



Science

Key Book



Class Five



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UNIT

1

**Characteristic of Living and
Long-living Things**

(A) Answer the following questions:

(i) Define the following terms:

- (a) growth (b) respiration
(c) response (d) reproduction

(a) Growth:

All living things grow. They take food to increase in size and weight.

(b) Respiration:

All living things respire to produce energy. The energy in the form of food we take in is released through respiration. It combines and is released gradually in the body with this energy, we are able to carry out various life activities.

(c) Response:

All living things respond to stimuli e.g when we touch a hot vessel then we immediately withdraw our hand.

(d) Reproduction:

All living things reproduce their own kinds and thus they multiply.

(ii) What is the difference between the growth of plants and animals?

Ans: We know that the young ones of animals, though they are small, resemble their parents. They

gradually grow in size and shape till a certain age whereas the plants continue to grow through their life.

(iii) What is Stimuli?

It is an object for which animals and plants show their reaction.

(iv) How do plants respond to stimuli?

- The stems of the plants grow towards the light.
- Roots go deeper into soil away from the light.
- When we touch the leaves of “Touch me-not” plant. They bend down immediately. After sometimes they come back to their normal position.
- Sunflower keeps face towards the sun.
- Lotus flower open during the day.

(v) Describe reproduction in animals:

All living things reproduce their own kinds and thus they multiply. Animals like birds, lizards, snakes, frogs and fishes lay eggs. They are hatched into young ones.

(B) Fill in the blanks:

- (i) Growth is an increase in size and wight .
- (ii) Growth stops in size after sometime.
- (iii) Growth in living things is internal.
- (iv) All living things respire to produce energy .
- (v) Responding to stimuli is quicker in animals than in plants.

- (vi) Female give birth to young ones.
- (vii) Plants reproduce through seeds, stems, roots and bulbs.

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

- (i) All living organisms have some common characteristics. **T**
- (ii) All living things grow. **T**
- (iii) Certain non-living things also grow in size but they grow internally. **F**
- (iv) Hair, nail are non-living things. **T**
All living things respire to produce energy. **T**
- (v) Non-living things respire. **F**

D. Tick (✓) the correct answer:

- (i) The things which have life are called:
(a) living things ✓ (b) non-living things
(c) crystal (d) solution
- (ii) Seeds will grow into:
(a) germinates (b) seedlings ✓
(c) dormant (d) solution
- (iii) Young plants grow faster than:
(a) roofs (b) in water
(c) older plants ✓ (d) sprinkle water
- (iv) The carbon dioxide is one of the constituents of:
(a) water (b) air ✓
(c) solution (d) wind

(E) Match the following:

- | | | |
|-------------------------|---|----------------|
| (i) Living things | → | Seeds |
| (ii) Non-living things | → | Produce energy |
| (iii) Plants produce | → | Do not respire |
| (iv) Respiration | → | Plants |
| (v) Make their own food | → | Grow |

ACTIVITY

Word Search:

P	E	N	G	U	I	N
A	G	B	C	D	C	S
E	G	F	G	H	E	E
B	I	R	D	I	J	A
K	C	O	L	D	L	L
M	N	O	F	I	S	H
K	R	I	L	L	P	Q

- Seal
- Ice
- Fish
- Egg
- Cold
- Penguin
- Bird

**UNIT
2****Seed Dispersal and Fruit**

(A) Answer the following questions:

(i) What are special features of the seed and fruits dispersed by the wind?

Ans: Dispersal of seeds and fruits by wind is very common. Some seeds and fruits have special modification so that they can be easily carried away by the wind.

(ii) What are the special feature of the fruits dispersed by the water?

Ans: Fruits dispersed by water have some adaptations for floating.

1. Very light air filled fibrous fruits wall. Example is coconut.
2. Flat spongy thalamus containing seeds. Example is louts. All fruits dispersed by water have water in it.

(iii) What is the importance of the dispersal of seeds?

Ans: Dispersal of seeds is very important of every plant. All the seedling will not be able to get mineral salts, water, light, air to grow healthy among the seedling. To overcome this draw back the seeds and fruits to place where the conditions are favourable for good growth. This is done only by the dispersal of seeds.

(iv) What will happen if all seeds of a plant took root around that plant itself?

Ans. In this situation they suck all water and the plant will die soon.

(v) Why do plant whose seeds are dispersed by wind have seeds in large numbers?

Ans. In this method many seeds are spoiled or reached at improper place, so they are in large numbers.

B. Give two examples each of the following.

(i) Seeds are dispersed by wind.

Examples: grass and orchids produce the fines seeds.

(ii) Seeds are dispersed by water.

Examples, coconut and lotus.

(iii) Seeds are dispersed by animals.

Examples, melon, and watermelon, etc.

(iv) Seeds are dispersed by men.

Example, orange and watermelon.

(v) Seeds are dispersed by explosive mechanism.

Example, Pea and mustard are the examples of dispersal explosive mechanism.

C. Write whether the following statements are true or false.

(i) Caltrops seeds are dispersed by water. **F**

(ii) The fruits of tiger's nail are covered all over with spines. **F**

(iii) Fruits of the balsam plant explode on ripening

and throw the seeds inside them faraway from the plant. **T**

(iv) The fruits of lotus have a fibrous covering which keep this float in the water. **T**

(v) The distribution of seeds and fruits away from the plant is called dispersal of seeds. **T**

D. Fill in the blanks:

(i) Dispersal of seeds and fruits by wind is very common.

(ii) Men and animals eat large number of fleshy fruits.

(iii) Fruit of castor, pea, mustard plant explode on ripening.

(iv) Birds swallow some seeds.

(v) The grass and orchids produce the finest seed.

**UNIT
3****The Nervous System**

(A) Answer the following questions:

(i) Which are the parts of the nervous system?

Ans: There are three main parts of the nervous system brain, the spinal cord and the nerves.

(ii) Describe the brain.

Ans: Brain is the main controller of our body. The brain is well protected in a bony box called cranium. They are three major parts in the human brain namely cerebrum, cerebellum and medulla.

(iii) Which are the function of the brain?

Ans: Brain is the main controller of our body. Everything that we do like thinking, our memory and even our all movements are due to our brain.

(iv) What is cerebrum?

Ans: The cerebrum is the largest part of the brain. It is also called the great brain.

(v) Describe the cerebellum.

Ans: The cerebellum is smaller in size as compared to cerebrum. It controls the working of our muscles. It is helpful in keeping the balance of the body. It sends all the impulses that come from the organs of the back part of the body to the cerebrum.

(vi) What is the neuron?

Ans: Neuron are the structural unit of the neuron

system they carry impulses or messages.

(vii) What is the reflex action?

Ans: Reflex action is an automatic reaction. When we touch our hand with a hot object we immediately withdraw our hand. At this time the message does not come from the brain and the spinal cord acts in the place of the brain. So, the spinal cord is the seat of reflex action and our hand removed at once. This reaction is called reflex action.

(viii) Name the three kinds of nerves and explain how they function.

Ans: There are three types of nerve in our body:

(i) The sensory nerves:

The sensory nerves carry the impulses or stimuli from the sense organs to the brain or spinal cord.

(ii) The motor nerves:

The motor nerves carry the impulses or response from the brain or spinal cord to the muscles and are responsible for the movement of muscles.

(iii) The mixed nerves:

The mixed nerves carry both the sensory and motor information. They carry impulse from the sense organs to the brain and spinal cord and also from the brain and spinal cord to the muscles and glands

(ix) Differentiate between:

(a) Cerebrum and cerebellum

Cerebrum is largest part of our brain while

cerebellum is the smallest part of the body. Cerebellum contains nerve cells while cerebellum controls working of our muscles.

(b) Sensory and motor nerves

The mixed nerves carry both the sensory and motor information. They carry impulses from the sense organs to the brain and spinal cord and also from the brain and spinal cord to the muscles and glands.

B. Fill in the blanks:

- (i) The nervous is the structural unit of the nervous system.
- (ii) The nervous system is composed of the the brain and the spinal cord.
- (iii) The three major parts of the human brain are the cerebrum the cerebellum and the medulla oblongata.
- (iv) The mixed nerves carry messages from the sense organs to the brain or to the spinal cord.
- (v) The spontaneous action or response to a stimulus is as fast in which we do not think.

C. Say whether the following statements are true or false.

- (i) The brain is protected by the skull. **T**
- (ii) The cerebellum is the longest part of the brain. **F**
- (iii) The cerebrum is the seat of intelligence. **T**

- (iv) The spinal cord lies below the cerebrum. **T**
- (v) Neurons are the nerves that are connected to the brain. **T**
- (vi) Reflex actions are sudden and involuntary. **T**

D. Choose the correct options:

- (i) Which of the following is not a part of the brain:
- (a) cerebrum (b) spinal cord ✓
(c) cerebellum (d) medulla oblongata
- (ii) The cerebrum is the _____ part of the brain.
- (a) largest ✓ (b) smallest
(c) equal (d) voluntary
- (iii) The medulla oblongata lies below:
- (a) dendrite (b) brain
(c) cerebellum ✓ (d) axon
- (iv) The brain is well protected in a bony box called:
- (a) spinal cord (b) cranium ✓
(c) nerve cell (d) cerebellum
- (v) The spinal cord is the continuation of the:
- (a) impulses (b) motor nerves
(c) vertical column (d) medulla oblongata ✓

(E) Match the following:

- | | | | | |
|-------|-------------------|---|---|----------------------|
| (i) | Cerebrum | — | → | Nerve cells |
| (ii) | Cerebellum | — | → | Brain stem |
| (iii) | Medulla Oblongata | — | → | Reflex action |
| (iv) | Spinal cord | — | → | Seat of intelligence |
| (v) | Neurons | — | → | Seat of balance |

**UNIT
4****Health and Deficiency Diseases**

A. Answer the following questions:

(i) Why do we need nutritious food?

Ans: It is very necessary that our daily food should contain nutrients like carbohydrates, proteins, fats, vitamins, minerals and water. If any of the nutrients are lacking in our food, we lose our resisting power and are easily attacked by diseases.

(ii) What do you understand by deficiency diseases?

Ans: Deficiency of different minerals leads to many diseases.

(iii) Why are the children attacked by the disease kwarshiorkar?

Ans: kwarshiorkar accrues in children between six months and three years to deficiency of proteins.

(iv) Why are the nutrition deficiency diseases caused?

Ans: The disease caused by the deficiency of nutrient such as carbohydrates, fats, proteins in the human diet are called nutritional diseases or nutrition deficiency diseases.

(v) What are the effects of lack of vitamins on the human body?

Ans: The following affects are occurred due to the

deficiency of vitamins. Every vitamin has very importance in our diet if we lack one of any vitamin then it may get very dangerous result. e.g

- (i) Lack of vitamin A is caused of night blindness: Symptoms, can see clearly during the day time but cannot see in dim light at night.
- (ii) Lack of vitamin B is caused of Beri-Beri symptoms. Dry and cracked lips, redness of tongue sores out the angles of the mouth and lips loss of sensation in the limbs.
- (iii) Lack of vitamin C scurvy is caused of scurvy: Symptoms: Spongy and bleeding gums low resisting power weakness wounds cannot heal easily red spots under the skin.
- (iv) Lack of vitamin D is caused of Ricket symptoms. Bowed legs or knock knees, bending of ribs bulging of back bones.
- (vi) **Which diseases are caused by the lack of minerals?**

Ans: Deficiency of different minerals lead to many diseases. The following table gives some information about mineral deficiency diseases.

Mineral	Disease caused	Symptoms
Iron	Anaemia	Gets tired easily, loses weight and looks pale loses appetite and becomes very irritable.
Iodine	Goitre	Abnormal enlargement of thyroid glands situated in the neck
Calcium and Phosphorous	Rickets	Deformities in bone formation and structure bones remain soft, the child has bow legs. (bent legs)

B. Fill in the blanks.

- (i) Every body needs **healthy** food to enjoy healthy life.
- (ii) A healthy person is free from **sickness** and **disease**.
- (iii) The symptoms of lack of proteins are **oedema** and **diarrhoea**.
- (iv) General weakness is caused due to the lack of **carbohydrates**.

- (v) Food rich in vitamin A are green vegetables , carrots and milk .

C. Match the following.

Beri-Beri	bleeding gums and spots under the skin.
Rickets	enlargement of thyroid glands.
Scurvy	bowed legs and bending of ribs.
Goitre	gets tired and loses weight and appetite.
Anaemia	cracked lips and redness of tongue.

D. Say whether the following statements are true or false.

- (i) Malnutrition is not a deficiency disease. **F**
- (ii) Protein deficiency disease is more common in small children. **T**
- (iii) Exposure to sunlight causes rickets. **T**
- (iv) Lack of iodine causes goitre. **T**
- (v) Vitamin A is found in leafy vegetables, carrots and milk etc. **T**

E Choose the correct answers:

- (i) Symptoms of scurvy are _____.
- (a) bleeding gums ✓ (b) bowed legs
- (c) cracked lips (d) bulging of backbone.

- (ii) Deficiency of carbohydrates can be improved by taking _____.
- (a) vitamins (b) milk ✓
(c) fats (d) iodine
- (iii) Diseases like anaemia, goitre and rickets are caused due to deficiency of _____.
- (a) carbohydrates (b) fats
(c) minerals ✓ (d) vitamins
- (iv) Goitre is caused due to the deficiency of ____.
- (a) iron (b) iodine ✓
(c) calcium & phosphorus (d) vitamins
- (v) A Balanced diet contains _____.
- (a) vitamins (b) minerals
(c) carbohydrates (d) all of these ✓
- (vi) Beri-Beri occurs due to the deficiency of ____.
- (a) vitamin-A (b) vitamin- B ✓
(c) vitamin-C (d) vitamin-D

**UNIT
5****First Aid**

(i) What is first aid?

Ans: First aid is based on scientific medicine and treatment. It is a skilled assistance. But always remember this is fact that first-aider is not a doctor. After the doctor taking charge, the first-aider responsibility ends.

(ii) State the aims of first aid.

Ans: First aids had three main aims:

1. to save life.
2. to promote recovery.
3. to prevent worsening of the condition of the injured.

(iii) Mention the rules of first aid.

Ans: The best advice to the first aider is “Make haste slowly”

1. Reach the accident spot quickly.
2. Be calm, methodical and quick.
3. Look for the following.
 - (i) Is there failure of breathing.
 - (ii) Is there severe bleeding?
 - (iii) Is the shock light or severe?

Attend to these and then treat easily observable injuries.

4. Clear the crowd with nice words. Do not allow

people to crowd around the casualty.

5. Do not attend too, much you are only a first aider. Give that much assistance so, that the condition does not become worse and life can be saved.

(iv) Why is first aid really necessary?

Ans: Now- a -days, especially in cities, due to over crowding and heavy traffic on the roads, the accident have increased. Therefore, it is necessary for each of us should learn the principle and practice of first aid.

(v) What first aid will you give for a wound?

Ans: 1. Handle the injured part, as gently as possible. First of all, try to stop bleeding we can also use tourniquet. A tourniquet is a light band that is twisted round a wound.

2. Make the patient sit or let him lie down.

3. If the wound is in a limb (arm or leg) and there is no fracture raise the limb. This will lessen the bleeding.

4. Wash hands thoroughly or clean them with antiseptic lotion before giving the first aid as germs from dirty hand may infect a wound.

5. Remove foreign objects like glass, stones, etc. found in the wounds if it can easily get at them.

6. Place a clean dressing over the wound and bandage firmly.

7. If there is not a doctor or nurse nearby then take him/her to nearby hospital as early as possible.

(vi) What is fracture?

Ans: A fracture is the partial or complete breaking of a bone.

(vii) Name the two kinds of fractures.

Ans: i. Fracture of legs.
ii. Fractures of backbone.

(viii) What will you do if a person's clothes catch fire?

Ans: If some catches the fire.

1. Put out the flames by whatever means available.
2. Do not allow the person to run about. This only fans the fire and makes the flame spread.
3. Cover the person with a blanket or coat or table cover around you.
4. Lay the person down quickly on the ground and wrap the cloth tightly.
5. Smother the flame by gently rolling the person or by gentle pats over the covering.

(ix) What are the symptoms of a fracture?

Ans: i). sever pain at the spot of fracture .
ii). Tenderness i.e. pain on gentle pressure (do not press hard).
iii). Swelling of the area and discolorations.
iv). Loss of normal movement of the part.
v). Deformity.
vi). Irregularity of the bone.

(x) What are accidents?

Ans: A sudden and unexpected event which cause an injury to the body is called an accident.

B. Fill in the blanks.

- (i) The breaking of a bone is called **Fracture**.
- (ii) Fire due to petrol or kerosene can be put out by throwing **mud or sand**.
- (iii) If the fire is caused by short circuit, we switch off the main source of **power**.
- (iv) The supply of air should be **Cut off** to put off flames.

C. Tick (✓) the correct answer:

- (i) If the clothes on the body catch fire.
 - a) pour water over th body.
 - b)✓ cover the clothes with a blanket.
 - c) crumple the burning clothes with your hands.
 - d) run shouting for help.
- (ii) If there is bleeding due to a wound.
 - a) wash the injured part with tap water.
 - b) clot the blood by blowing.
 - c) press dust over the wound.
 - d) ✓ clean the wound with spirit, apply some antiseptic ointment and bind the wound tightly with a clean cloth.

F. Unscramble the following words.

calimed

medical

teatmentr

treatment

derujin

injured

tentpai

patient

**UNIT
6****Matter**

A. Tick (✓) the correct answer:

(i) What are the two common properties of matter?

- a) they have shape and weight.
- b) they occupy space and they have weight. ✓
- c) they have shape and volume.
- d) they occupy containers and have shape.

(ii) Which one of these is not matter?

- a) air
- b) sound ✓
- c) soil
- d) water

(iii) Iron rod is the good example of:

- a) object ✓
- b) space
- c) volume
- d) external force

(iv) Attraction of earth on the mass of an object is:

- a) force
- b) power
- c) mass
- d) weight ✓

(v) What changes will an object undergo if it is taken to the moon or to another planet?

- a) its mass will remain the same, but its weight will change. ✓
- b) both its mass and weight will change.
- c) its weight will remain the same, but its mass will change.
- d) its mass, weight and volume will all change.

B. Answer the following questions:**(i) What is matter?**

Ans: Anything which occupies space, has weight and resist when external forces are applied to it, is called matter.

(ii) Give some examples of solid, liquid and gaseous matter.

Ans: **Solid:** Stone, iron, building, house and table are some examples of solid.

Liquid: Water, milk, cold drink and mango juice are some examples of liquid.

Gaseous: Oxygen, hydrogen, carbon dioxide, are some examples of gaseous.

(iii) What do you mean by an object?

Ans: An object that occupies some space, It has weight and effort is required in order to push it is called object.

(iv) Write down the common properties of matter.

Ans: All matters occupy space, volume and weight.

(v) What is meant by the mass of an object?

Ans: The total amount mass of a body of matter in a body is called it mass. Mass of a body remains same at every place.

(vi) What is meant by the weight of an object?

Ans: The attraction of the earth on the mass of an object called its “weight”.

(vii) Explain why the weight of an objects change.

Ans: Weight depends upon pull of earth. If it changes, weight of an object also changes.

(viii) What is the difference between mass and weight?

Ans: The total amount of matter present in an object is called its mass. On the other hand the attraction of the earth on the mass of an objects called its weight.

C. Answer the following long questions:

(i) Prove by experiment that matter occupies space.

Ans: Matter occupies space. This means space is required for an objects to be placed. A space which is already occupied by an object cannot be occupied by another object. Let us describe an easy experiment to demonstrate the fact that matter occupies space. We know that both stone and water are mater. Take a glass and fill into the brim, but make sure no water spill out. Now carefully drop a few piece of stone into the water in the glass. We shall see that the water spills over. Why does the water spill over? Because the pieces of stone occupied some space inside the glass, causing the water in those space to spill out.

(ii) What changes will the weight of an object undergo if it is taken to the moon or to another planet?

Ans: Although the weight of an object varies depending on its location at different places on the earth or on different planets or satellites, its mass will be the same everywhere because the amount of matter in the object remains the same all the same time.

Because of this, if an object is taken to the moon or somewhere else, its weight will change but its mass will not vary.

(iii) Why will this change occur?

Ans. Because weight depends upon pull of earth. if it changes, weight also changes.

D. Fill in the blanks.

- (i) Objects are all made of matter .
- (ii) An iron rod is an object .
- (iii) Cotton are made of light matter.
- (iv) Wood has heavy matter.
- (v) The total amount of matter present in an object is called mass .

UNIT
7**States of Matter**

A. Tick (✓) the correct answer:

(i) What are the characteristics of solids?

- a) solid objects have definite shape but no definite volume.
- b) solid objects have definite volume but no definite shape.
- c) solid objects have definite shape and definite volume. ✓
- d) solid objects have definite volume but no definite weight.

(ii) What are the characteristics of liquids?

- a) liquids have definite shape but no definite volume.
- b) liquids have definite volume but no definite shape. ✓
- c) liquids have definite shape and definite volume.
- d) liquids have definite volume but no definite weight.

(iii) What are the characteristics of gases?

- a) gases have definite shape but no definite volume.
- b) gases have definite volume but no definite shape.
- c) gases have definite weight but no definite shape or volume. ✓
- d) gases have definite volume and weight but no definite shape.

B. Answer the following short questions:

(i) What are the characteristics of solids? Give some examples of solids.

Ans: Wood, paper, coal, nooks, buckets, etc. are some examples of solid. The volume of solid remains constant and it occupies space and volume.

(ii) What are the characteristics of liquids? Give some examples of liquids.

Ans: Water, oil, milk, etc. are some examples of liquid. It has definite volume but no definite shape.

(iii) What are the characteristics of gases? Give some examples of gases.

Ans: The state in which matter has no definite shape or volume but has a definite weight is called the gaseous state of matter.

Air, oxygen, nitrogen and carbon dioxide are some examples of gaseous.

(iv) What happens when ice is heated? What will happen if more heat is applied to it?

Ans: If we take some cubes of ice and heat them that they will change into water. If we heat them more then they will change into steam.

(v) What is meant by term plasma.

Ans: Plasma looks like gases, but the atoms are different because they are made of free electrons and ions of an element such as neon.

C. Answer the following long questions:

(i) How many states of matter are there? What are they?

Ans: There are three states of matter, solid, liquid and gas.

(ii) Describe the characteristics of these states.

Ans: **Characteristics of solid:** The solid has volume, weight and shape. The shape and volume of it remains constant always.

Characteristics of solid: The liquid has definite volume but no definite shape and it occupies space.

Characteristics of solid: The gas has no definite shape or volume but has definite weight.

(iii) What happens first if steam is cooled or if heat is removed from steam?

Ans: When steam is cooled it converts into water.

(iv) What will happen upon further removal of heat or further cooling?

Ans: When water is cooled further it converts into solid state.

(v) What will happen if camphor or naphthalene is left uncovered in the open space? Why will it happen?

Ans: If naphthalene and camphor is left uncovered in open space. They directly convert into gases for.

D. Fill in the blanks.

(i) Matter has three types.

(ii) Substance exist in three physical state.

(iii) Water is liquid state of substance.

(iv) By heating water turn into steam .

(v) Steam is gaseous state of substance.

element.

(ii) What is a compound? Give example of a compound.

Ans: The substance which can be broken down into a number of different elements is called a compound. For example, water.

C. Answer the following long questions:

(i) Write down five differences between metals and non metals.

Ans: **Metals:**

- i). Metals are hard solids except mercury (Hg) which is liquid.
- ii). Metals possess a peculiar luster.
- iii). Metals can be hammered into sheets (malleable) or drawn out in wires (ductile).
- iv). Metals are good conductor of heat and electricity.
- v). Metals have high melting and boiling points.

Non-Metals:

- I). Non-metals are found in solid, liquid and gaseous state. These are soft except diamond.
- ii). Non-metals do not have luster or shine.
- iii). Non-metals can not be hammered into sheet or can not be drawn out in wire.
- iv). Non-metals are bad conductor of heat and electricity.
- v). Non-metals have low melting and boiling points.
- v). How do molecules form?

(ii) State the names of one exceptional metal and one exceptional non metal.

Ans: One exception of metal and non metal are arsenic and silicon

(iii) Why does matter exist in different forms? Explain it.

Ans: Molecules of different matters are not at same distance. So, they have form solid, liquid and gas according to their distance.

D. Fill in the blanks.

- (i) A total of 92 elements have been know to exist in nature.
- (ii) Sugar is a compound.
- (iii) Oxygen and hydrogen can be chemically combined to produce water.
- (iv) Silicon is good example of non-metals produce metalloids.
- (v) Kerosene is a good example of compound.

**UNIT
9****Atoms and Molecules**

A. Tick (✓) the correct answer:

(i) What is a molecule of ammonia composed of?

- a) one nitrogen atom and one hydrogen atom.
- b) one nitrogen atom and three hydrogen atoms. ✓
- c) two nitrogen atoms and one hydrogen atom.
- d) two chlorine atoms and one sodium atom.

(ii) What is a molecule of water composed of?

- a) one hydrogen atom and one oxygen atom.
- b) two hydrogen atoms and one oxygen atom. ✓
- c) one hydrogen atom and two oxygen atoms.
- d) two hydrogen atoms and two oxygen atoms.

B. Answer the following short questions:

(i) What is an atom?

Ans: The smallest particles of elements which cannot exist separately but participated in reaction are called atoms.

(ii) What is a molecule?

Ans: Those particles that can exist freely in nature. They are called molecules.

(iii) What are the properties of metals?

Ans: Properties of metals are:

they glitter.

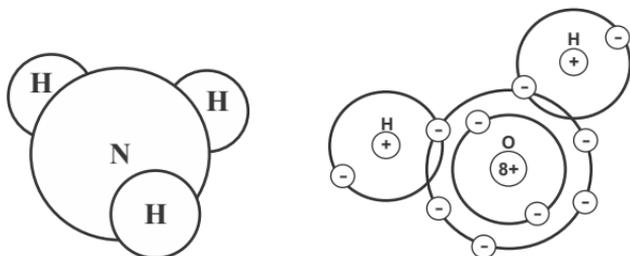
they do not break easily.

they have high density.

they have high boiling and melting point.

- (iv) **Draw the diagram of a water molecule and an ammonia molecule.**

Ans:



C. Answer the following long questions:

- (i) **Describe how the molecules of water, ammonia and sugar are formed.**

Ans: An atom of oxygen and two atoms of hydrogen combine to form a molecule of water. Similarly one nitrogen atom and three hydrogen atoms combine to form a molecule of ammonia. On the other hand 12 carbon atoms, 22 hydrogen atoms and 11 oxygen atoms combine to form a molecule of sugar.

- (ii) **Write down the properties of atoms and molecules.**

Ans: Atoms are the basic building blocks of matter usually an elemental substance is made of innumerable atoms of the same type.

Molecules Properties:

It can be said that molecules are the relatively larger particles formed upon the combination of

atoms same elements or a number of different elements which can exist free in nature.

(iii) What is the force of attraction between the molecules of substances?

Ans: Force of attraction between the molecules of substances its related to solid, liquid and gaseous states of matter.

D. Fill in the blanks.

- (i) The smallest particles are called **atoms** .
- (ii) All iron atoms are **identical** .
- (iii) Gaseous elements usually do not exist state.
- (iv) Argon and Neon gases are called **inert** gases.
- (v) The substances have definite shape and volumes are called **solid** .
- (vi) All substances are composed of **innumerable** molecules.

are nitrogen and oxygen. In addition, there is small amount of other gases.

C. Answer the following long questions:

(i) How shall we prove that air occupies space? Describe an experiment to do so.

Ans: Take an uncapped transparent plastic bottle and drill a hole in its bottom. Take a bucket of water. Press our finger tightly on the hole so that air cannot come out. Now, holding the open mouth of the bottle vertically downward, try to dip it in the water. We shall not be able to do so easily. We shall feel a pressure. Now, lift the bottle from the water. We shall find that there is no water inside the bottle, and no water is falling from it. This is because no water had entered the bottle. Now remove our finger from the hole in the bottom of the bottle and try to immerse the bottle into the water as before. This time, we shall find that the bottle easily goes underwater. We shall notice air coming out of the hole in the bottom of the bottle. Why could not water enter the bottle when it was first immersed in the water with our finger pressed on the hole? Because the air inside the bottle occupied space. But during the second time, air was allowed to come out through the hole in the bottom of the bottle, and water could enter. This experiment also shows that air occupies space.

(ii) Prove by means of an experiment that air has weight.

Ans: Take a light thin stick which is about 1 foot to 1.5 feet long, 2 balloons and a lengthy thread. Inflate the balloons equally by blowing into them and tie their mouths with strings. Now, suspend the balloons from both ends of the stick using string.

Tie a string lightly to the middle of the stick. Take care so that the string can be moved sideways easily. Tie a loop at the upper end of the string so that our finger can be inserted through it.

Now, lift the balloons by using the string tied to the middle of the stick. We may see that the stick is slanting, and is not parallel to the ground.

Now, move the string tied to the stick sideways to balance the ends of the stick so that it becomes parallel to the ground. Ask our friends to confirm that the ends are balanced. If the weights at both ends are equal, the stick will become parallel to the ground like weighing scales do when they are balanced. We obviously know that the inflated balloons contain air, and the weights of the balloons are equal and balanced. Now, puncture one of the suspended balloons with a pin. We shall see the air leaking out and the balloon becoming deflated. What else shall we see? We shall see that the stick is dipping toward the direction of the other balloon which is still filled with air. Why is it dipping? Because that balloon

still contains air, but the punctured one does not. The weight of the air inside the balloon causes the stick to dip. This proves that air has weight. We can all perform this experiment very easily by ourselves.

(iii) By experiment prove that air opposes force applied on it.

Ans: Take a deflated balloon and fill it with air by blowing into it.

Now tie the mouth of the balloon with a string so that the air cannot escape. Now carefully press the balloon with our hand.

It will seem to that someone from inside the balloon is pushing away our hand and trying to resist it. We can easily feel this resistance. Who is providing the resistance? It is the air inside the balloon. So, air opposes external forces which are applied to it.

From the above experiments we can conclude that air has weight, it occupies space and opposes external forces applied to it. So, air is a substance.

D. Fill in the blanks.

- (i) Air has **weight**.
- (ii) Air occupies **space**.
- (iii) The huge layer of air is called the **atmosphere**.
- (iv) Life **does not** exist on the Moon.
- (v) Air opposes **forces** which is applied to it.

**UNIT
11****Pressure of Air****A. Tick (✓) the correct answer:**

- (i) Why are equatorial regions hotter than polar regions?
- a) because the sun shines down perpendicularly on equatorial regions. ✓
 - b) because the polar regions are very close to the sun.
 - c) because the sun never rises in the polar regions.
 - d) because the amount of water in equatorial regions is low.
- (ii) Where is air pressure the greatest?
- a) On the sea
 - b) On the surface of the earth ✓
 - c) High in the sky
 - d) On the peak of a mountain
- (iii) What is the name of the device used to determine the pressure of air?
- a) Thermometer
 - b) Lactometer
 - c) Speedometers
 - d) Barometer ✓

B. Answer the following short questions:**(i) What is the atmosphere?**

Ans: Air pressure is usually called “atmosphere” under normal condition.

(ii) What is the pressure of air also write its unit?

Ans: The force exerted per unit area is called air

pressure. Newton is unit of air pressure.

(iii) What are barometers used for?

Ans: Barometers are used to measure the pressure of air. It can also be used to determine how higher or lower than sea level is a place.

(iv) Write a note on the structure of barometer.

Ans: As we can see in the diagram, a barometer is made of glass tubes which are calibrated in centimeters along the length of its body. The tube contains mercury. The level of mercury inside the barometer rises and falls with the increases and decreases of air pressure. Under normal conditions, the height of the mercury inside a barometer at sea level is 76 cm.



(v) Write a note on the working of barometer.

Ans: The higher we go above sea level, the lower the mercury level inside the barometer becomes. Air pressure decreases when water vapour in the air increases, and air expands because of the heat of the sun and becomes thinner. This causes the level of mercury inside the barometer to go below 76 cm. This usually indicates the possibility of rainfalls and storms. If the mercury levels become too low, it indicates the possibility of severe storms or cyclones. This way the state of the weather can be forecast from the rise and fall of the mercury in a barometer.

C. Answer the following long questions:**(i) State the causes of flow of wind.**

Ans: State the cause of flow of wind:

The air pressure is not the same all the time everywhere. It varies because of a number of reasons.

1: The air pressure decreases and increases on the earth due to different altitudes. The air pressure is maximum at the surface of the earth. The higher we rise above the earth's surface, then the air pressure goes down. The air pressure also varies because of the amount of water vapour in the air and the temperature of the air.

2: If the amount of water vapour in the air increases, the amount of air decreases, and it becomes thinner. This causes the pressure to decrease. Because of this, before raining air pressure decreases due to the increase in the amount of water vapour in the air.

3: The air pressure can also vary as a result of variation of the heat of the sun. Air expands and becomes thinner as a result of heating. Thinner air exerts less pressure. The substance moving inside the barometer shown in the diagram is mercury. The level of mercury inside the barometer rises and falls with the increases and decreases of air pressure.

(ii) What are the uses of winds?

Ans: Winds help to maintain the balance of temperature on the surface of the earth. Winds are

used for sailing. In many countries, factories are run by wind power. Windmills are used to generate power and provide irrigation. Winds are useful for drying clothes. We use palm-leaf fans or electric fans during very hot weather. This gives us relief. This is nothing but a way to create waves in the air and remove the hot air. We feel cooler when colder air occupies the area.

(iii) Why does air flow from the land to the sea at night?

Ans: In some places, the land become hotter faster than the water by sunshine during daytime scorching the air above the land to become lighter and rise upward. As a result, wind blows from the water to the land.

(iv) What are the causes behind the variations of air pressure on the surface of the earth?

Ans: **1:** The air pressure decreases and increases on the earth due to different altitudes. The air pressure is maximum at the surface of the earth. The higher we rise above the earth's surface, then the air pressure goes down. The air pressure also varies because of the amount of water vapour in the air and the temperature of the air.

2: If the amount of water vapour in the air increases, the amount of air decreases, and it becomes thinner. This causes the pressure to decrease. Because of this, before raining air pressure decreases due to the increase in the amount of water vapour in the air.

3: The air pressure can also vary as a result of

variation of the heat of the sun. Air expands and becomes thinner as a result of heating. Thinner air exerts less pressure. The substance moving inside the barometer shown in the diagram is mercury. The level of mercury inside the barometer rises and falls with the increases and decreases of air pressure.

(v) **How can sunlight alter air pressure?**

Ans: When sunlight falls vertically it increases the temperature. It causes air to become lighter and rise upward. So, air pressure decreases.

(vi) **What is the difference between wind and storm?**

Ans: Naturally, air flows from high-pressure zones to low-pressure zones. This flow of air is called a wind. There is a major difference between high-pressure and low-pressure zones. Sometimes air blows very fast toward the low-pressure zones. This fast flow of air is called a storm.

D. Fill in the blanks.

- (i) Pressure is usually called **atmosphere** under normal conditions.
- (ii) Air pressure is maximum at the **surface of the earth**.
- (iii) Air expands and becomes thinner as a result of **high temperature**.
- (iv) **Barometers** are used to measure the pressure of air.
- (v) Under normal conditions the height of the mercury inside a barometer at sea level is **76 cm**.

**UNIT
12****Light**

A. Answer the following questions:

(i) When does a body cast a shadow ?

Ans: When rays of light does not pass through a body then a shadow is formed.

(ii) Which things are necessary for the formation of a shadow?

Ans: Some conditions are necessary for formation of a shadow. An opaque objects is needed for the formation of a shadow.

(iii) How did people calculate time before the invention of clocks and watches?

Ans: Before clocks were invented, people used to find time by means of shadows formed by the sun on objects like building, trees and poles etc. The time of the day can be calculated by observing the length and position of the shadow.

(iv) What is a sun dial ?

Ans: Many types of sun dials were invented by the people long ago. The shadow cast on the sun dial shows what time is it.

(v) What is a Solar Eclipse ?

Ans: The solar Eclipse when the sun, the moon and the earth in a straight line the moon's shadow in cast upon the earth people in different regions, in the

shadow of the moon we cannot see the sun or see it partially. This is called solar eclipse.

(vi) What is a Lunar Eclipse ?

Ans: When the earth is between the sun and the moon and these three are in a straight line the moon will be in the shadow of the earth. It is called lunar eclipse.

(vii) How does a Solar Eclipse occur ?

Ans: The solar eclipse occur on a new moon day. On a particular new moon's day, the moon comes between the sun and earth. The solar eclipse occur only during the day time.

(viii) How does a Lunar Eclipse occur ?

Ans: The Lunar Eclipse occurs only on a full moon night . When the earth is between the sun and the moon and when these three are in a straight line, the moon will be in the shadow of the earth. The light of the shadow falls on the moon, so the moon cannot be seen, this eclipse of the moon is called Lunar Eclipse.

(ix) How will you prove experimentally that light travels in a straight line ?

Ans: Light always travell in a straight line. There is given below an activity to prove it.

Take three equal rectangular card board screens A, B and C. Make a hole in each of them at the centre. Arrange them one behind the other leaving equal space with the holes in a straight

line. Keep a burning candle behind the last screen C. Look through the hole of the first screen A. You are able to see the flame. Light travels in straight line. This shows that light passes through the three holes in straight line. This shows that light passes through the three holes in straight line.

(x) **Write short a note on:**

(i) **Solar Eclipse** (ii) **Lunar Eclipse.**

(i) **Solar Eclipse:**

When the Sun, the Moon and the earth are in a straight line, the Moon's shadow is cast upon the earth. People in different regions in the shadow of the Moon cannot see the Sun or see it partially.

If the Sun is invisible, we call it a total Solar Eclipse. If we cannot see a part of it, a partial Solar Eclipse. When there is total Solar Eclipse in one place, nearby places will have partial eclipse and far away places will have partial eclipse and vary far away places will have no eclipse at all.

(ii) **Lunar Eclipse:**

When the earth is between the sun and the moon and when these three are in a straight line, the moon will be in the shadow of the earth. The light of the shadow falls on the moon, so the moon cannot be seen, this eclipse of the moon is called Lunar Eclipse.

If the complete disc of the moon is covered by the earth's shadow, the moon cannot be seen at all,

this is known as total Lunar Eclipse.

B. Define the following:

(i) Transparent, translucent and opaque objects.

Transparent: Light can pass through certain objects. Such objects are called transparent objects.

Translucent: There are some objects which allow light to pass through them partially. We cannot see things distinctly, through them. Such objects are called translucent objects.

Opaque Objects: Light cannot pass through many objects. Such objects are called opaque objects. Wood, stone, metals, wood, cardboard etc, are examples of opaque objects.

(ii) Eclipse: An eclipse is the partial or complete hiding of one heavenly body by another by its shadow.

(iii) Shadow: A shadow is formed when light rays are blocked by an opaque object.

(iv) The Sun dial: The shadow cast on the sun dial shows what time it is. This is called the sun dial.

C. Distinguish between:

(i) Transparent objects and opaque objects.

Light rays can pass through transparent objects, while light cannot pass through opaque objects.

(ii) The Solar Eclipse and the Lunar Eclipse.

The Solar Eclipse occurs on a new moon day, while the Lunar Eclipse occurs only on a full moon night.

D. Fill in the blanks:

- (i) The **Sun** is the natural source of light.
- (ii) Planets, the moon and the earth do not **have light** of their own.
- (iii) **Light ray** travels in a straight line.
- (iv) Glass allows **light** to pass through it.
- (v) Wood and stone are **opaque** objects.
- (vi) If you stand facing the sun, your shadow will be **behind** you.
- (vii) When the moon comes between the earth and the sun, a **Solar** eclipse is formed.
- (viii) The solar eclipse occurs on a **daytime** and the lunar eclipse occurs on a **fully** night.

- (iv) In order to find out if it is going to rain in a certain place, we must know the amount of **vapours** in that place as well as the **directions** of the wind.

C. Answer the following questions:

- (i) What is climate? Name the elements of the climate.**

Ans: The average weather condition of a place over a number of years is called the climate of its place. Elements of air are temperature of the air, pressure of the air, humidity of the weather and climate air, rainfall, flow of wind among others. This means that weather and climate change according to the changes in these factors.

- (ii) What is air pressure? State the causes behind the increase and decrease in air pressure.**

Ans. The air pressure is not the same all the time everywhere. It varies because of a number of reasons. For example:

1. The air pressure decreases and increases on the earth due to different altitudes. The air pressure is maximum at the surface of the earth. The higher we rise above the earth's surface, then the air pressure goes down. The air pressure also varies because of the amount of water vapour in the air and the temperature of the air.
2. If the amount of water vapour in the air increases, the amount of air decreases, and it becomes thinner. This causes the pressure to decrease. Because of this, before raining air pressure decreases due to the increase in the amount of water vapour in the air.
3. The air pressure can also vary as a result of variation of the heat of the sun. Air expands and becomes thinner as a result of heating. Thinner air exerts less pressure. The substance moving inside the barometer shown in the diagram is mercury. The

level of mercury inside the barometer rises and falls with the increases and decreases of air pressure.

(iii) Write down the three differences between weather and climate.

Ans: **(1) Weather:** The temporary state of the atmosphere of a place is called its weather.

Climate: The average weather condition of a place for many years is called its climate.

(2) Weather: The weather is the temporary state of the atmosphere of a small area.

Climate: The climate is the long term state of the atmosphere of a large area, such as a country or a continent.

(3) Weather: Weather can change over short period of time.

Climate: It can take years for the climate of a place to change.

(iv) Describe the effects of the heat of the sun on the weather and the climate of a place.

Ans: The intensity of the temperature of a place depends on how much sunlight that place gets? And at what angle the rays of the sun fall on it? The circular line which is imagined on the surface of the earth at equal distances from the North Pole and the South Pole is called the equator. Almost throughout the year the rays of the sun fall vertically on this line. Therefore, the sunlight pass through a comparatively narrow layer of atmosphere before falling on the surface of the earth, and it is spread over a less wide area. So, these places receive more heat from the sun.

**UNIT
14****Environmental Pollution****A. Tick (✓) the correct answer:**

- (i) Which one is responsible for soil pollution?
a) ✓ plastic b) paper
c) cloth d) leather
- (ii) How can we prevent waste from polluting the environment?
a) burning waste b) ✓ treating waste
c) storing waste d) covering waste
- (iii) What measures can be taken in order to keep industrial waste from polluting the environment?
a) burning waste
b) burning waste underground
c) ✓ treating waste
d) storing waste
- (iv) Which of these is a natural cause behind the pollution of the environment?
a) ✓ cutting down trees
b) burning waste
c) disposing of waste in rivers
d) floods

B. Answer the following short questions:

- (i) **Name the factors responsible for polluting the soil.**

Ans. Factors polluting the soil are, pesticides plastic

bags, waste from factories.

(ii) List the causes behind water pollution.

Ans: Mostly, many people dispose of garbage in, rivers and streams water logging is also responsible of water pollution.

(iii) Make a list of the natural causes of environmental pollution.

Ans: Natural disasters like earthquakes, floods tidal waves, wildfire, volcanic, eruptions, cyclones, tsunami, etc. these are all elements main cause environmental pollution.

(iv) Draw a picture of a beautiful environment.



C. Answer the following long questions:

(i) How soil can be kept pollution free?

Ans: Plants and trees only grow due to the soil. And these plants are main cause to clean air and atmosphere.

(ii) Describe the causes of air pollution.

Ans: Smoke from factories and automobiles are main causes of air pollution.

(iii) Explain how reuse of waste keeps the environment pollution free.

Ans: If we reuse waste material, it will clean the environment pollution free. For example, garbage can be used to form bio gas. Papers are also reused to produce papers.

(iv) Describe how the environment can be kept pollution free?

Ans: A pollution free environment is needed in order to live healthy life. In order to keep our environment pollution-free, we must refrain from things which may pollute the environment. Waste from factories must be treated so that they cannot pollute the environment.

We must take care of plants in order to prevent pollution of air. We must plant trees around our houses, participate in forestation, participate in tree planting regularly, and plant lots of trees. We must take care of plants, and tell people not to cut down trees unnecessarily.

(v) Describe how we would keep the environment of your school clean.

Ans. We can keep our school clean if we do not throw garbage in ground. We do not use polythene bags and use dustbins to throw garbage.

C. Answer the following short questions:**(i) What is a celestial body?**

Ans: The sun, moon and innumerable tiny shining dots of light in the sky are called celestial bodies.

(ii) Write down the names of some celestial bodies?

Ans: There are seven types of celestial bodies in space, these are stars, planets, nebulae, comets, galaxies and meteors.

(iii) What is the diameter of sun?

Ans: The sun has an approximately diameter of 1,384,000 kilometers.

(iv) What do you mean by polar star and what is its use?

Ans: If we look at the northern sky in the evening, we can see a bright star. This star can be seen twinkling in the northern sky at same place, throughout the year. This is called the pole star. Travellers and sailor use the polar star for navigation during night.

(v) What is the difference between planets and stars?

Ans: There are eight planets in the solar system and our earth is a also planet. The stars appear in the high and they are millions of kilometers away from the earth because of which they appear like tiny points of light. The star are burning steam sphere.

D. Answer the following long questions:

(i) Write a note on solar system.

Ans: The collective name for the sun and the celestial bodies surrounding it is the solar system. The sun is located at the centre of the Solar System. The planet earth on which we live is a planet of the sun. Other than the earth the sun has eight more planets. The planets revolve around the Earth along their own orbits. The earth revolves around the sun once in 365 days and 6 hours. Some planets have their satellites. For example, the planet earth has the moon as its satellite.

Like the earth some other planets have satellites too. The names of planets are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

(ii) Write a note on satellite.

Ans: Some celestial bodies also revolve around the planets in their own orbits. They are called satellites and they are smaller than planets. They have no heat or light of their own. They are illuminated by reflection of sunlight.

**UNIT
16****Science and Technology**

A. Tick (✓) the correct answer:

- (i) What is the knowledge obtained from experiments and researches called?
a) technology b) education
c) science ✓ d) skill
- (ii) What is the name of the process through which the knowledge discovered by scientists is used to meet the needs of human beings?
a) skill b) technology ✓
c) experiment d) science
- (iii) What is the knowledge obtained from experiments and researches called?
a) technology b) education
c) science ✓ d) skill
- (iv) Emitted from air-conditioners and refrigerators damage the ozone layer of the earth's atmosphere.
a) CFC ✓ b) ATP
c) O₃ d) DVD

B. Fill in the blanks.

- (i) Sound waves are used in ultrasonography machines.
- (ii) The new piece of technology used for seeding crops is called a GURTs.
- (iii) Radio signals are used in TV remote controls.

C. Answer the following short questions:**(i) What is science?**

Ans: Science is the process of acquisition of knowledge through research. It helps human being to acquire new concepts.

(ii) What is technology?

Ans: Technology is the application of scientific knowledge or the use of scientific discoveries and inventions in order to develop different fields of our live and livelihoods.

(iii) State the difference between science and technology with an example.

Ans: Science and technology are very closely related. They go hand into hand. Technology must be used in order to utilize valuable innovations of the scientists for the benefit of mankind.

Therefore, technology is developed for utilizing the scientific discoveries and inventions. For example, in ancient times, humans did not know the uses of fire. Science taught them the use of fire. And human beings made stove to cooking by using scientific knowledge. This is the example of technology.

(iv) Write down the names of five old types of technology.

Ans: The names of old types of technology. Clothes, nylon, polyester, plastic toys, house hold appliance, etc. are examples of old technology.

(v) Write down the names of five types of modern technology in the field of information technology.

Ans: Television, radio, telephone, fax, e-mail and the internet have revolutionized in the field of communication and technology.

D. Answer the following long questions:

(i) Describe the relationship between science and technology.

Ans: Sir Isaac Newton he discovered the Laws of Gravitation. In his laws, Newton said that all objects attract each other. He stated that different planets revolve around the sun. Rockets and artificial satellites were developed based on Newton's Laws of Gravitation. Here, the discovery of Newton's Laws of Gravitation was a scientific act. The development of rockets and artificial satellites are examples of technology.

(ii) Describe the effect of technology on the lives of human beings.

Ans: The advent of science has allowed people to know about what was previously unknown. It has improved our quality of life. The use of technology in the field of medicine has increased the average life of humans and has saved them from many diseases. Technology is being used to grow more food. This has caused the food production in our country rise.

Due to advance technology better house are being built and people can travel quickly from one place to another. We have obtained new source of energy through the use of science and technology. Television, radio, telephone, fax, e-mail and the internet have revolutionized the field of education, information communication and technology.

(iii) Discuss the problems which arise out of the misuse of technology.

Ans: Proper use of technology has increased the quality of our lives and our comfort and happiness. However, misuse of technology has also resulted in certain problems. The most serious one among them is environmental pollution chemical wastes and poisonous gases from factories are polluting water, soil and air.

Also, fumes emitted from defective motor cars pollute the air, resulting in breathing problems and various types of diseases.

Use of too much fertilizer and insecticides in crop fields pollute the air and the water, and also decrease the fertility of the soil.

The misuse of radios, televisions and computers create many problems in the human body. Listening to the radio very loudly, watching TV all day or working at the computer all day long without taking any breaks can create many

complications in our body. They include decrease in hearing, aches in the neck or shoulders, tears drying up, poor eyesight etc.

A substance called CF'C which is emitted from air-conditioners and refrigerators damage the ozone layer of the earth's atmosphere. This has caused the temperature of the earth to rise