. Analogy type.

1. cities, 2. Afforestation

E. Very short answer questions.

1. Forests are important for animals as they provide the food and shelter.
2. Leaves, wood, fruits, rubber, flowers, herbs, fodder, timber, rasim, etc.
3. Deforestation damages the shape of water cycle in nature.
4. it is called forest flood.
5. Deforestation.
6. Food chain.
7. The forest are called green lungs of the earth because they purify the air.
8. The heavy rains do not cause floods in forest because the trees in the forest abstract the flow of water.

F. Short answer type questions.

1. In India, different kinds of trees are found, like mahagony, sandalwood, rubber, teak, pine, mango, sundari, babool, beeker, etc.
2. Forests are very important because:
 - (i) they provide us useful products such as fruits, flowers, timber, etc.
 - (ii) they purify the air and provide us oxygen to breathe in.
 - (ii) they help in bringing rains, etc.
3. The forests are a renewable natural resource because they can be grown after deforestation. They also can be grown in barren lands.
4. The food is an inter connected food chains depicting the complex representation of energy in the nature.
5. The few plants grow on the floor of a rainforest because there is a lck of sunlight. Which is necessary to gross a seed into a baby plant. These forests are very thick and sunlight does not reach the floor of these forests.

6. The three human activities that can damage forests are as follows:
 - (i) He cuts trees on a large scale to get land for building houses, roads, factories, etc.
 - (ii) He cuts forests to get land for growing crops or farming.
 - (iii) He cuts trees to get wood for various purposes.
7. Four useful products of forests are fruits, flowers, timber and medicines.
8. Pollution affect wildlife seriously. The polluted rivers as streams that run through forest became a serious danger for wild animals. Drinking polluted water exposes the wild animals to diseases.

G. Long answer type questions.

1. The topmost layer of fertile soil is mostly blown away by the wind and washed away by flowing water. The dense growth of plants in a forest reduces the force of wind and flowing water, there by preventing soil erosion.
2. The decomposers are very important in forest because they play a vital role to make the soil fertile in the forest as they feed on dead plants and animals and convert them into simpler substances which mix into the soil. Most of these substances are plant nutrients and are used by the plants.
3. We can do the following things to spread awareness on forest conservation to rural people.
 - (i) We should tell the importance of plants and tress to the local people and try to prepare for not cutting trees.
 - (ii) We should encourage them to plant trees or to follow social forestry programme runs by Indian government.
 - (iii) We should encourage them to stop overgrazing by cattle and other animals.
4. The ecosystem in a forest can be maintained by conserving the trees and animals in the forests or our ecosystem as they play an important role in keeping balance in nature through the food chains and food wets which are essential to maintain the ecosystem.

HOTS

1. I can think of a food chain with human beings as the consumers because he also gets food from ecosystem.
2. It is not a better option because a complete and prosperous ecosystem needs different kinds of trees and plants. Some kinds of plants cannot give support to all kinds of animals.

Find Out

All the food chains always begin with a plant because plants are producers and all others are consumers.

Science Olympiad

1. Deforestation lead to reduction of soil fertility because it increases the soil erosion.

2. We do not too much waste in a forest because the decomposers are always active to decompose it.
3. Trees are planted along the road to check noise, soil and air pollution.
4. (a) For building rest houses tree are cut on a large scale, that is why this activity causes forest damage.
(b) Tourists throw different kinds of waste materials which make dirty the environment of the forest.

18. Waste Water Management

A. Tick (✓) the correct option.

1. (a), 2. (c), 3. (a), 4. (a), 5. (b), 6. (c), 7. (a), 8. (b), 9. (c), 10. (a)

B. Fill in the blanks.

1. muddy sediment
2. waste water
3. problems
4. water pollution
5. sewer system

C. Match the following :

1. (e), 2. (d), 3. (a), 4. (b), 5. (c)

D. Sate True or False.

1. True, 2. True, 3. False, 4. False

E. Very short answer type questions.

1. Water pollutants
2. Water treatment
3. muddy sediment
4. It pollutes the water bodies
5. It is medidramical filter to remove large objects from waste water.
6. A manhole is very important in sewage system because it is used to clean the sewer.
7. A septic tank is an ansite mini sewage treatment plant.
8. Three such diseases are cholera, typhoid and hepatitis.

F. Short answer type questions.

1. Waste water should be efficiently managed because
 - (i) it pollutes fresh water bodies.
 - (ii) it spreads fatal diseases.
2. We can do many things to central sewage. Some of them things are that we should not waste fresh water in washing, cleaning and bathing. We should not use such chemical which cause water pollution.
3. Throughout the day a housewife performs such tasks as cleaning fur floors and cupboards, cutting regetables, washing clothes and utensils, etc. The waste water generated by these activities discharges in the sewer line which takes this dirty water to waste water plant.
4. The untreated water has dangerous chemicals that pollutes the water in the water bodies and because of them the level of dissolved oxygen falls, fish and other aquatic animal begin to die.

5. Water pollution is the contamination of water bodies, usually as a result of human activities. Water bodies include for example lakes, rivers, oceans, groundwater, etc.
6. Names of four water borne diseases are cholera, typhoid, hepatitis and dysentery.

G. Long answer type questions.

1. The different methods involved in treatment of waste water in water treatment plant are as follows:

The waste water is treated using a series of physical and chemical treatments.

- (i) Removal of large solids from the sewage- when the sewage reaches a sewage treatment plant through a network of pipes, the waste water is made to pass through screens which separate solids such as pieces of stones, wood, plastics, glass, metal, etc.
 - (ii) Sedimentation of waste from water here the sludge is separated from the waste water and it is converted into manure or burnt and used as landfill.
 - (iii) Decomposition of organic matter- here the waste water is held in the created tanks for 48 hours and micro organisms decompose most of the organic matter still present in the sewage.
 - (iv) The separation of sediments and chemical treatment during this process most of the solid substances from the water are removed and water is shifted to a tank where it is treated with chlorine to kill all the micro- organisms present in the waste water.
2. After separating the sludge from the sewage, the waste water is transferred into the large tanks where air along with micro-organisms is bubbled into the tank. The reason of it, is that the micro-organisms break down the waste matter into harmless substances. Oxygen in the air is used by the micro-organisms to respire.
 3. The stones and pieces of wood are removed from the sewage in a sewage treatment plant through a network of pipes. The waste water is made to pass through screens which separate solids such as pieces of stones, wood, plastics, glass, metal, etc.

HOTS

1. The bar screen present in a waste treatment plant is use to separate the solids like pieces of stones, wood, plastics, etc.
2. The vent pipes allow the sewer gases to escape to the outside, rather than being realed inside the house.

Find Out

An oil spill is the release of a liquid petroleum into the environment, especially the marine or sea ecosystem, due to human activity, and is a form of pollution.

Science Olympiad

1. Yes, I think because they will be reason of serious water pollution.
2. This habit does not become a reason of contamination of groundwater because we use fresh water to irrigate plants.

Model Test Paper -1

A. Answer the following questions in one sentence.

1. The process why which the organisms obtain their food and utilize it, is called nutrition.
2. Fibres that are obtained from animals and plants are called natural fibres.
3. The heat is a form of energy that gives us the sensation of hotness or coldness.
4. Substances whose molecules have one or more hydrogen atoms are called acids.
5. Climate is the average long term weather condition on an area.

B. Answer the following questions in brief.

1. The weather of a place is determined by the conditions of temperature.
2. Soil contains rock particles, humus, minerals, water, air, etc.
3. The respiration which takes place in the presence of oxygen is called aerobic respiration.
4. The ways that make it possible for an animal or plant to live in a particular place are called adaptations.
5. A precipitate is formed by a double displacement reaction called precipitation reaction. In this reaction the compounds react in their aqueous state to form an insoluble product which appears in the form of a precipitate.

C. Answer the following questions in detail.

1. We know that the iron objects like iron nails or iron gates are covered with a reddish- brown substance. This substance is rust. When iron is left exposed to moist air, it chemically reacts with oxygen and water in the air to form a powdery substance, iron oxide (Fe_2O_3) which we call rust.
2. Bases which are soluble in water are known as alkalies.
The three properties of alkalies are as follows:
(i) They are colourless. (ii) They are odourless.
(iii) They are carrosive to the skin.
3. We can describe the effects of heat as follows:
When an object is heated, there are many changes that take place.
To understand these changes, consider the common practice of boiling water.
4. Silk is obtained from cocoons by the process of reeling.

D. Fill in the blanks.

1. artificial
2. insulator
3. bitter
4. roundly spherical
5. physical

E. Define the following.

1. The removal of soil by running water and wind is known as soil erosion.
2. Respiration: The vital process in living organisms which produces energy from the food.
3. Reproduction: Production of young ones of one's own kind.

F. Match the following.

1. (e) 2. (F) 3. (a) 4. (b) 5. (c) 6. (d)

G. Tick (✓) the correct option.

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

H. Give reasons:

1. Curd has a sour taste because lactic acid contained in it.
2. A use sting is tuarted with an aklali because it reacts with formic acid and neutralizes it.

I. Convert them.

Do it yourself.

Model Test Paper -2

A. Answer the following questions in one sentence.

1. Transpiration is the evaporation of water into atmosphere mostly from the leaves of plants through stomata.
2. Nature has developed a few novel methods by which seeds can be scattered over a large area. This is called seed dispersal.
3. Stop watch is a special kind of water which is used to measure time interval taken by an event.
4. The flow of electric charge per unit time is known as electric current.
5. Concave

B. Answer the following questions in brief.

1. The source of light which are not man made like sun and stars are called natural source of light.
2. Storms are created when a centre of low pressure develops with the system of high pressure surrounding it. This combination of opposing forces can create winds and result in the formation of storm.
3. Every place on the earth has a column of air over it. Although air is not visible, it has mass like any other matter. That is why the overlying column of air exerts pressure at every place. This is known as atmospheric or air pressure.
4. The food is an inter connected food chains depicting the complex representation of energy in the nature.
5. We can do many things to central sewage. Some of them things are that we should not waste fresh water in washing, cleaning and bathing. We should not use such chemical which cause water pollution.

C. Answer the following questions in detail.

1. The topmost layer of fertile soil is mostly blown away by the wind and washed away by flowing water. The dense growth of plants in a forest reduces the force of wind and flowing water, there by preventing soil erosion.

2. Water is important for irrigation because:
 - (i) it helps the seeds to grow in the soil and plants need water to gain a proper growth to give a sufficient produce.
 - (ii) it remain the soil wet which help plants growth.
 - (iii) it helps in increasing of soil fertility when farmers give fertilizer in their crops.
3. **Regular Reflection:** When a parallel beam of light falls on a smooth surface like that of a plane mirror, it gets reflected in a definite direction, such reflection is called a regular reflection.
Diffused Reflection: When a parallel beam of light falls on a rough surface, it gets scattered in different directions. This diffuses the reflected light. Such reflection is called irregular or diffused reflection.
4. Some advantages of heating effect of electric current are as follows:
 - (i) The electric bulbs heat up due to the heating effect of the electric current.
 - (ii) Electric appliances such as the iron, water heater, toaster, electric oven and room heater all work due to the heating effect of the electric current.

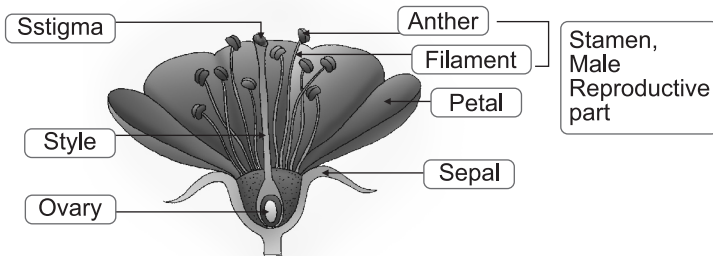
D. Fill in the blanks.

1. 2500°C
2. The position and the length of the shadow cast by an object changes with the time of the day.
3. stamen 4. seeds 5. kidney

E. Give two examples of each:

1. Lady finger and pea 2. Chilli and papaya 3. Roots and stem

F. Label the different parts of a flower in the following diagram.



G. State True or False.

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

H. Give reasons:

1. Cyclones form our oceans because the need warm waters and warm moist air to form which they get over vast oceans.
2. Due to the low pressure, the moist air from the ocean surface begins to rise up rapidly. This creates a strong upwards wind that rotates spirally.
3. When humid air reaches a certain height it forms cloud because this air condenses into tiny water droplets to for clouds.

I. Tick (✓) the correct option.

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