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# Chapter-10 Motion and Measurement of Distance

## TEXTBOOK QUESTIONS

Q.1 Give two examples each of modes of transport used on land, air, water

(1) Land → car and bus
(2) Water → boat and ship
(3) Air → aeroplane and helicopter

Q.2 Fill in the blanks:—

(i) One meter is 100 cm
(ii) Five Kilometer is 5000 m
(iii) Motion of the needle of sewing machine is periodic.
(iv) Motion of wheel of a bicycle is rotational.

Q.3 Why can pace or a footstep not be used as a standard unit of length?

IV/A

Ans → The pace or footstep cannot be used as standard units of length because every person's body parts are slightly different from one another.

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It may create confusion while measuring length.

Q.4 Arrange the following lengths in their increasing magnitude:
1 metre, 1 centimetre, 1 kilometre, 1 millimetre

Ans → 1.) 1 millimetre
2.) 1 centimetre
3.) 1 metre
4.) 1 kilometre

Q.5 The height of a person is 1.65m. Express it into cm and mm.

Ans → The height of a person is 1.65m
1 m = 100 cm
1 m = 1000 mm
1.65 m = 165 cm
1.65 m = 1650 mm

Q.6 The distance between Radha's home and her school is 3250m. Express this into km.

Ans → The distance between Radha's home and school

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is 3250 Mm.

1000 m = 1 Km

$3250\,m = \frac{3250}{1000} = 3.250\ Km$

Q.7 While measuring length of a knitting needle, the reading of the scale at ~~one~~ ~~one~~ one end is 3.0 cm and at the other end is 33.1 cm what is the length of the needle?

Ans → The initial reading of the scale = 3 cm

The final reading of the scale = 33.1 cm

The actual reading of the scale = 33.1 − 3

= 30.1 cm

∴ The actual reading of the scale is 30.1 cm

Q.8 write the similarities and differences between the motion of a bicycle and a ceiling fan that has been switched on.

Ans → Similarities

(1) Bothe are moving Objects.

(2) The wheels of the bicycle and the blades of the fan show rotatatory motion.

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Differences

| | The motion of a bicycle. | The motion of a ceiling fan |
|---|---|---|
| 1. | The cycle is showing both rectillinear and Rotatory motion. | The ceiling fan is showing is only rotatory motion. |
| 2. | The cycle move from one place to another while showing movement | The ceiling fan cannot move from one place to another while showing movement. |

Q.9 Why could you not ~~use~~ use an elastic measuring tape to measure distance? what would be some of the problems you would meet in telling someone about a distance you measured with an elastic tape?

Ans > Elastic tape is highly stretchable. While measuring with the elastic measuring tape it may change its shape. So the measurement of distance by the elastic measuring tape may be faulty.

The problems that may arise in telling some

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one about a distance is - A long distance can be measured as a short distance. and a short distance can be measured as a long distance by the elastic measuring tape.

Q.10 Give two examples of periodic motion.

Ans → (1) Motion of a pendulum
(2) Phases of moon

## Extra Questions

Q.1 Why do we have standard units of measurement?

Ans → For the sake of uniformity scientists all over the world have accepted standard units of measurement. The system of units used now is known as the International system of units. eg → The SI unit of length is metre. (2) The SI Unit of Mass is Kilogram (Kg) The SI unit unit of time is second (s).

Q.2 What are the SI units of length, mass and time?

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Ans → The SI unit of length is metre (m)
The SI unit of mass is kilogram (kg)
The SI unit of time is seconds. (s)

Q.3 Why don't we measure all the lengths in just one standard unit metre?

Ans → We don't measure all lengths in one standard unit i.e. metre because there are some lengths which are smaller than metre like centimetre and millimetre and also some lengths are longer than metre like hectometre and kilometre.
Not The distance between the two cosmic ~~and~~ objects and the distance between the two countries cannot be measured by a single unit metre.

Q.4 How will you measure the length of a line segment using a scale? What are precautions to be taken while measuring?

Ans →
Ans → Following are the steps to measure a line segment using a scale -

(1) We place the Scale in ~~the~~ contact with the

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line Segment along its length.

(2) In some scales the ends may be broken. In such scales we may not be able to see the zero mark clearly. We can see any other mark of the scale, then we subtract the initial ~~reading~~ measurement from the other end.

Following precautions should be taken while measuring line segment.

(1) It is better if the measuring scale is made up of plastic.

(2) Correct position of the eye is also important for taking the measurement. Our eye must be exactly in front of the point where the measurement is to be taken.

Q.5 When an object is said to be in motion?

Ans → An object is said to be in motion, when it is moving and covering a certain distance with time.

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Q.6 Define & Periodic motion. Give two examples.

Ans → A type of motion that repeat itself after some period of time is called as periodic motion. eg → Motion of a child on a swing, motion of a pendulum.

Q.7 What do you mean by Retilinear motion? Give two examples.

Ans → Motion in a straight line is called Rectilinear motion. eg Motion of soldiers in a march past in a parade, motion of a sprinter in a 100m race.

Q.8 What is circular motion? Give two examples.

Ans → When an object moves around a circular path from a point and the distance of the object and the point remain the same. The motion is called Circular motion. eg → Motion of blades of a fan and motion of the hands of a ~~Q.9~~ cycle.

Q.9 What are the two parts of measurement?

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Ans → The two parts of the measurement are number and the unit. Eg → 2 Kg, 2 is the number and Kg is the unit

Q.10 How many centimetres are there in on kilometre?

Ans → We know that 1m = 100 cm

1 Km = 1000m × 100 = 1,00,000 cm

Q.11 Define measurement

Ans → Measurement is a technique developed for correct judgement of dimensions of various objects.

Q.12 What do you mean by SI units?

Ans → The International system of units which is accepted all over the world for the unit of measurement is called as SI unit. eg. The SI unit of length is metre (m) and the SI unit for time is seconds (s).

Q.13 What do you mean by units of measurement?

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a

Ans → A unit is known as value of physical quantity which when combined with a numerical value gives complete measurement of that quantity.

Q.14 Give an example where an object undergoes two types of motions at the same time.

Ans → (1) A sewing machine is an example, when a sewing machine works its wheels show circular motion. It also has a needle which moves up and down as long as the wheel moves. The needle undergoes a periodic motion.

(2) When a cycle moves in a straight road, the wheels of the cycle show rotatory motion and the movement of the cycle in a straight road shows the rectilinear motion.

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good!

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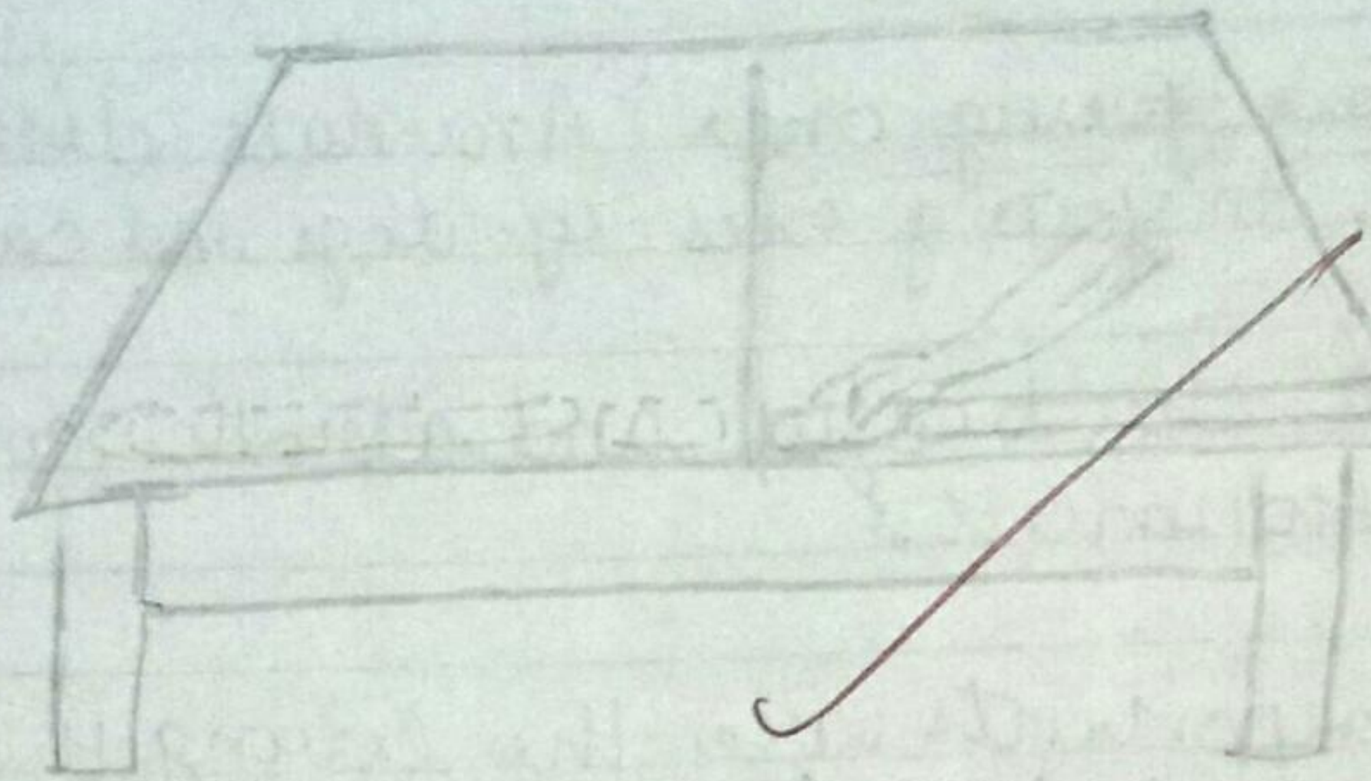


Fig 10·2 Measuring the length of a desk with gilli and danda

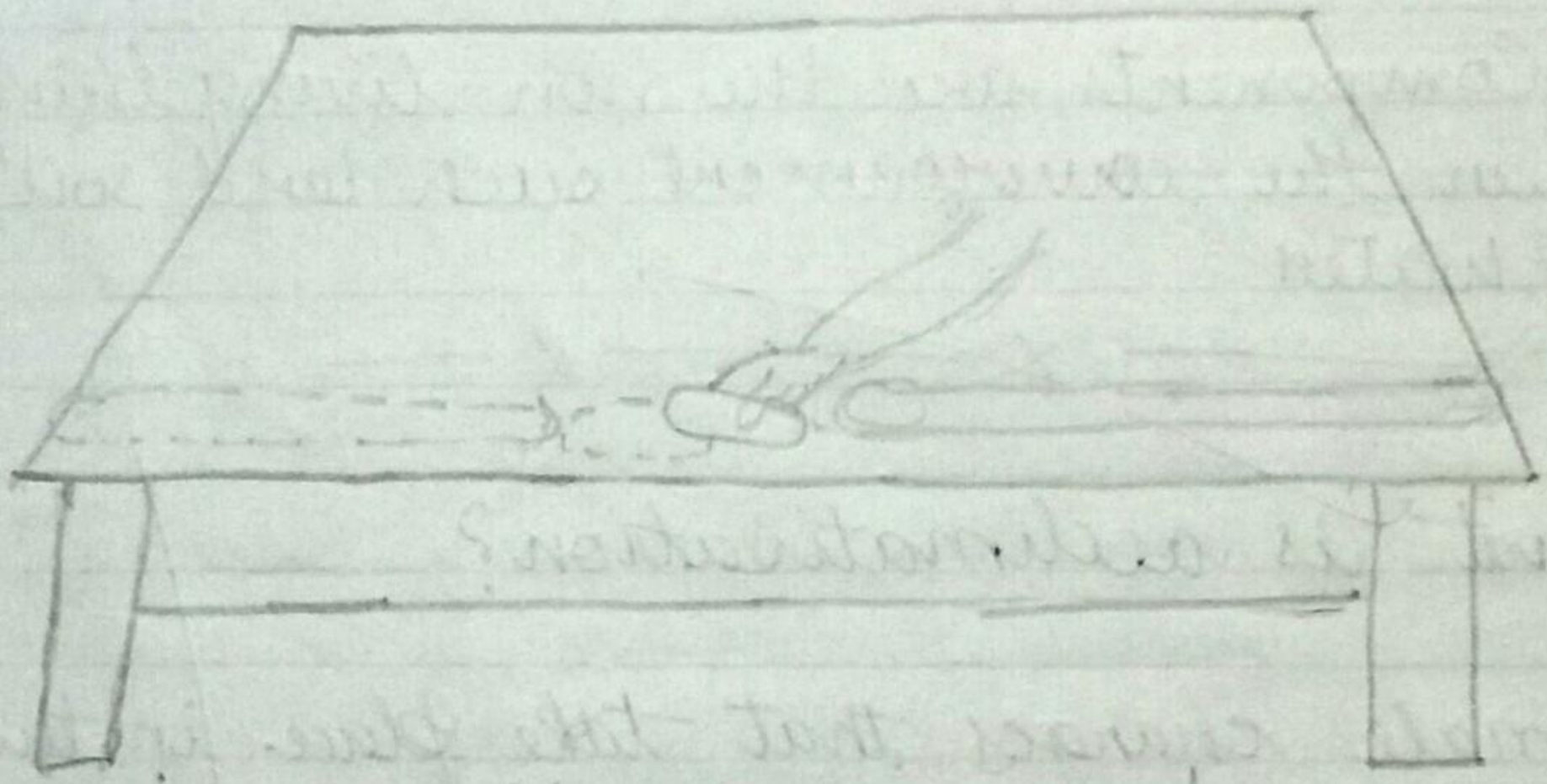


Fig 10·3 Measuring the length of the desk with a different set of gilli and danda

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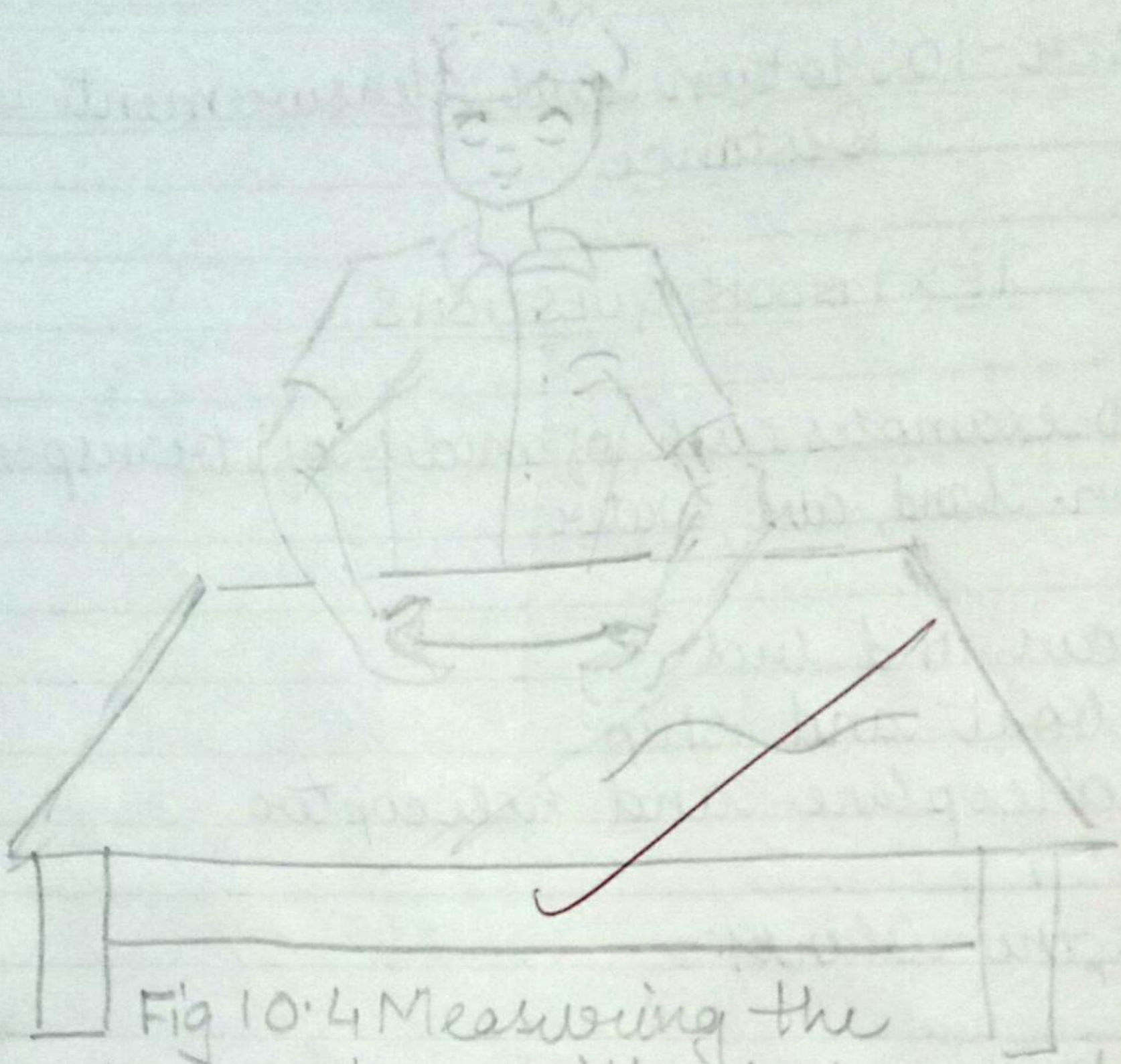


Fig 10.4 Measuring the length of desk. with String lengths

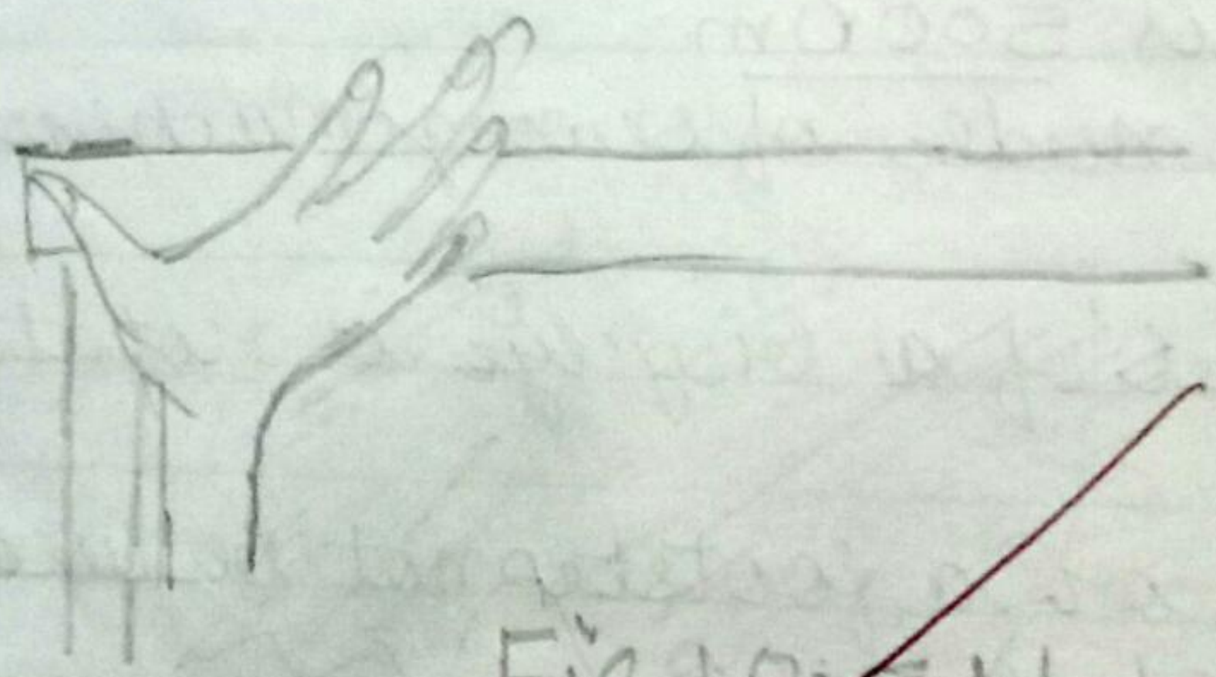


Fig 10.5 Measuring the width with a. handspan

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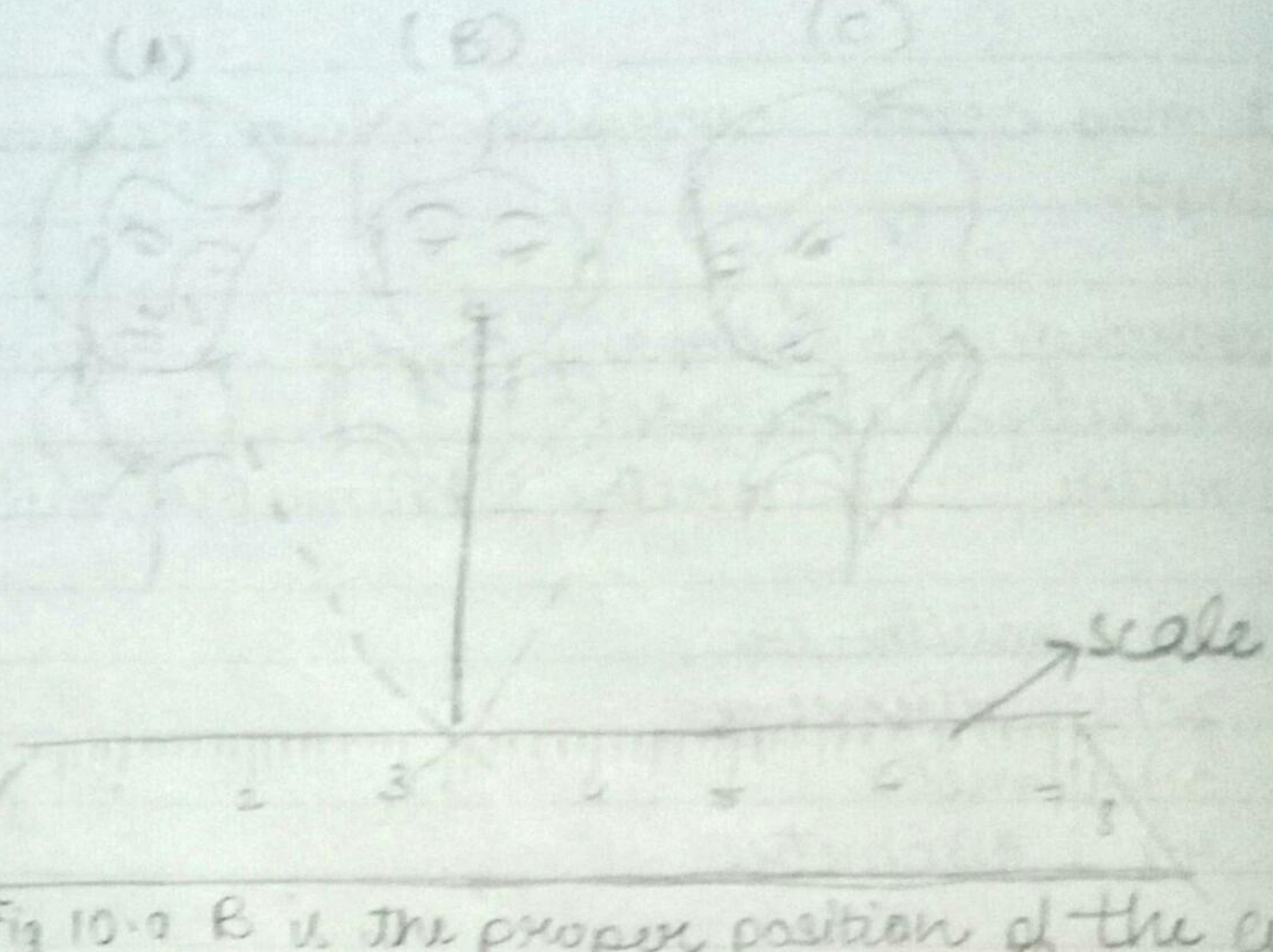



Fig 10.9 B v. The proper position of the eye for taking reading of the scale

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# Ch-12 Electricity and Circuits

## TEXTBOOK QUESTIONS

Q.1 Fill in the blanks:-

1: A device that is used to break an electric circuit is called Switch.

2. _____

Q.2 Mark 'True' or 'False':-

1. Electric current can flow through metals. True

2. Instead of metal wires, a jute string can be used to make a circuit. False

3. Electric current can pass through a sheet of thermo col. False.

Q.3 Explain why the bulb would not glow in the arrangement shown in Fig 12.13.

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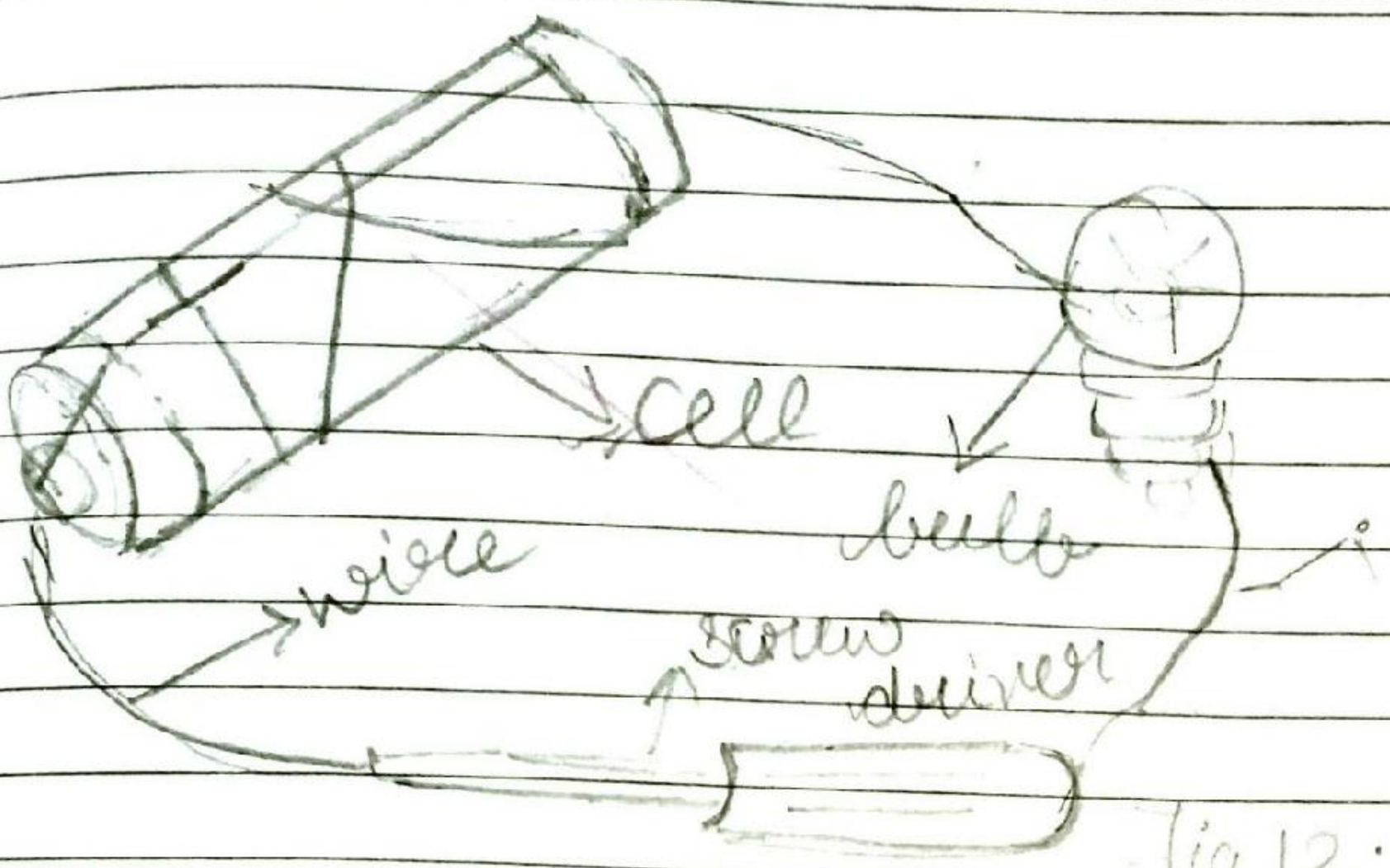



Fig 12.13

Ans → In the given circuit the bulb would not glow because the handle of the screw driver is made up of plastic. Plastic is a bad conductor of electricity. The touch of the end of the screw driver breaks the circuit and the flow of electricity is stopped. Therefore the bulb stops glowing.

Q.4 Complete the drawing shown is Fig 12.14 to indicate where the free ends of the two wires should be joined to make the bulb glow.?



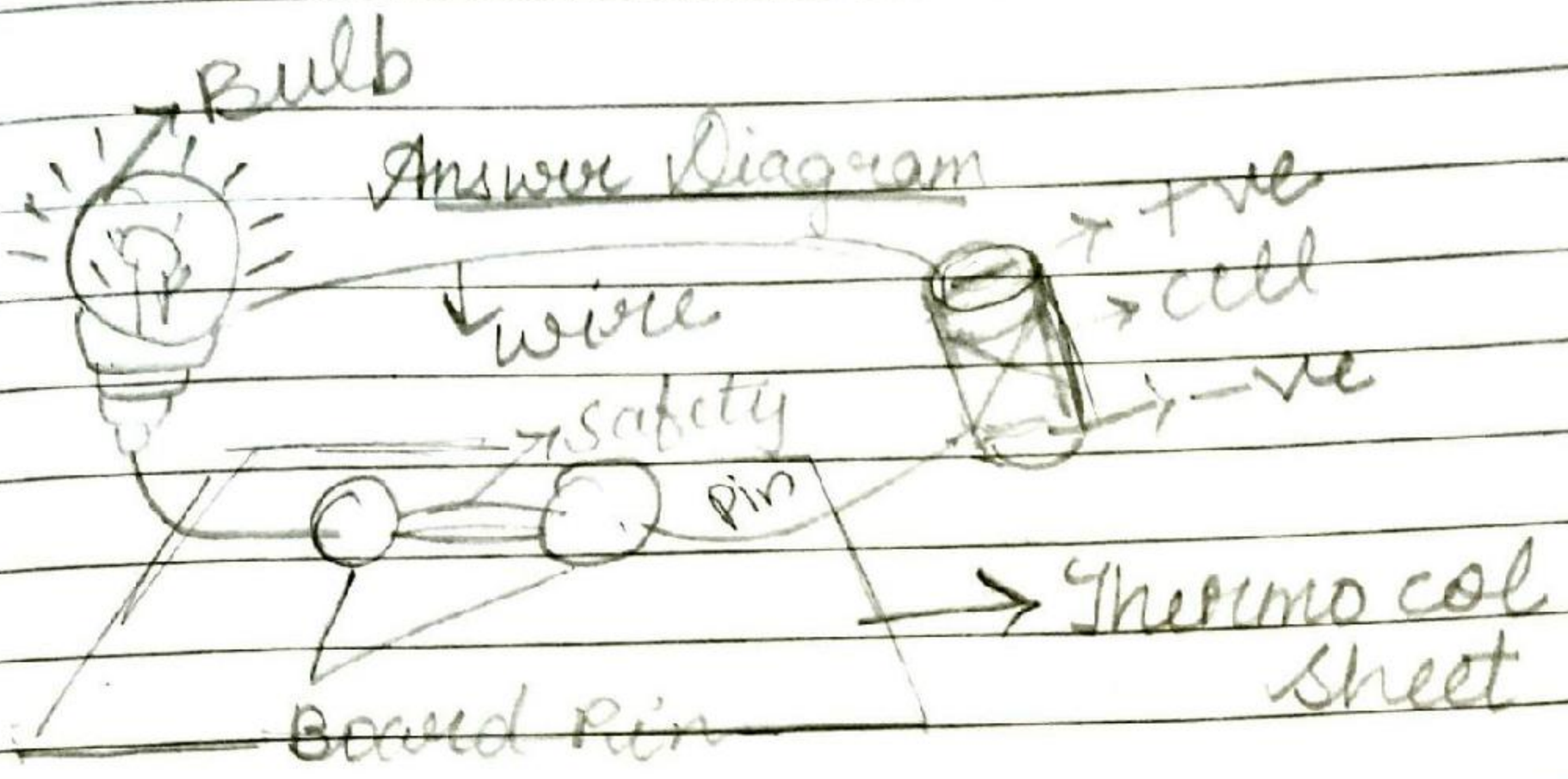
Fig 12.14 as question.

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Ans →




Q.5 What is the purpose of using an electric switch? Name some electrical gadgets that have switches built into them.

Ans → A switch is a device either ~~two~~ to complete a circuit or break the circuit. A circuit is completed when the switch is 'ON' position and the circuit is broken when the switch is in 'OFF' position. Some electrical gadgets that have switches built in them are television, mixers, hair dryer, washing machine, microwave-ovens etc.

Q.6 would the bulb glow after completing the circuit shown in Fig 12.14 if instead use of safety pin we use an eraser?

Ans No, the bulb would not glow. Eraser is made

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up of rubber and rubber is a bad conductor of electricity. Therefore, the bulb would not glow if we place an eraser in the place of safety pin.

Q.7 Would the bulb glow in the circuit shown in Fig 12.15?

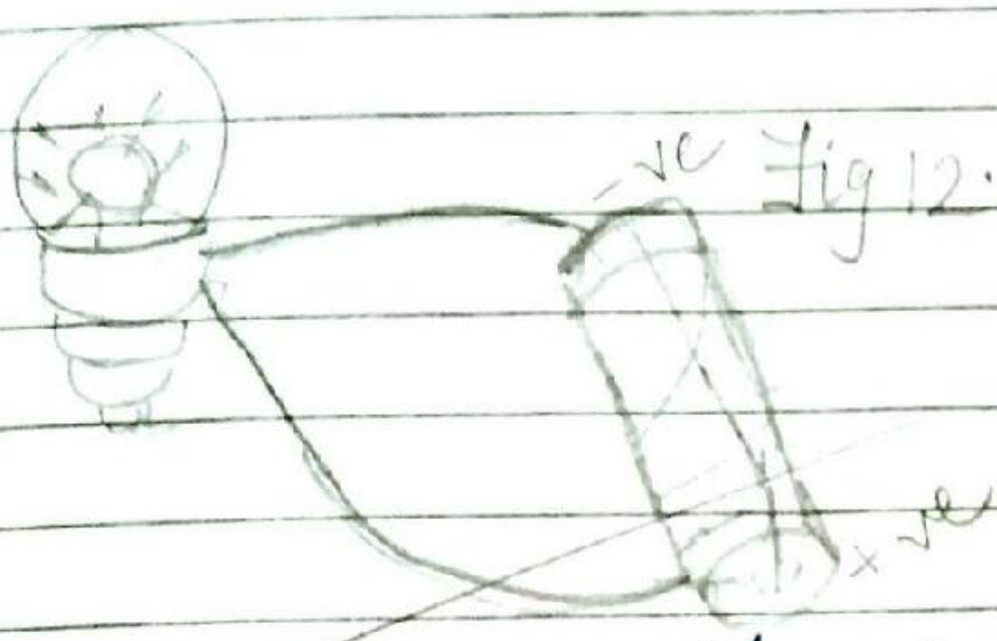


Fig 12.15

Ans → No, the bulb would not glow in the circuit shown. As we observe in the circuit the positive and the negative terminal of the cell are joined with only one terminal of the bulb and the another terminal remains vacant. Thus, the circuit is incomplete and the bulb would not glow.

Q.8 Using the 'conduction tester' on an object it was found that the bulb begins to glow. Is that object a conductor or an insulator? Explain.

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Ans → When the two free ends of a conductor are touched with an object then the bulb of the tester would glow, if the object conducts electricity. However, the bulb would not glow if the object does not conduct electricity. Since, the bulb glows in the tester when touched with the object, the object must conduct electricity. Hence the object is a conductor.

Q.9 Why should an electrician use rubber gloves while repairing an electric switch at your home, explain.

Ans → ~~Rubber is an insulator~~ Rubber is a bad conductor of electricity, That is why when electricians are doing some repairing work they wear rubber gloves. So that they do not get any electrical shock while repairing the electric switch.

Q.10 The handles of the tools like screwdrivers and pliers used by electricians for repair work usually have plastic or rubber covers on them. Can you explain why?

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Ans → We know that plastic and rubber are insulators and do not conduct heat or electricity. Screw drivers are made in such a way that one end is metallic and the handle is made up of plastic. Such handles do not conduct electricity. Therefore the electricians do not get electrical shock while repairing electrical gadgets.

## Extra Questions

Q1 When is an electric ~~ot~~ circuit said to be closed?

Ans → When the circuit allows the flow of current from one terminal of the electric cell to the other terminal, then the circuit is said to be closed.

Q2 Why electricity cannot flow in an open circuit?

Ans → Electricity cannot flow in an open circuit because the path of the current is not continuous and the flow of electricity is obstructed. Thus there is no flow of electricity in an open circuit.

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Q.3 What are the differences between conductors and insulators?

| Conductors | Insulators |
|---|---|
| 1.) Materials that allow electricity to pass through them are called as conductors.. | 1.) Materials that do not allow electricity to pass through them are called called as insulators. |
| 2.) Metals like copper and aluminium, water and human body are some of the examples of conductors | 2.) Paper, wood, stone, plastic, rubber and glass are some of the examples of insulators. |

Q.4 Describe the structure of an electric cell?

Ans * An electric cell produces power and provides electricity to the bulb in a torch or other electronic equipments. An electric cell has a metal cap on one side and a metallic disc on the other side. The cell has a positive sign (+) and a negative sign (−)

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marked on it. The metal cap is the positive terminal and the metal disc is the negative terminal of all the cells.

Q5 Why are electric wires used at homes are covered with plastic? ~~Plastic is a non-conductor~~ of

Ans - Plastic is a non-conductor of electricity. So electric wires used in our homes are covered with plastic so that we do not get electric shock when we touch any electronic device

Q.6 Describe an activity to show that how an switch works? Draw diagrams 12.9 and 12.10. electric

Ans → Aim → To show how an electric switch works.

Materials Required → Two drawing pins or board pins, a small sheet of thermocol, a cell or a battery of two cells and one indicator bulb and a wire, safety pin

Method → We insert the board pin into ring at one end of the safety pin and fix it on the thermo-

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Sheet. We make sure that safety pin can be rotated freely. We fix the other drawing pin on the thermocol sheet in such a way that the the free end of the safety pin touches the other pin. The safety pin fixed in this way would be our switch in this activity. Electric wires can be attached with the a small indicator bulb. While the wire from the other board pin attached with one terminal of the cell or a battery. The other terminal of the cell or a battery is attached with indicator bulb. Hence we have made a circuit.

board

Observation → We rotate the safety pin so that the free end of the safety pin touches the drawing pin. While doing so we see that if we move the safety pin away the bulb does not glow but if we touch the free end of the safety pin with the board pin, the bulb glows.

Conclusion → The safety pin is working as a switch and it covered the gap between the two board pins. When we made both of them touch in this position the switch is said to 'ON'. Being the conductor the material of the safety pin allows electricity to

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flow through it. The circuit is complete and the bulb glows. It proves that ~~when~~ the switch is 'on' the circuit is closed. When the switch is 'off' the circuit is open.

Q.7 What is a bulb?

Ans → An electric bulb is a device made up of glass inside in which a thin filament made up of tungsten is present getting heated up when electricity is passed and glows to give light

Q.8 What are Conductors?

Ans → Materials which allow electric current to pass through them are called conductors
Eg → Metal key and water.

Q.9 What are insulators?

Ans → Materials which do not allow electricity to pass through them are called insulators.
Eg → Wooden box, plastic scale, rubber.

Q.10 What is an electric cell?

Ans → It is a source of power which produces

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electricty from the chemicals ~~it~~ stored inside it. It has two terminals, positive (+ve) and negative (-ve).

Q.11 Define an electric circuit?

Ans → An arrangement of electrical equipments and source of power in an organized manner to show the path or the flow of electricity.

Q.12 What is a filament?

Ans → The thin wire that gives off light is called filament of the bulb. It is made up of ~~thumb~~ tungstem.

Q.13 What is a terminal?

Ans → The base ~~of the~~ and the metal tip of the ~~bulb~~ base are the two terminals of the bulb. These two terminals are fixed in such a way that they do not touch each other. Both the electric cell and the bulb have two terminals each.

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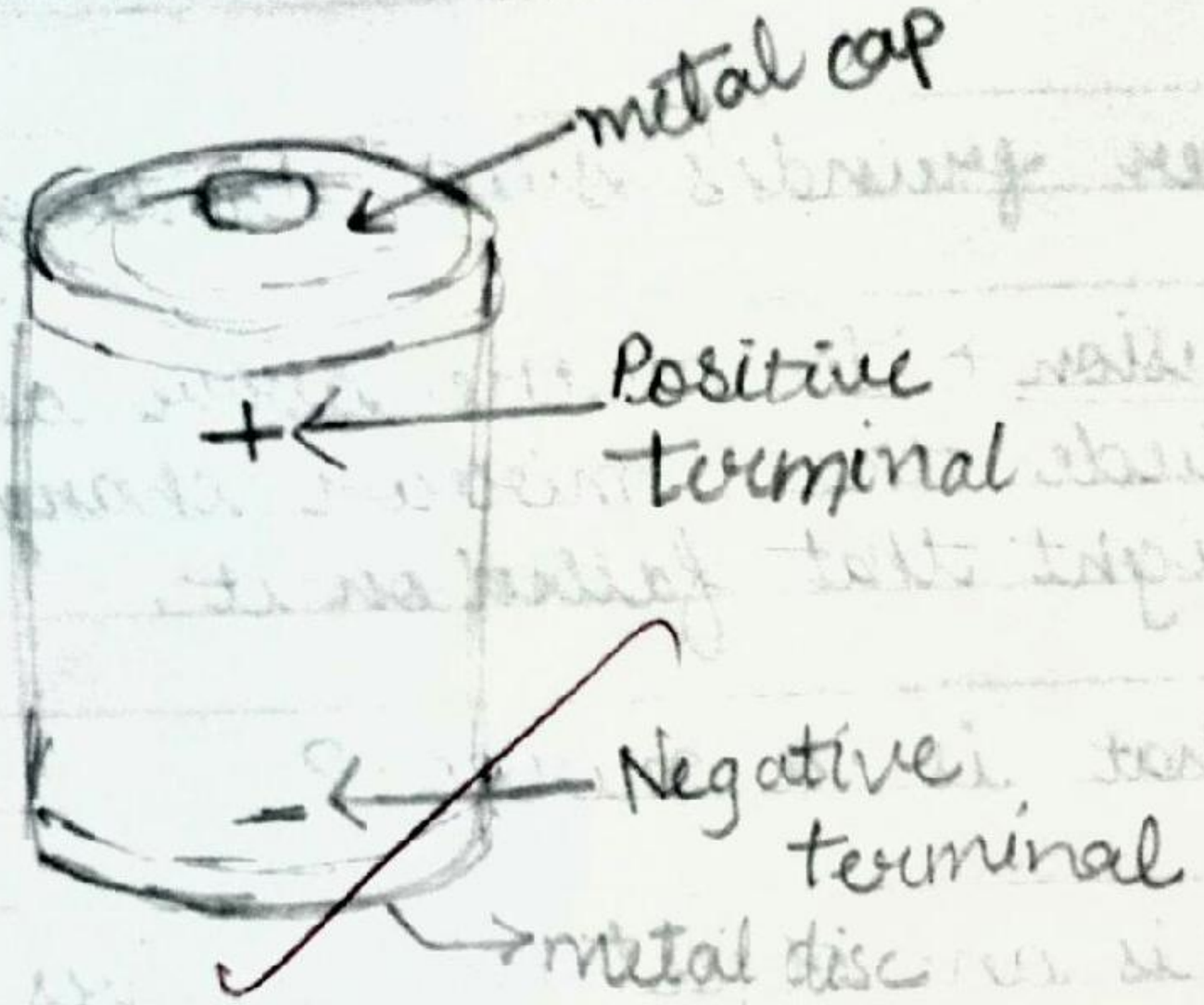



Fig 12.1 An electric cell

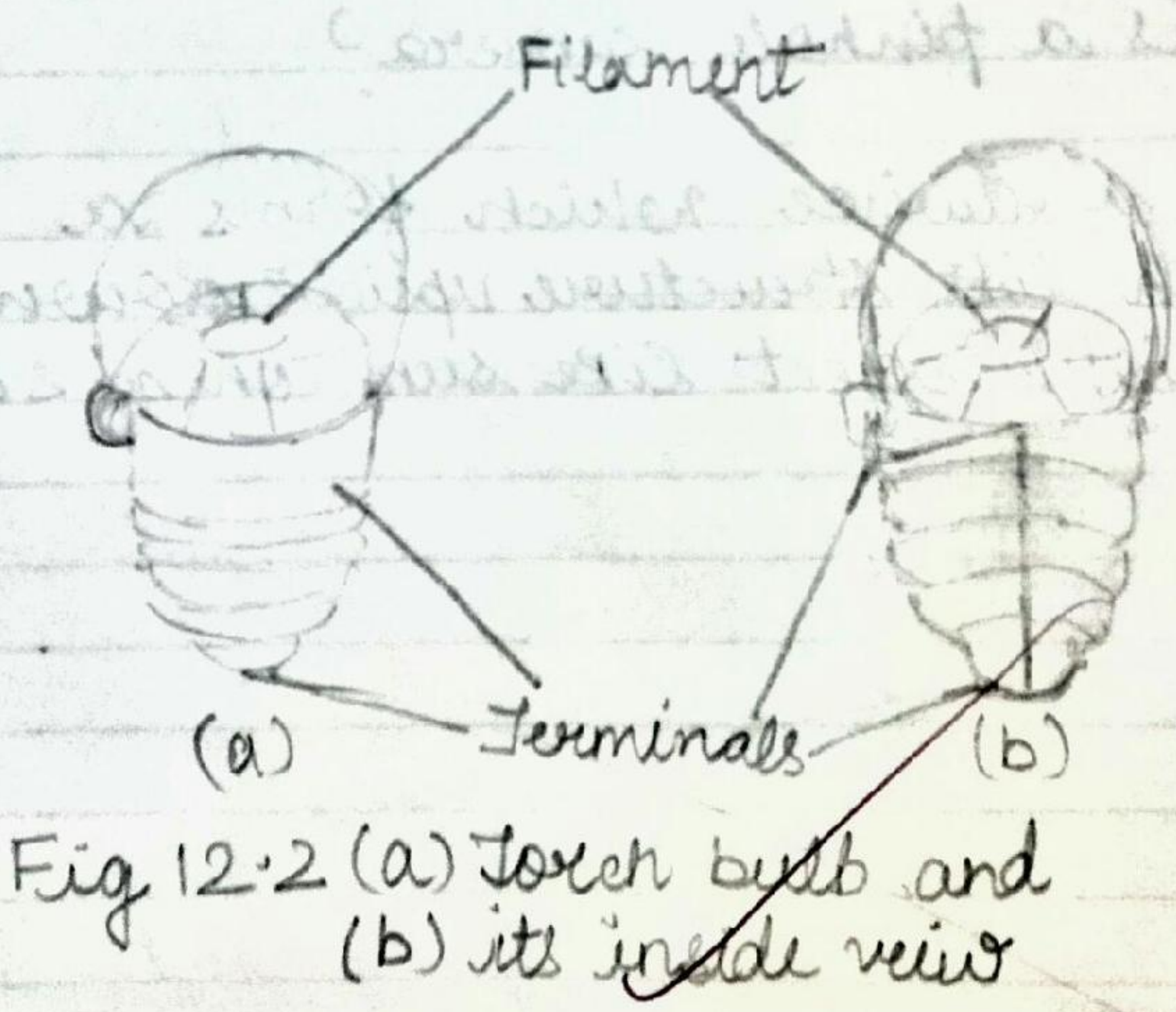



Fig 12.2 (a) Torch bulb and
(b) its inside view

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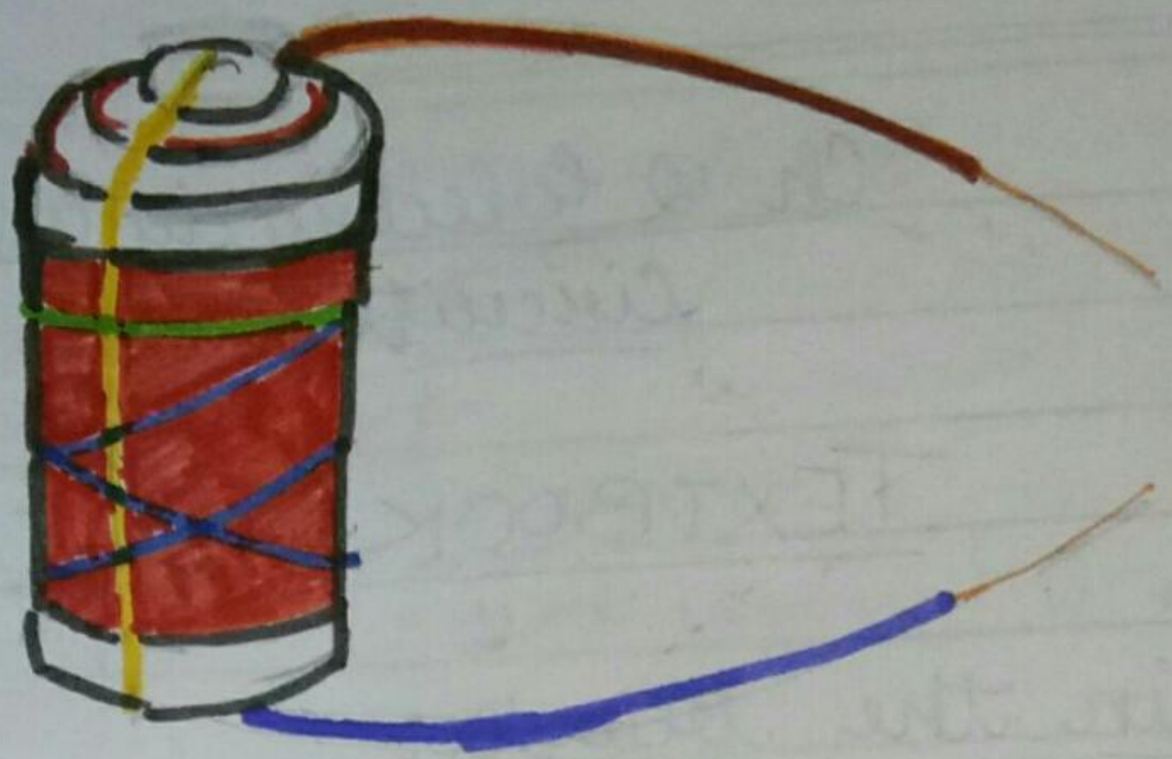


Fig 12·3 Colectoric cell with two wires attached to it

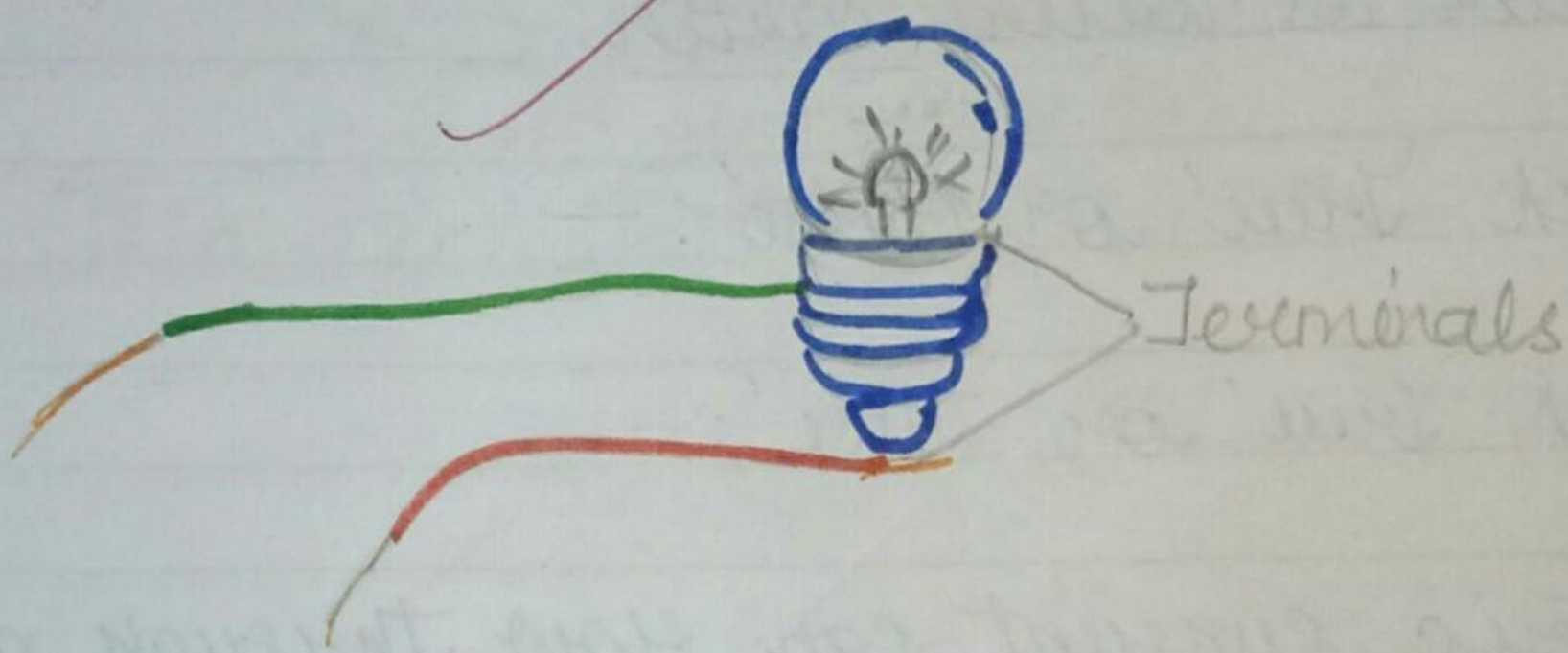



Fig 12·4 Bulb connected to two wires

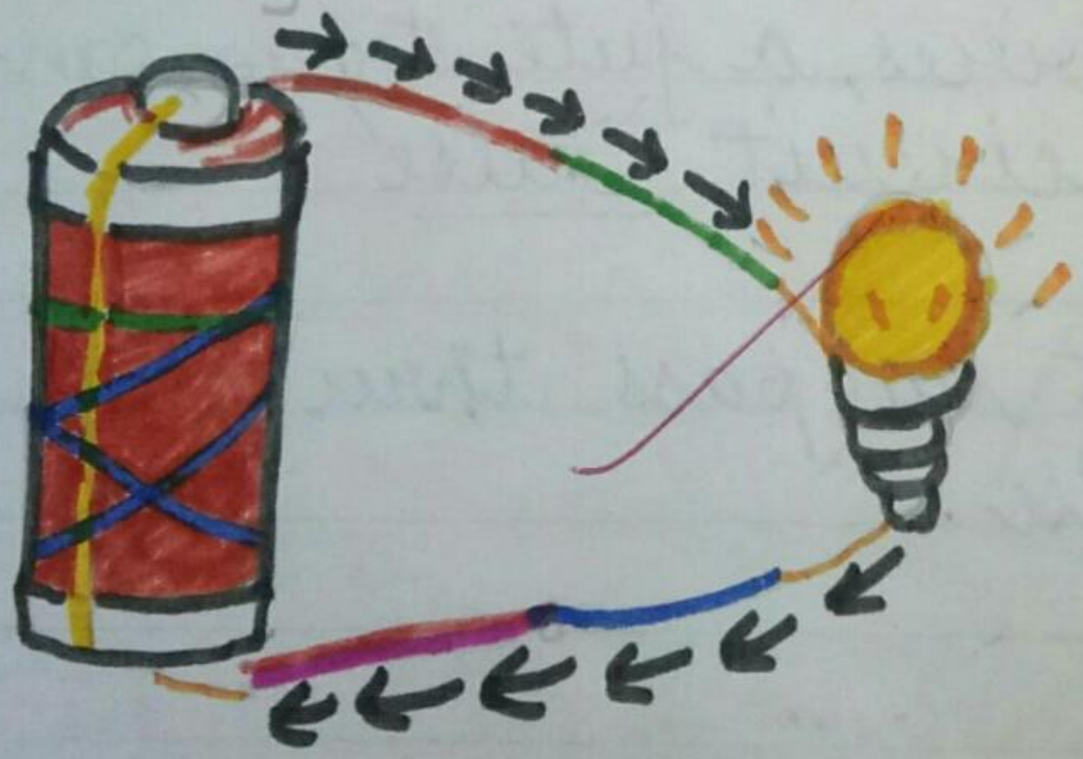


Fig 12·6 Direction of current in an electric circuit

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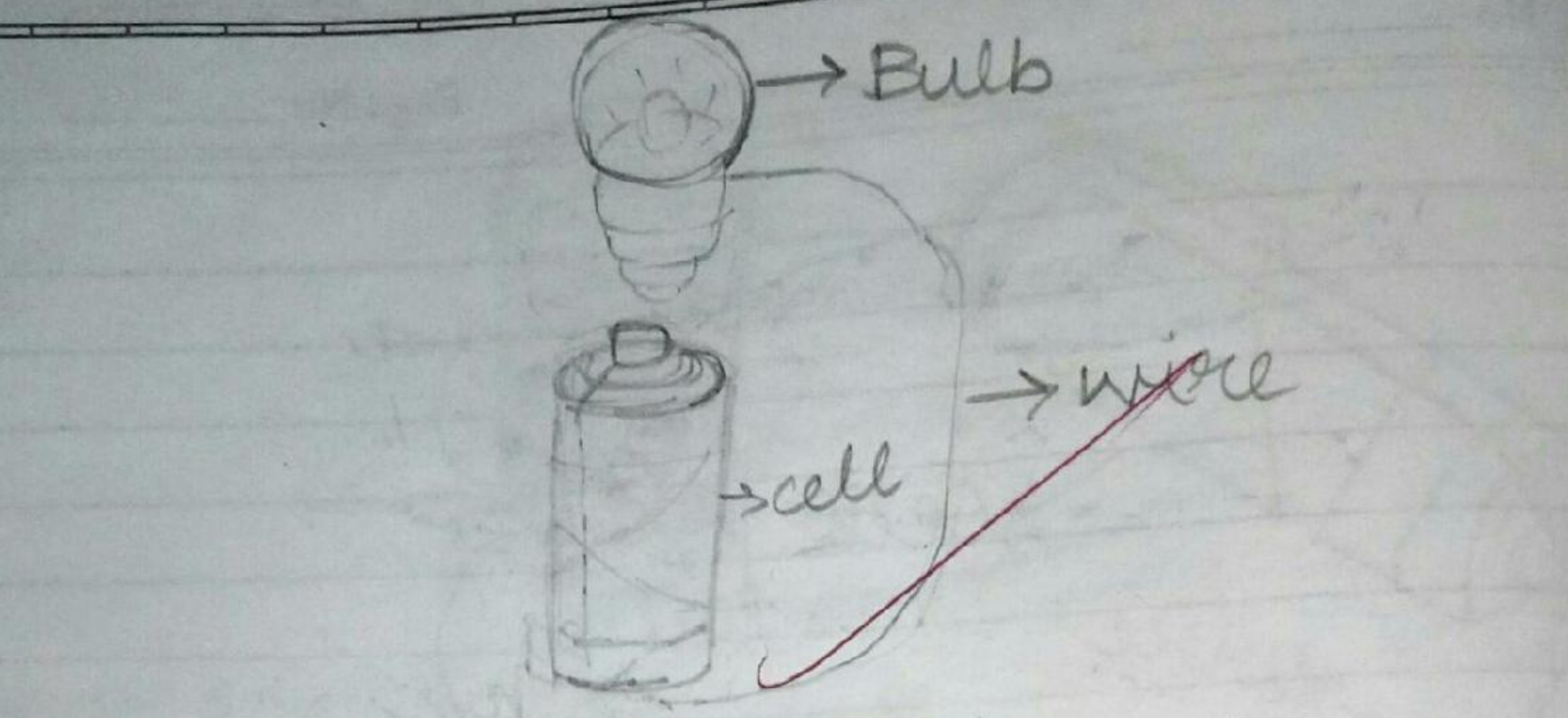



Fig 12.7 A home made torch

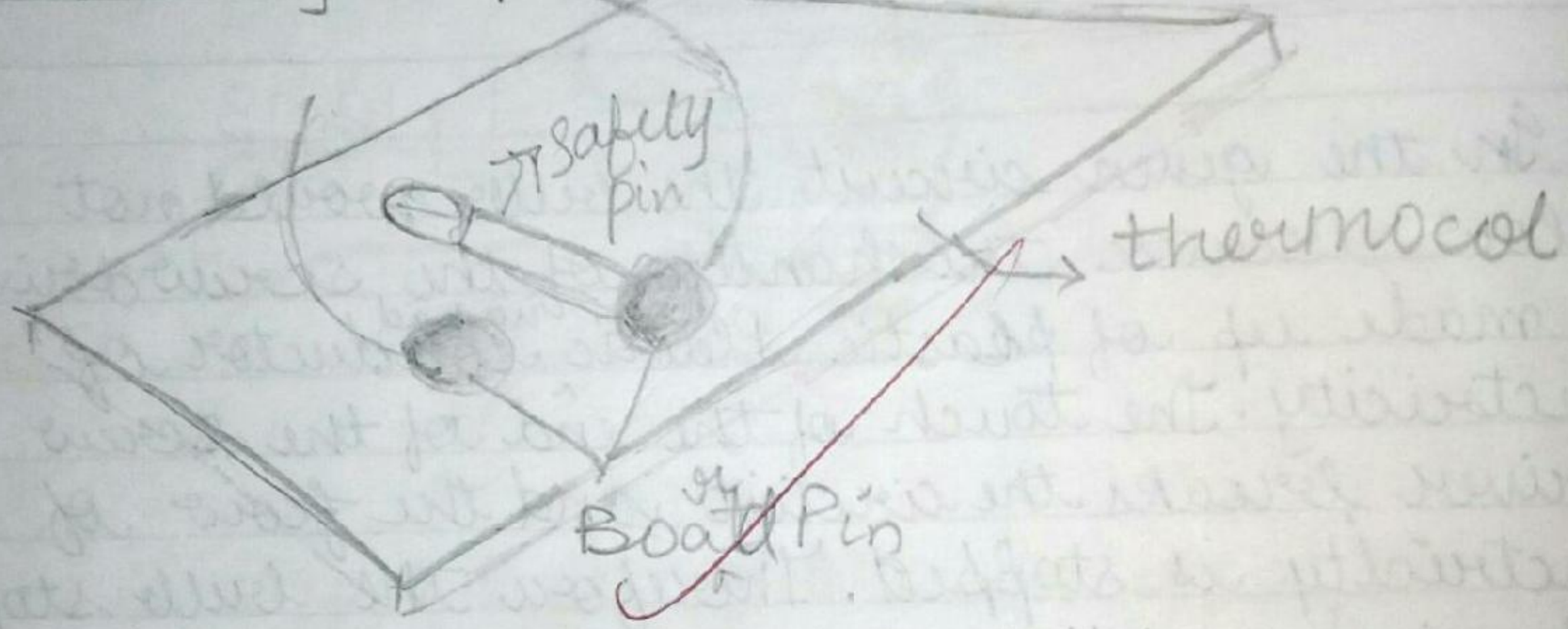



Fig 12.8 A simple switch

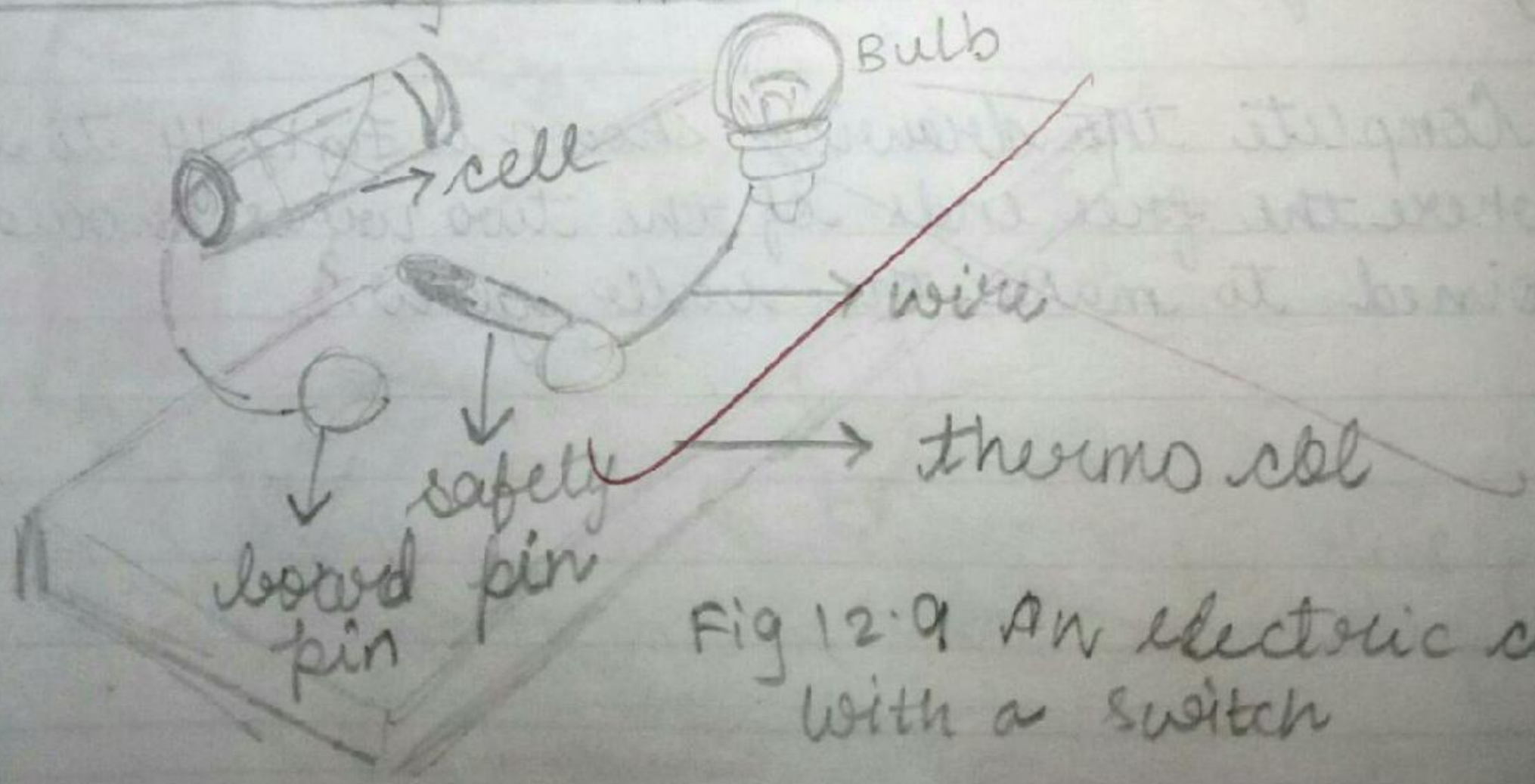



Fig 12.9 An electric circuit with a switch

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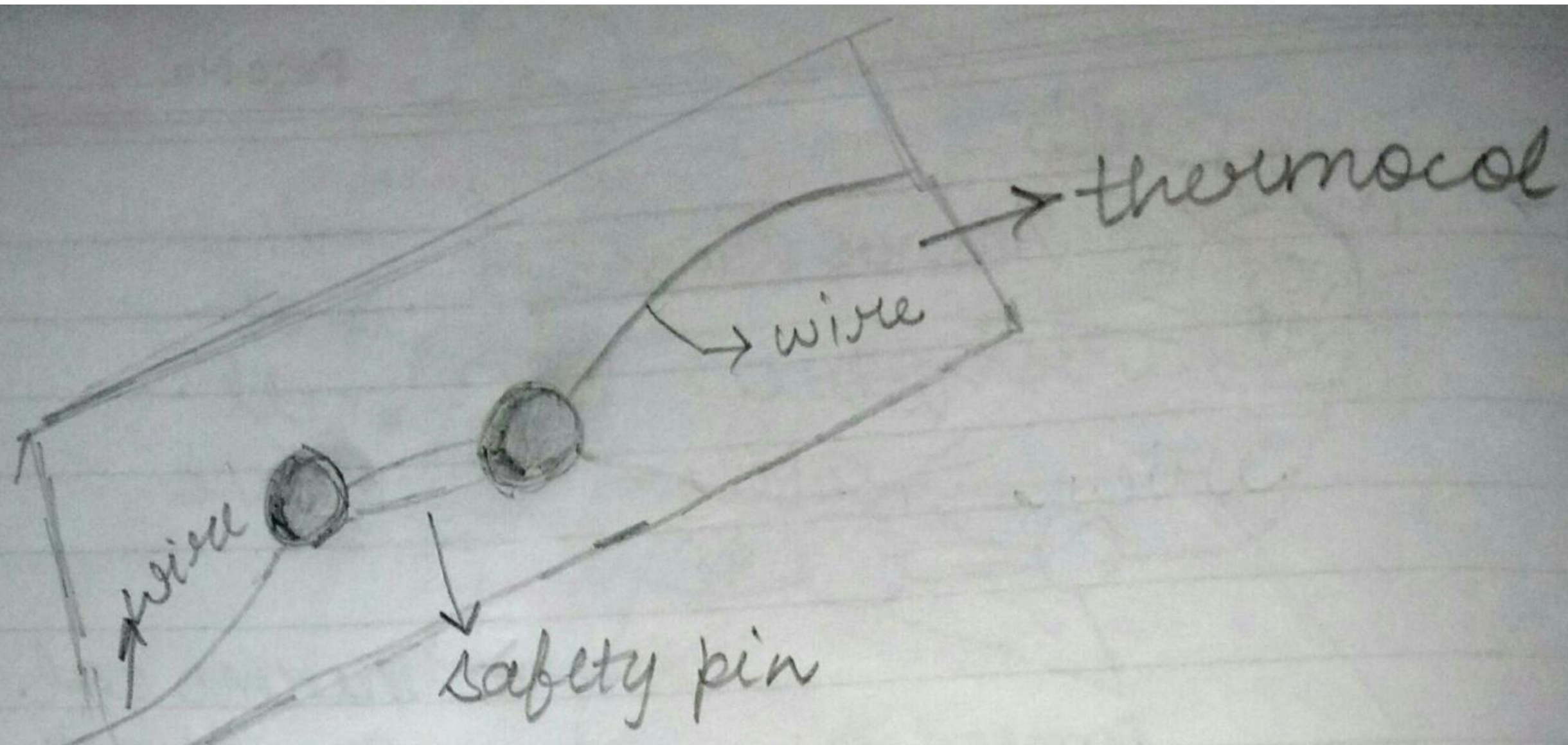



Fig 12.10 A switch in ON Position

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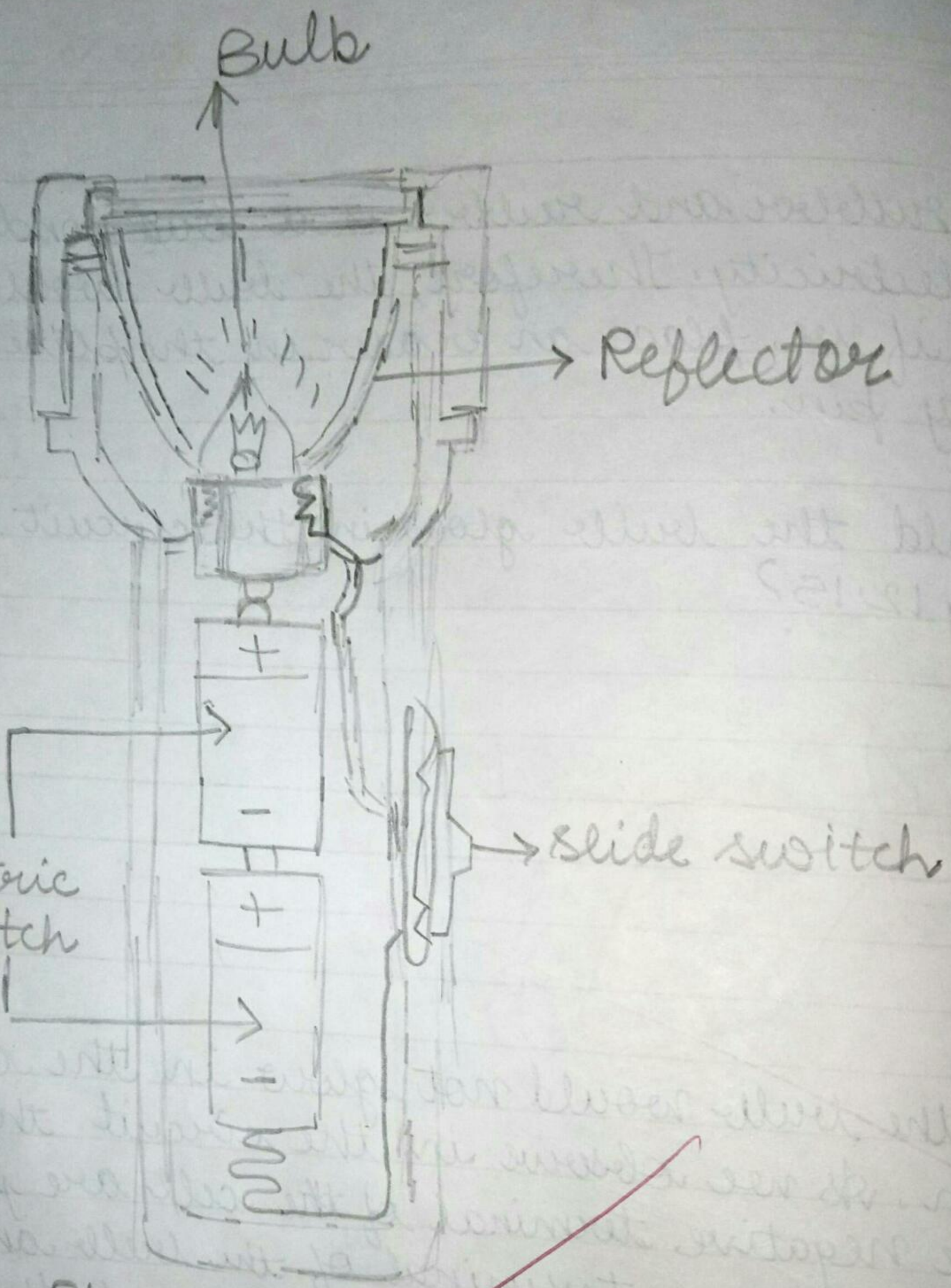
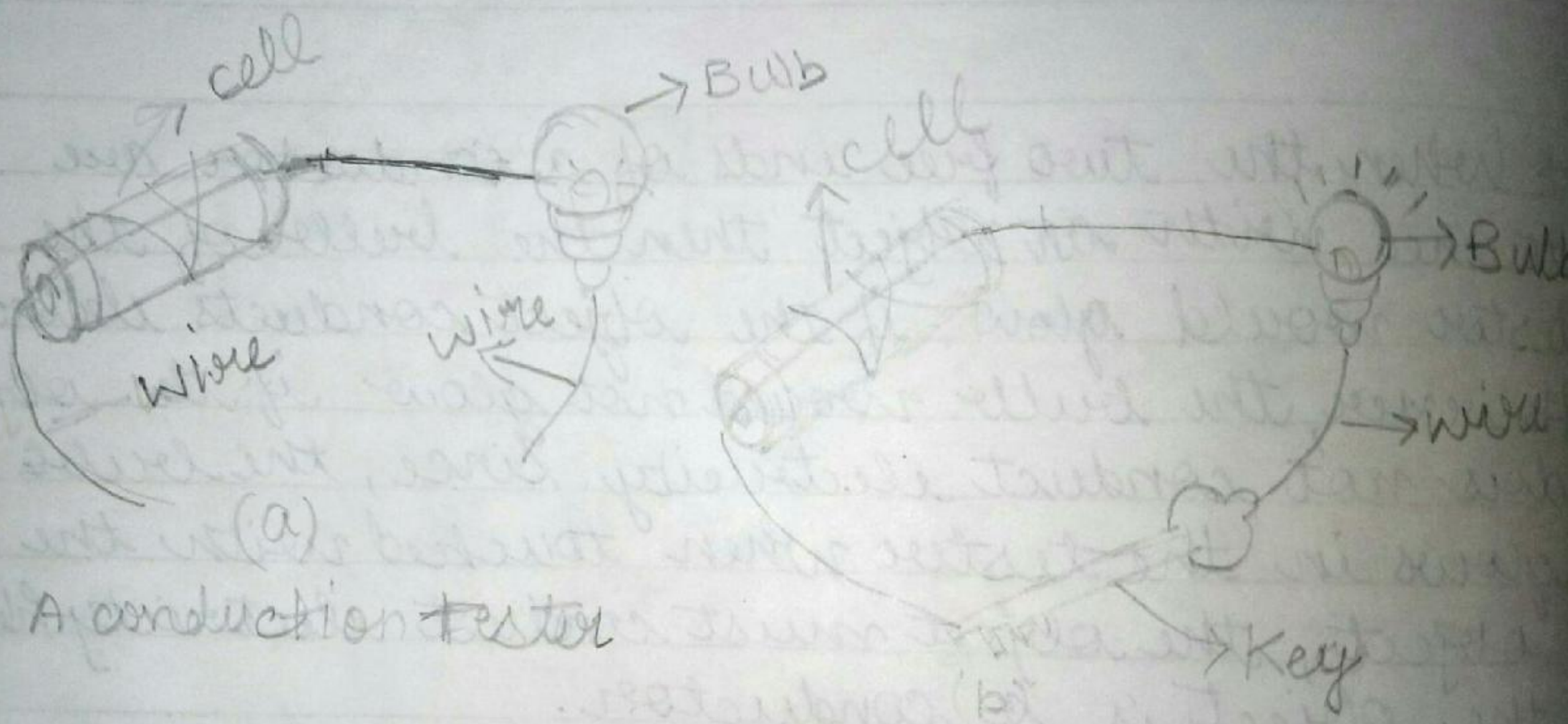



Fig 12.11 Inside view of a torch

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A conduction tester

Testing wether the bulb glows when the tester is in contact with a metal key.

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# Chapter - 13 → Fun with Magnets

## TEXTBOOK QUESTIONS

**Que-1 Fill in the blanks:**

(i) Artificial magnets are made in different shapes such as horse shoe, ball ended and cylindrical magnet.

(ii) The materials which are attracted towards a magnet are called magnetic materials.

(iii) Paper is not a magnetic material.

(iv) In olden days, sailors used to find direction by suspending a peice of natural magnet.

(V) A magnet always has two poles.

**Que-2 True or False:**

(i) A cylindrical magnet has only one pole. False

(ii) Artificial magnets were discovered in Greece. True

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(iii) Similar poles of a magnet repel each other. True

(iv) Maximum iron fillings stick in the middle of a bar magnet when it is brought near them. False

(v) Bar magnets always points towards North-South direction. True

(vi) A compass can be used to find East-West direction at any place. False

(vii) Rubber is a magnetic material. False.

Que-3 It was observed that a pencil sharpener gets attracted by both the poles of a magnet although its body is made of plastic. Name a material that might have been used to make some part of it.

Ans → The blade of the sharpener is made up of iron but the other parts were made up of plastic. Therefore the blade of the sharpener is attracted towards the magnet but the other parts are not attracted.

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Que 5 → Write any two properties of a magnet.

Ans → The properties of a magnet are →
1. The property of attraction and Repulsion.
2. The property of showing directions.

Que 6 Where are poles of a bar magnet located?

Ans → The poles of a bar magnet are located at the two ends of the magnet. The south facing end indicates the South poles & North facing end indicates the north pole.

Que 7 A bar magnet has no markings to indicate its poles. How would you find out near which end is its north pole located? (Fig 13.9)

Ans → First of all, we will suspend the unidentified bar magnet with a string from a stand. Next we will take another bar magnet where north and south poles are marked. Now we will bring the north pole of identified bar magnet. If there is a repulsion between the two bar magnet we will be sure that the identified bar magnet has the north pole on that side

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But if there is an attraction, then the other end of the bar magnet must be the north pole.

Que-8 You are given an iron strip. How will you make it into a magnet? (Fig 13.11)

Ans → We take iron strip and place it on a table. Now, we take a bar magnet and place one of its pole near the edge of the iron strip without lifting the bar magnet, we move it along the length of the iron strip till we reach the other end. Now, we lift the magnet and continue the same activity in the same direction. We repeat the process 30-40 times. Now we bring an iron pin to check wether the iron strip has turned into a magnet or not. If it attracts the pin then we can conclude that iron strip has turned into a magnet.

Que-9 → How is a compass used to find the directions?

Ans → The magnetic compass has a dial with

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directions marked on it. It is kept at a place of which the direction we want to know. The magnetic needle inside dial indicates north and south direction. We shake the compass a little and place it at a place whose direction we need to know. After a few seconds when the needle comes to rest, we should observe the position of the magnetic needle. The side of the needle which is painted red always shows the north direction. The opposite must be the south direction and the other direction can be identified.

Que-10 → Done in the book

## ⟹ EXTRA QUESTIONS ⟸

Que-1 What are magnetic materials? Give examples.

Ans → The materials which get attracted towards a magnet are called magnetic materials. Eg → Iron, Cobalt and Nickel.

Que-2 → What are non-magnetic materials? Give examples?

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Ans → The materials which are not attracted towards a magnet are non-magnetic materials. Eg → Plastic, wood, rubber.

Que3 What are natural and artificial magnets?

Ans > Natural magnet → On the surface of the earth some rocks are present which have a unique property of attracting magnetic substances.

→ Artificial magnet → A process of making magnet from peices of iron with the help of natural magnet which was discovered in Greece long ago are called Artificial magnets. Artificial magnets are prepared in different shapes. Eg → Bar magnet, Horse-shoe magnet, Ball-ended magnet and cylindrical magnet. Electro-magnet is also an artificial magnet.

Que-4 > How will you find out the two poles of a magnet? (Activity Form) (Fig 13.7)

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Ans → **Aim :-** To find out the two poles of magnet

**Materials required:-** A bar magnet and some iron filings.

**Method:-**
1) On a ~~fair~~ peice of paper some iron filings are taken.
2) Now, we place the bar magnet on the iron filings.

**Observation:-** After a few minutes we take out a bar magnet. We will see that the iron filings are remaining attached at the two ends of bar magnet, but no or very few iron filings were attached in the middle of the bar magnet.

**conclusion:-** North and south poles of a bar magnet are located at the two ends of the bar magnet where maximum amount of iron filings were attracted.

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Que-5 → How do magnets ~~use~~ loose their magnetic property?

Ans → ~~The properties~~ Magnets lose their magnetic property by various activities :—

1. Hammering
2. Dropping from height
3. Keeping near fire
4. Keeping near electronic devices.

Que-6 → What happens when magnets are not stored properly?

and

What is the correct way of storing magnets?

Ans → Magnets become weak as they lose their magnetic property. If they are not stored properly. To keep the bar magnet safely we should keep them in pairs with unlike poles facing each other. They must be separated by a peice of wood while two peices of soft iron should be placed accross the two ends.

Q-7 What is a compass?

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Ans → It is a devia made up of small box with a glass cover on it. A magnetised needle is balanced on a pivot which rotes freely and shows different directions marked in it.

Que-8 → What is a magnetide?

Ans → A natural magnet is called magneticle.

Que-9 → Define magnet.

Ans → The substance having a property of attracting iron is called as magnet.

Que-10 → Define North Pole?

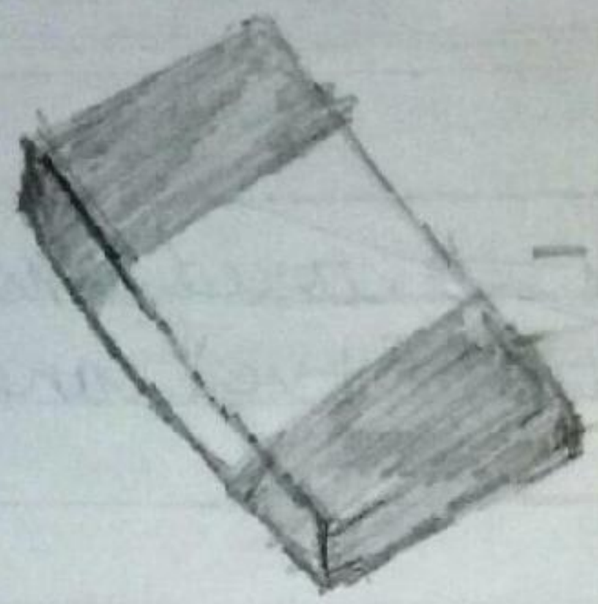
Ans → The end of the magnet that points towards the north is called North Pole.

Que-11 → Define South Pole:

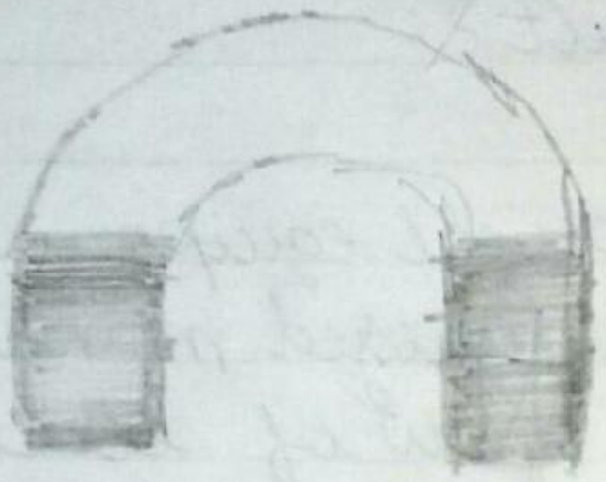
Ans → The end of the magnet pointing towards the South is called South Pole.

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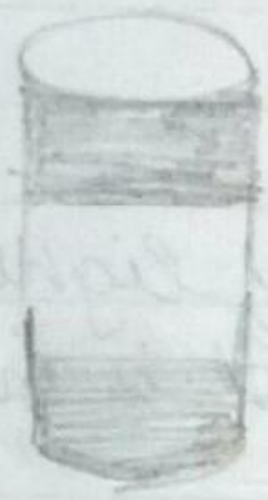
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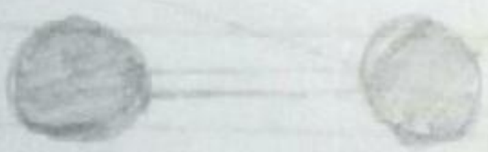
- Bar Magnet



- Horse shoe magnet



- cylindrical magnet



- Ball Ended magnet

Fig 13.4 Magnets of different shapes.

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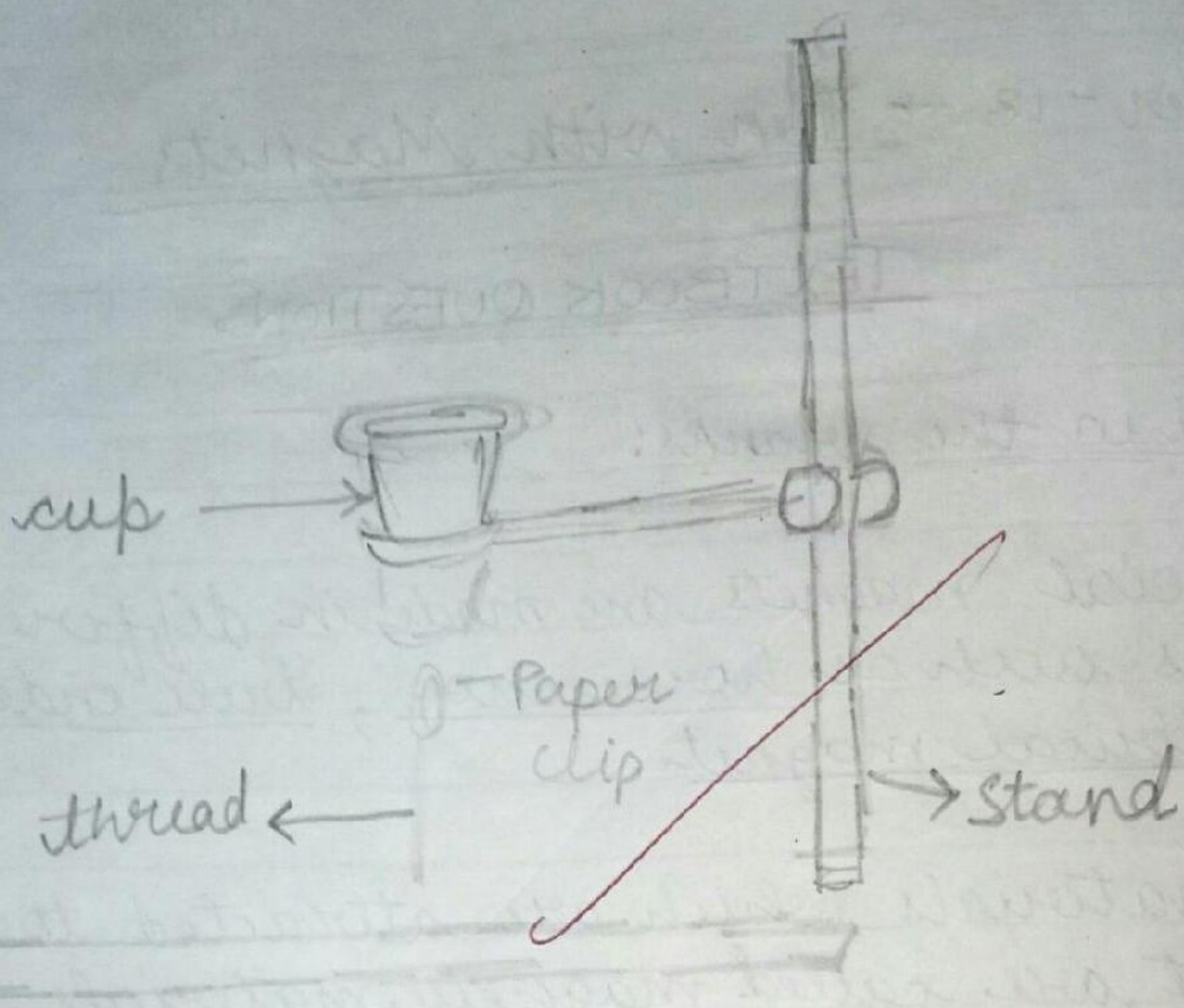
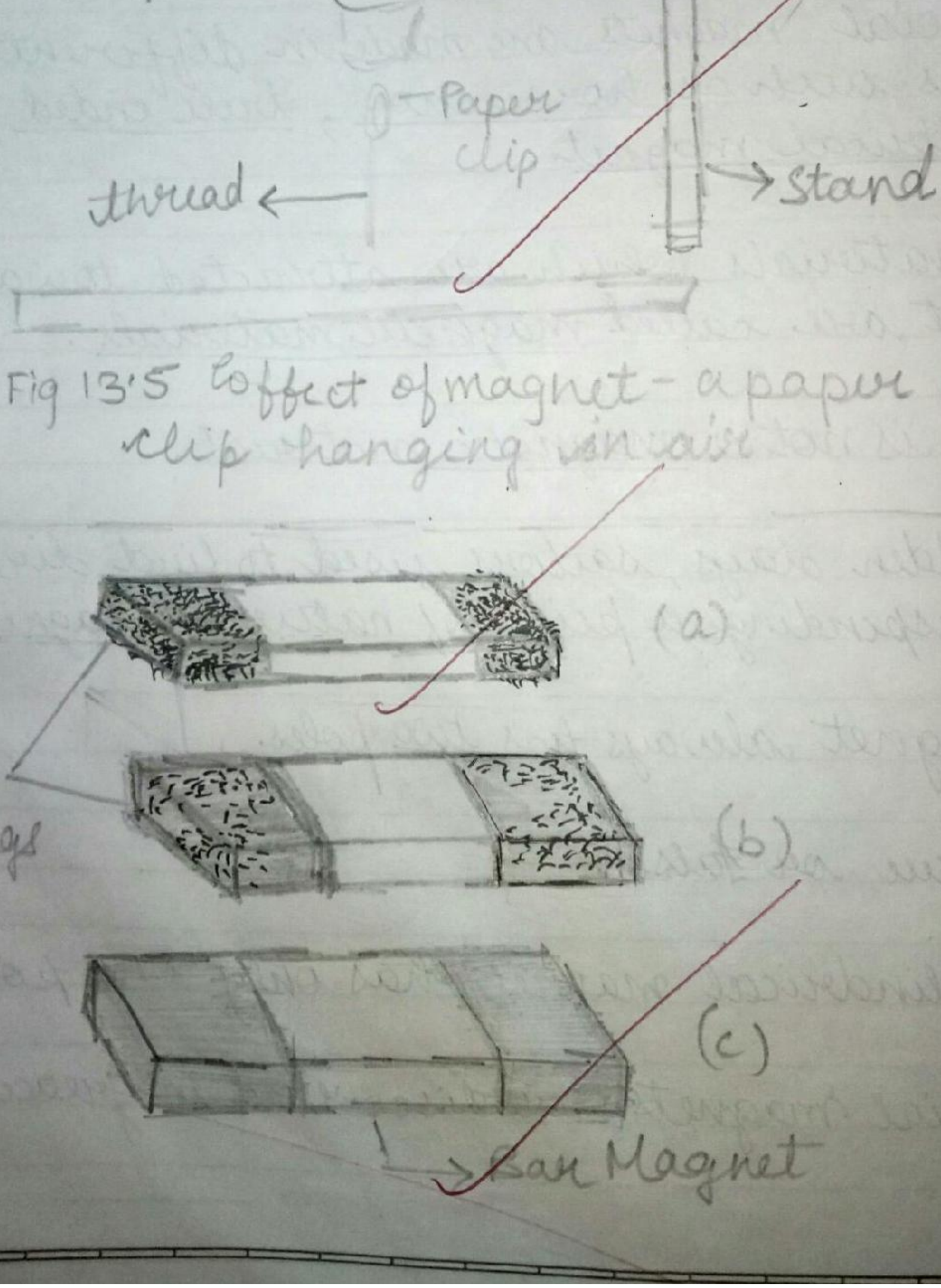



Fig 13.5 Effect of magnet - a paper clip hanging in air




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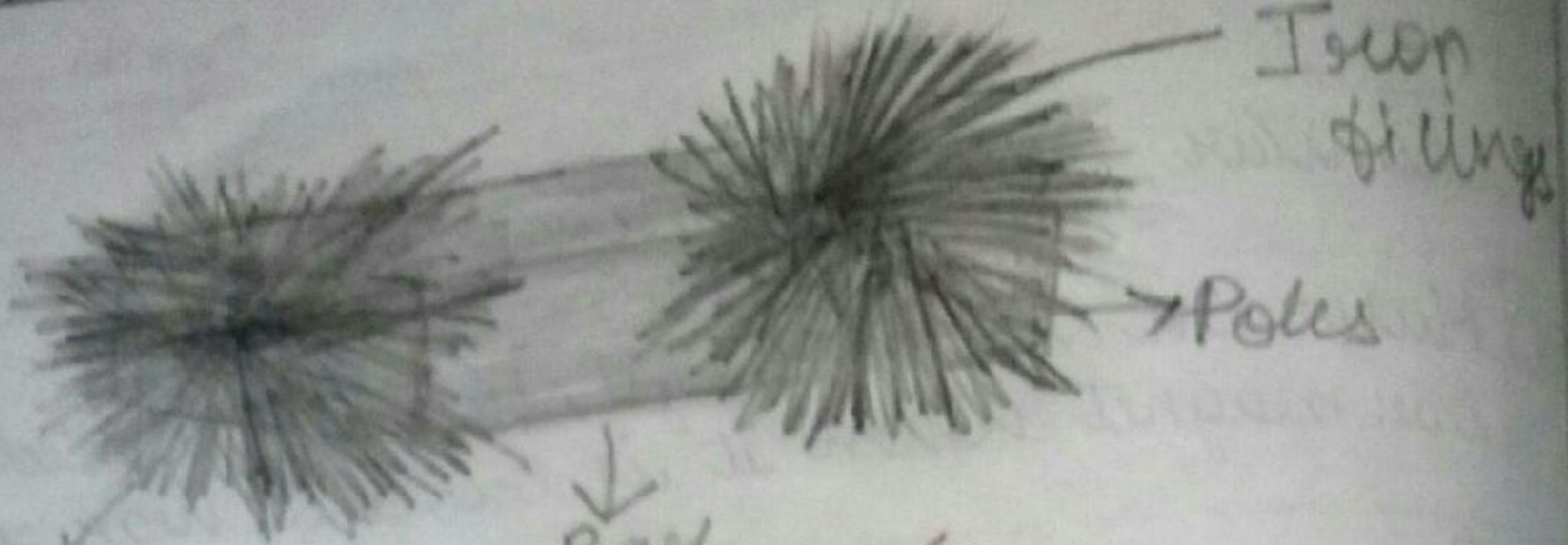



Fig -13.7 Iron filings sticking to a bar magnet

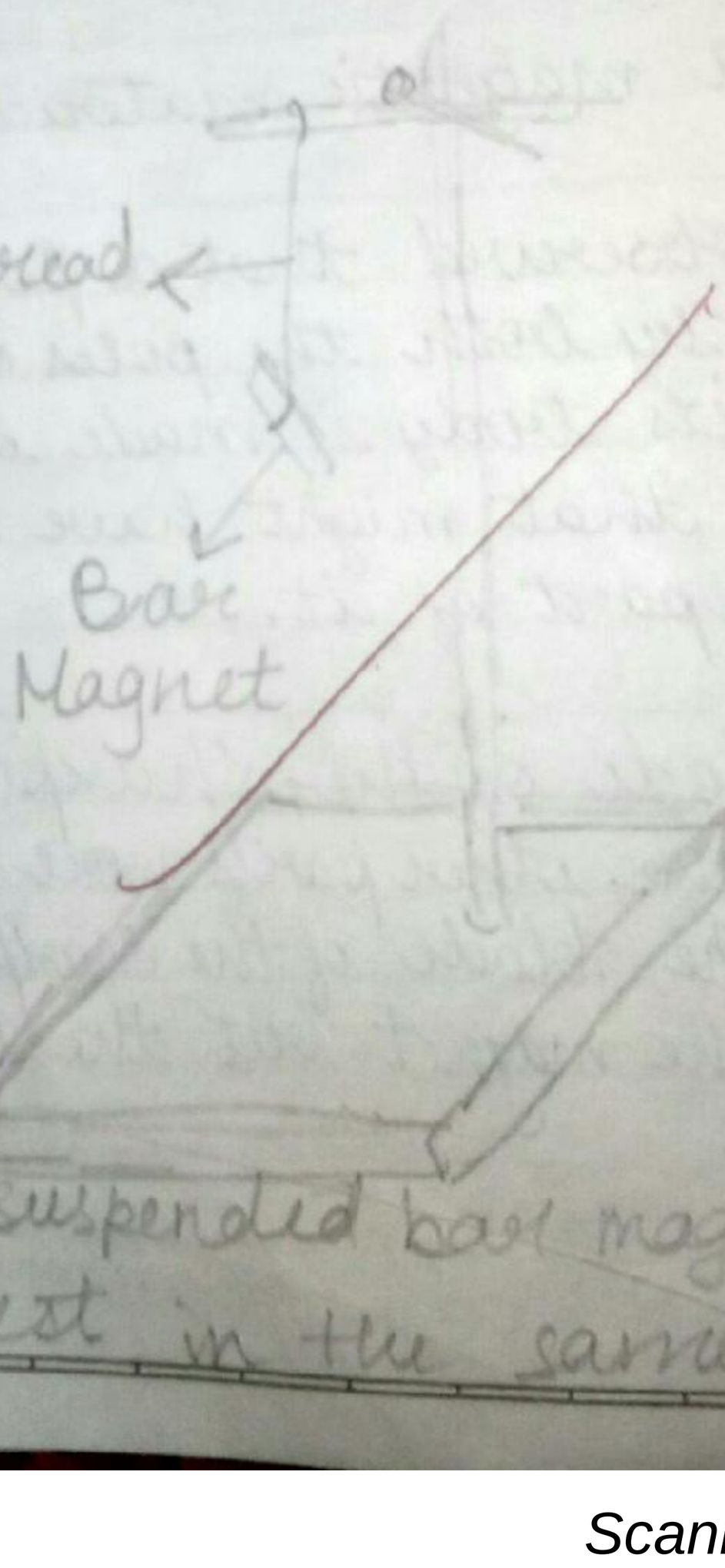
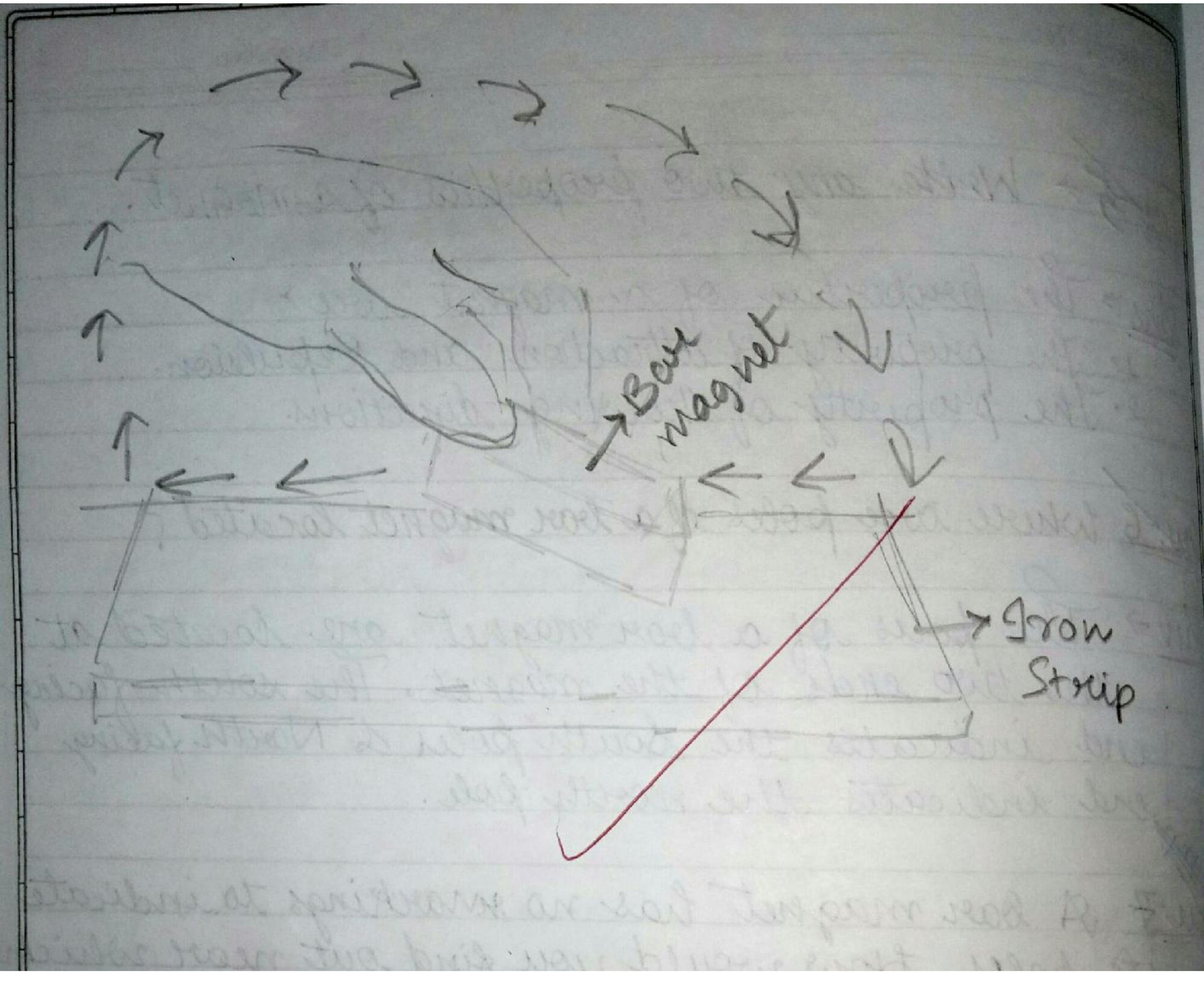



Fig 13.9 A freely suspended bar magnet always comes to rest in the same direction

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# CHAPTER - 14 : WATER

## TEXTBOOK QUESTIONS

Q.1 Fill ups:

[a] The process of changing of water into its vapour is called evaporation.

[b] The process of changing water vapour into water is called condensation.

[c] No rainfall for a year or may lead to drought in that region.

[d] Excessive rains may cause floods.

Q.2 True / False:

1) Water vapour is present in air only during monsoon
False

2) Water evaporates into air from oceans, rivers, and lakes but not from soil. False

3) The process of water changing into its vapour,

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is called evaporation. True

4) The evaporation of water takes place only in sunlight: False

5) Water vapour condenses to form tiny droplets of water in the upper layers of air where it is cooler. True

Q.3 Evaporation / Condensation:

1) Water drops appear on the outer surface of a glass containing cold water. Condensation

2) Steam rising from wet clothes while they are iron. Evaporation

3) Fog appearing on a cold winter morning. Condensation

4) Blackboard dries up after wiping it. Evaporation

5) Steam rising from a hot girdle when water is sprinkled on it. Evaporation

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Que-4 Suppose you want to dry your school uniform quickly. Would spreading it near an ~~an~~ anghiti or heater help? If yes, how?

Ans → Yes, clothes will dry quickly, if they are spread near an aghiti. The heat produced by these devices will help in evaporation of water from the clothes and they will dry up quickly.

Que-5 Take a cooled bottle of water from refrigerator and keep it on a table. After some time you notice a puddle of water around it. Why?

Ans → The water vapour present in the air comes in contact with the outer cold surface of the bottle which is taken out from the refrigerator. Air gets condensed which result in the formation of water droplets, which are collected on the outer surface of the water. After some time when more amount of water droplets accumulate they form a puddle of water around the bottle.

Q.6 To clean their spectacles, people often breathe out on glasses to make them wet. Explain

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why the glasses become wet.

Ans → The air that we breathe out has a higher temperature than the atmospheric air. When people breathe out on their glasses, water vapour forms droplets of water on the glasses and make them wet. Thus people easily clean their spectacle glasses.

Q.7 How are clouds formed?

Ans → Due to the heat of the sun the water present in the water bodies such as rivers, ponds, seas etc. change into vapour. They are light in weight and move upwards. As they go higher and higher they get cooler and cooler. ~~go they at Suffici~~ At sufficient height air becomes so cool that the water vapour condenses to form droplets of water. These tiny droplets ~~wi~~ along with smoke and gases remaining floating in the air and appears as clouds.

Q.8 When does a drought occur?

Ans → If it does not rain for a long period of time such as

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a year or more, it may lead to drought. During this condition the soil becomes ~~and~~ dry and the ground water level falls down. In this condition it is difficult food and water. This may further lead to famine

## EXTRA QUESTIONS

Q.1 What do you mean by water cycle? Draw

Ans → The water from the water reservoirs like seas, oceans, rivers etc. are evaporated as water vapours by the action of sunlight. These water vapours along with dust, smoke and other particles from clouds. These water vapour turns into droplets of water and return to the earth's surface as rain, snow or hail. Finally precipitation rain, hail and snow in these form of water goes back to oceans this circulation of water into water vapour and again water in the form of rain or snow is called as water cycle.

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Q.2 What happens when it rains heavily?

Ans → When heavy rains continue for a longer time it may lead to rise in the water level of rivers, lakes and ponds. When these water overflows and spread over a large area, it causes floods. The crop fields, forest, villages and cities may get submerged under water. Floods also cause intensive damage to domestic animals and human being's property and natural resource.

Q.3 What happens to the water that rain or snow bring to different regions of the earth?

Ans → Most of the water that falls on ~~earth~~ the land as rain and snow sooner or later goes back to the nearest water reservoir. This happens in many ways-

1. Snow in the mountain cap melts down into water which flows down the mountains in the form of streams or rivers which may later reach oceans.

2. Some of the water that falls on the land percolates down through the spaces in between the soil particles

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to reach the water table and re-charge it.

Q.4 How do plants lose water?
use

Ans → Plants ~~lose~~ a small part of water absorbed by the roots. After preparing the food most of the water is retained by different parts of the ~~plant~~ mainly leaves. The remaining part of the water is released by the plants into the air in the form of water vapour. There are small pores in the leaves ~~or s~~ called stomata through which excess water is evaporated as water vapour. This process is called transpiration.

Q.5 Two-third of the ___ is covered with water, yet there is very little water to use. Why?

Ans → Even if two-thirds of the earth is covered with water but very little water is available to us because most of the water ~~contains~~ is in seas or oceans, contains different types of salts dissolved in it. Such saline water is not fit for drinking and other domestic use as well as ~~original~~ agricultural and industrial use.

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Rest of the water remains in the form of ice in the glaciers and in ice bergs and snowy mountains. Such condensed water cannot be used by us. Thus there is very little available to us for use.

Q. What is ground water? How do we draw this ground water?

Ans → A part of the rain water gets absorbed by the ground and seemed to disappear in the soil. This water becomes available to us as ground water. Ground water can be drawn by tube wells, hand pumps and by making wells.

Q. What is rain water harvesting? Describe two methods of Rain water harvesting?

Ans → Rainwater harvesting is the most modern method of conserving water. This is the way of increasing the availibility of water naturally. The method of collecting rain water in a large reservoir and stand it for future use. ~~This~~ is called rain water harvesting.

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The following are method of rain water harvesting

1.) Rooftop Rain water Harvesting :-
In this method rain water is colled in a big storage tank on the roof top. The water may contain soil dust or other harmful substances. Thus they should be filtered before their use. Instead of filtering this roof top stored water, it can be channelised through pipes which go directly in soil. This water which goes down later on recharge ground water.

2.) Allowing water to drain down :-

' Another option is to allow Rainwater to go directly into the ground from the road side ~~do~~ drains and collected inside the soil. This water gets naturally filtered and recharge the ground water.

Q.9 What is hail?

Ans → The rain drops coming down when passes through cold region may get frozen ice crystals which

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fall on the earth as hail.

Q.9 What is evaporation?

Ans → It is a process in which water changes into water vapour on heating. It is called evaporation.

Q.10 What is condensation?

Ans → It is a process in which water vapour changes into water on cooling. It is called as condensation.

Q.11 What are clouds?

Ans → The tiny droplets of water that remain floating in the air appear to us as clouds.

Q.12 ~~Many tiny water~~ What is snow?

Ans → Many tiny water droplets when come together and freeze and fall down as snow.

Q.13 What is water vapour?

Ans → Water on the earth evaporates all the time

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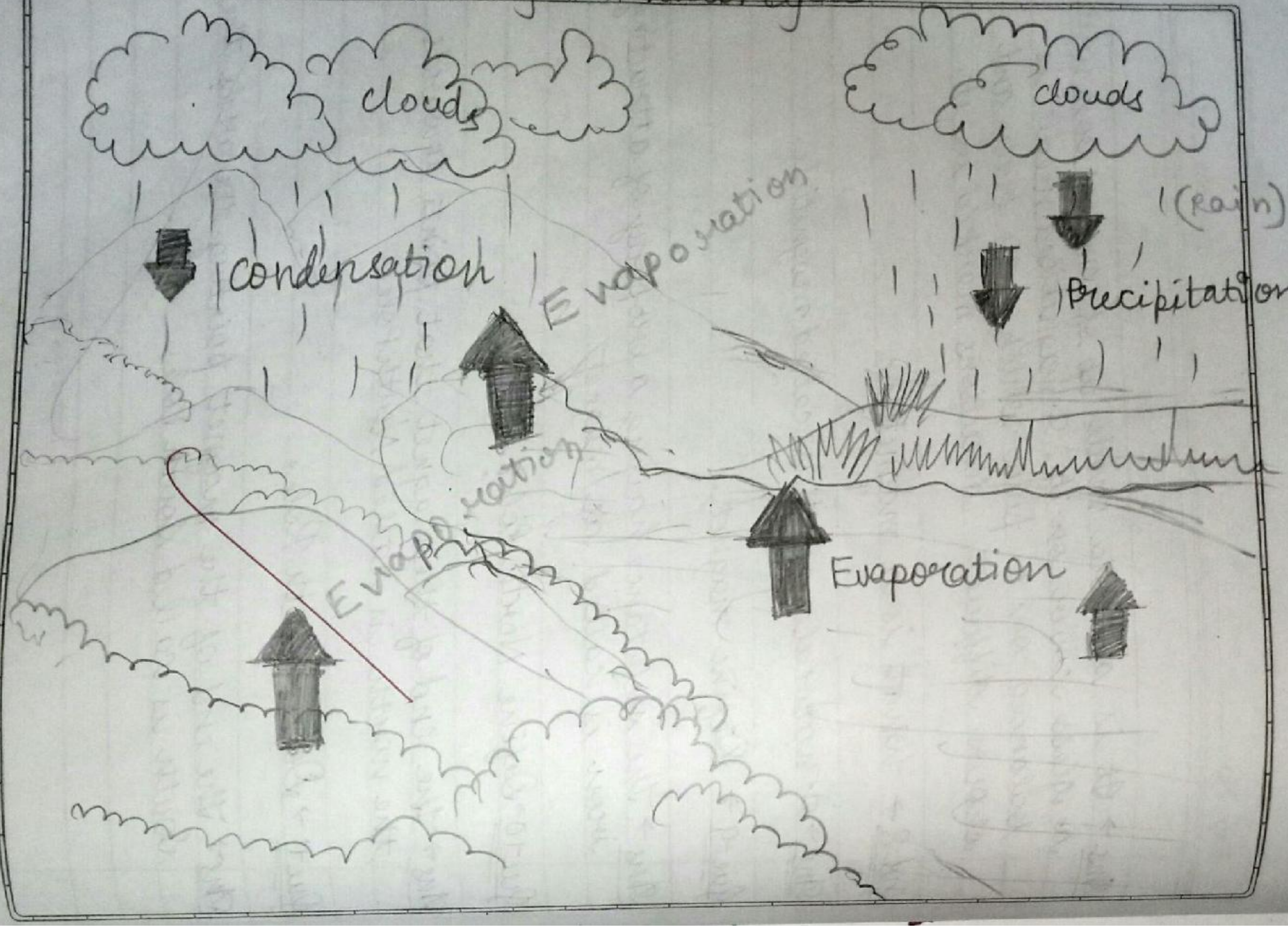
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due to the heat of the sun at the places and those vapours which form clouds are called as water vapour.

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Fig 14.9 water cycle




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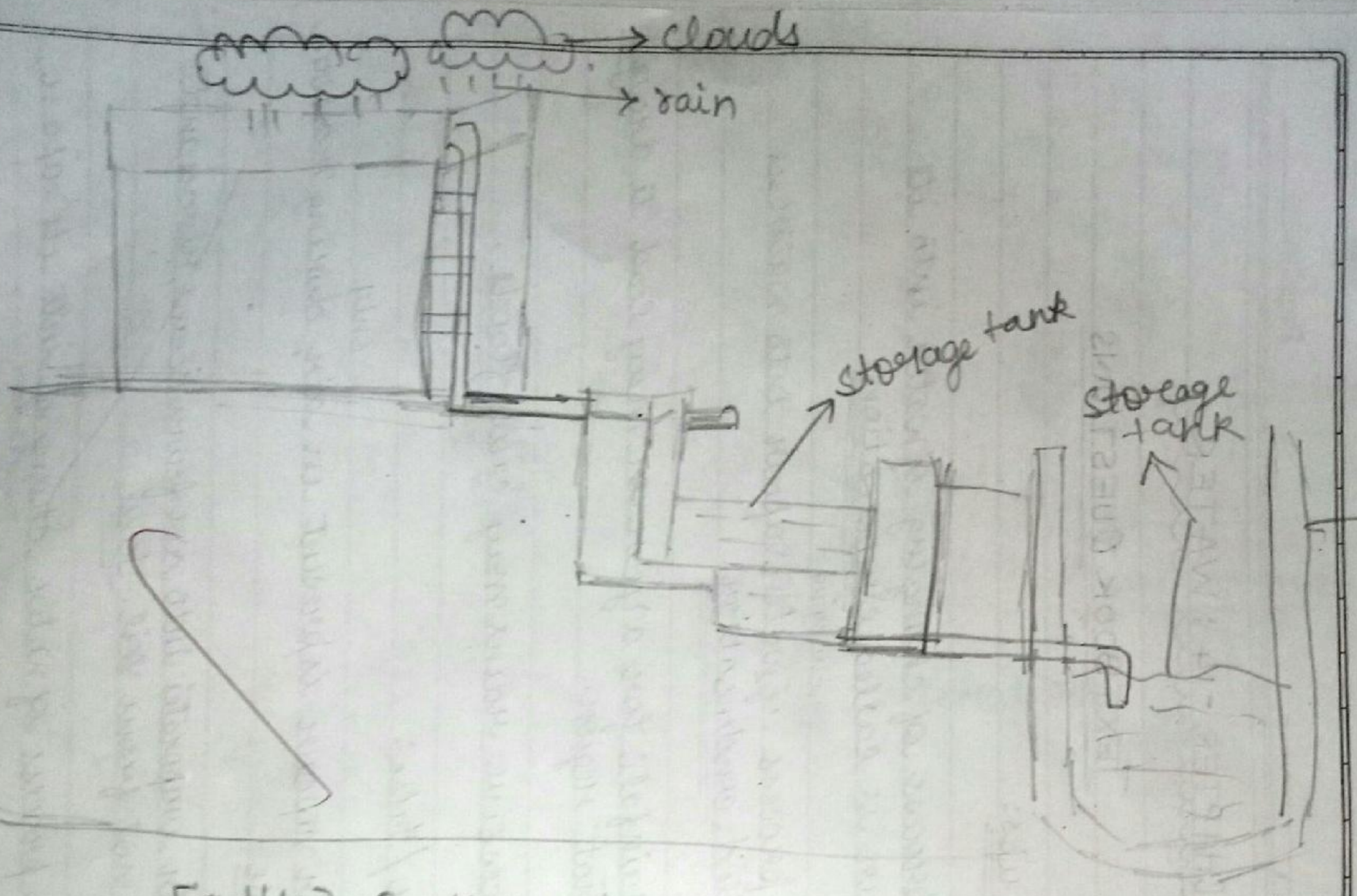



Fig 14.3 Rooftop rain water harvesting

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# CHAPTER-15: AIR AROUND US

## TEXTBOOK QUESTIONS

Q.1 What is the composition of air?

Ans → The composition of air is -

1. ~~78%~~ Nitrogen - 78%.
2. Oxygen - 21%.
3. Carbon dioxide - 0.03%.
4. Water vapour - 0.01%.
5. Inert gases - 0.~~●~~8% (Neon, Argon, Helium, ~~cryptozenon~~) (Krypto, Xenon)
6. Dust Particles -

Q.2 Which gas in the atmosphere is essential for respiration?

Ans → Oxygen

Q.3 How will you prove that air supports burning?

Aim → To show that air supports burning

Materials required → 2 shallow containers, 2 candles,

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water, 2 glass tumblers.

Method → We fix two small candles of same size in the middle of the two shallow containers. Now we will fill the containers with some water. We light the candles and then we cover each of them with an inverted glass tumblers (One of the glass tumbler taller than the other)

Observation → Both the candles continue to burn for sometimes and the water level starts rising in the inverted glass tumbler. The candle under taller glass tumbler burns comparitively longer than the smaller glass tumbler.

Conclusion → One-fifth of the air contains oxygen which ~~was~~ was used by the candles during burning. So to take the air or the oxygen which was utilised, water entered inside the glass tumbler. The taller glass tumbler has more oxygen

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Q4 How will you show that air is dissolved in water?

Aim → To show that air is dissolved in water?

Materials Required → Glass beaker, wire net, tripod stand ~~and~~ water and burner.

Method → We take some water in the beaker. The beaker is placed over the wire net on a tripod stand. Now, ~~Keep~~ ~~the~~ heat the beaker. As the water begins to boil, we look carefully ~~at~~ the inner side of the beaker.

Observation → We observe that tiny bubbles are coming out from the water that is being boiled in the beaker.

Conclusion → From the observations we can conclude that the bubbles which were coming out must be air bubbles. Due to the heating of water ~~escape~~ which were dissolved in water.

Q5 Why does a lump of cotton wool shrink in water?

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Ans → A lump of cotton wool is fluffy in appearance due to the presence of air in between the fibres of cotton wool. When the lump is dipped in water, water removes air and thus cotton wool shrinks.

Q.6 The layer of air around the earth is known as Atmosphere.

Q.7 The component of air used by green plants to make their food is, Carbon dioxide.

Q.8 List five activities that are possible due to the presence of air.

Ans → 1.) Air helps in the process of respiration in all living organisms.
2.) Air helps in combustion (Burning of materials)
3.) Air helps in the dispersal of seeds and pollination.
4.) Air helps in the movement of sailing yachts, gliders, parachutes and aeroplane
5.) Air plays an important role in water cycle.

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Q.1 How do plants and animals help each other in the exchange of gases in the atmosphere?

Ans → Plants make their own food by the process of photosynthesis and oxygen is produced during this process. Plants and animals both consume oxygen for respiration. Plants ~~and animals~~ produce more oxygen than they consume. Animals cannot produce oxygen thus it is said that animals cannot live without plants. Similarly plants require carbon-dioxide for photosynthesis which is produced in enough amount by animals. So we can say that both plants and animals need each other of for their survival and the balance of oxygen and carbon dioxide is maintained in the atmosphere. This show the ~~inde~~ interdependence of plants & animals.

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# EXTRA QUESTIONS

Q.1 Describe an activity to show that air occupies space.

Aim → To show that air occupies space.

Materials Required → An empty glass bottle and a tub of water.

Method → We take an empty glass bottle and turn it upside-down, if anything left inside it, it comes out. Now we dip the mouth of the bottle into the tub filled with water. Water does not enter. and thus we tilt the bottle a little,

Observation → It is the air which is present inside the bottle and it was not empty at all. In fact the bottle was completely filled with air even when we turned it upside down. That is why we noticed that water no was entering inside the bottle as their was no space for the air to escape. But when the bottle was tilted some amount of air escapes from the bottle and the water enters inside the bottle to take the

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space air.

Conclusion → From the above observation we can conclude that when the bottle was placed in the inverted position in the tub of water, air inside the bottle was not allowing ~~air~~ water to move inside. But when the was tilted the air escaped and the water entered inside bottle.

Q.2 What are the different properties of air?

Ans → 1. Air is found everywhere. We cannot see the air but we can feel it.

2. Air occupies space

3. Air has weight but no shape and volume.

4. Air is a mixture of oxygen, nitrogen, carbon-dioxide, water vapour and a few inert gases. It also has dust particles in it.

5. Air is present in water and soil. It is sparingly soluble in water ~~so~~ enough for the

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aquatic organisms to survive.

Q.3 What is atmosphere?

Ans→ The blanket of air that surrounds the earth is called as atmosphere.

Q.4 Why do mountaineers carry oxygen cylinders ~~in~~ with them?

Ans→ Air becomes thinner as the mountaineers climbs higher. The percentage of oxygen also decreases at height. So the mountaineers face difficulty in breathing. Therefore they carry oxygen cylinders with them while climbing high mountains.

Q.5 Why should not we breathe through our mouth?

Ans→ We should not breathe through our mouth because, like our nostrils we do not have any hair present in our mouth to prevent the dust particles from entering our body.

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Q.6 How is smoke produced? What does it contain?

Ans→ Mostly the burning of fossil fuels produce smoke. It comes out domestic chimneys, industorial chimneys of factories and automobile exhaust. ~~The con~~
The constituents of smoke are - It contains a few gases, mostly harmful and fine dust particles. In industorial areas smoke may containe also flyash, SPM (Suspended Particulate Matter).

Q.7 Why do earthworms come out of the soil during rainy season?

Ans→ When it rains heavily water fills up all the spaces occupied by air. In this situation animals living in the soil for respiration. That is why burrowing like earthworms come out of the soil during rainy season.

Q.8 What makes the windmill rotate?

Ans→ Air in motion is called wind. Blowing ~~air~~ wind makes the windmill rotate.

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Q.9 What are the usage of windmill?

Ans → 1) It helps in drawing of water from tube well.
2) It helps to run flour mills.
3) It helps to generate electricity.

Q.10 Write about the following gases in 1-2 lines.

1. Nitrogen - It is the major part of the air which takes up ~~4/5~~ four-fifth of the space that the air fills. It is required for animals and plants.

2. Oxygen - Oxygen is a gas comprising 21% of the atmosphere. It is necessary for all living organsims. It also supports burning.

3. Carbon dioxide - Carbon dioxide is a gas comprising 0.03% of the atmosphere. It is used by the plants for photosynthesis

Q.11 How will you ~~air~~ prove that air has oxygen?

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**Aim →** To prove that air has oxygen.

**Materials Required →** A table, 2 candles of same size and a glass tumbler.

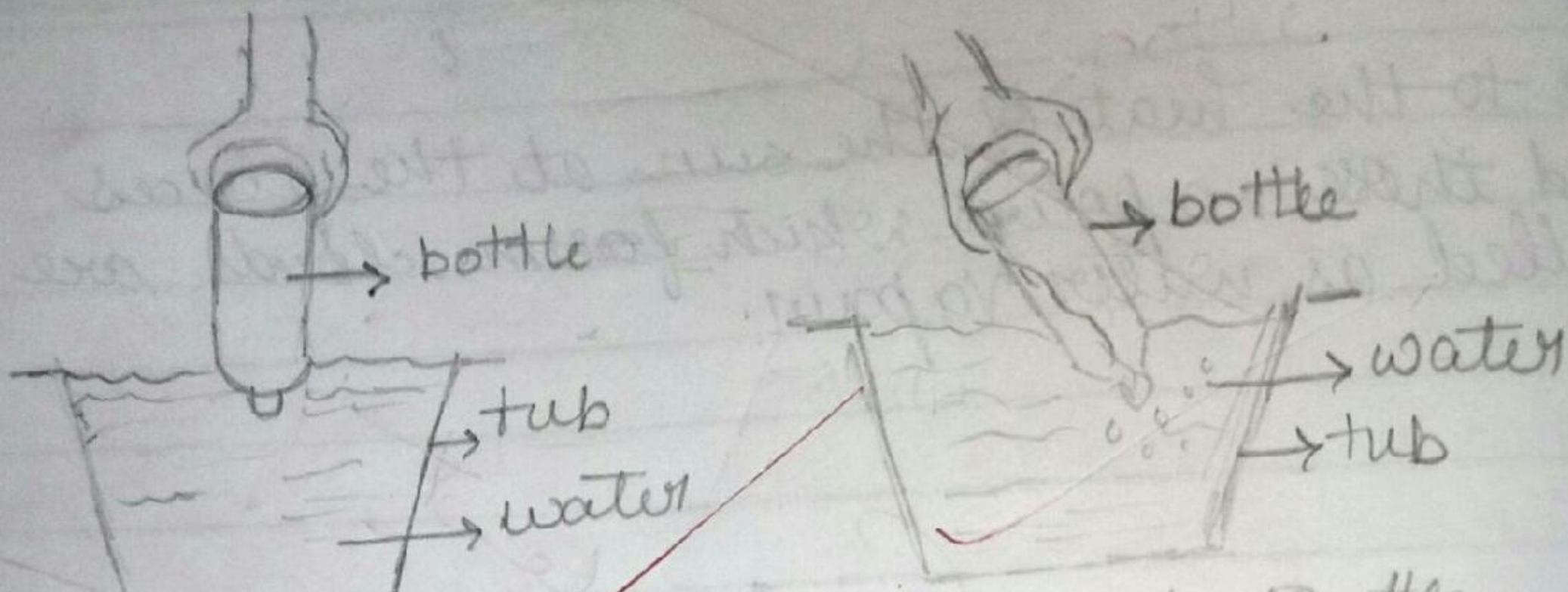
**Method →** 1. Fix 2 small candles of same length on a table.
2. Light both the candles.
3. Cover one of the candles with an inverted glass tumbler.
4. Observe both the candles carefully.

**Observation →** The candle ~~candle~~ covered with glass tumbler gets extinguished after some time whereas the other candle continues burning.

**Conclusion →** The candle got extinguished because the component which supports burning is limited. Most of the component is used up by the burning candle, however the other candle is getting continued supply of air. This component of air which supports burning is oxygen.

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Fig·15·4 Experiments with an Empty Bottle

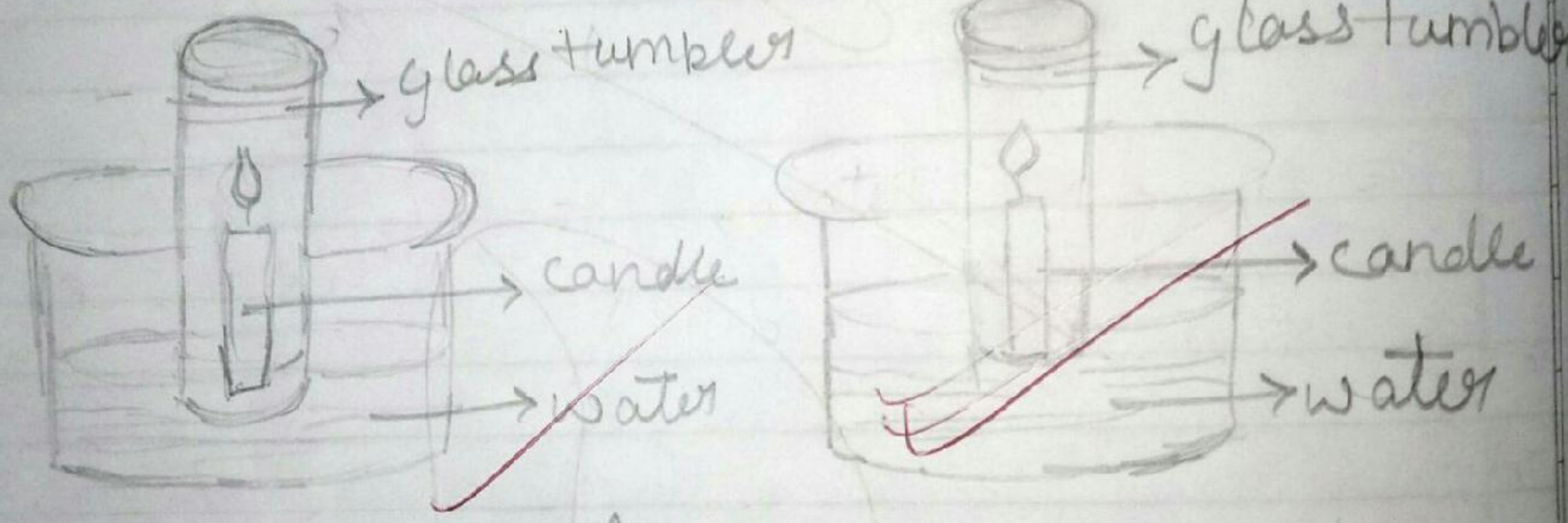



Fig. 15.6 Air has Oxygen

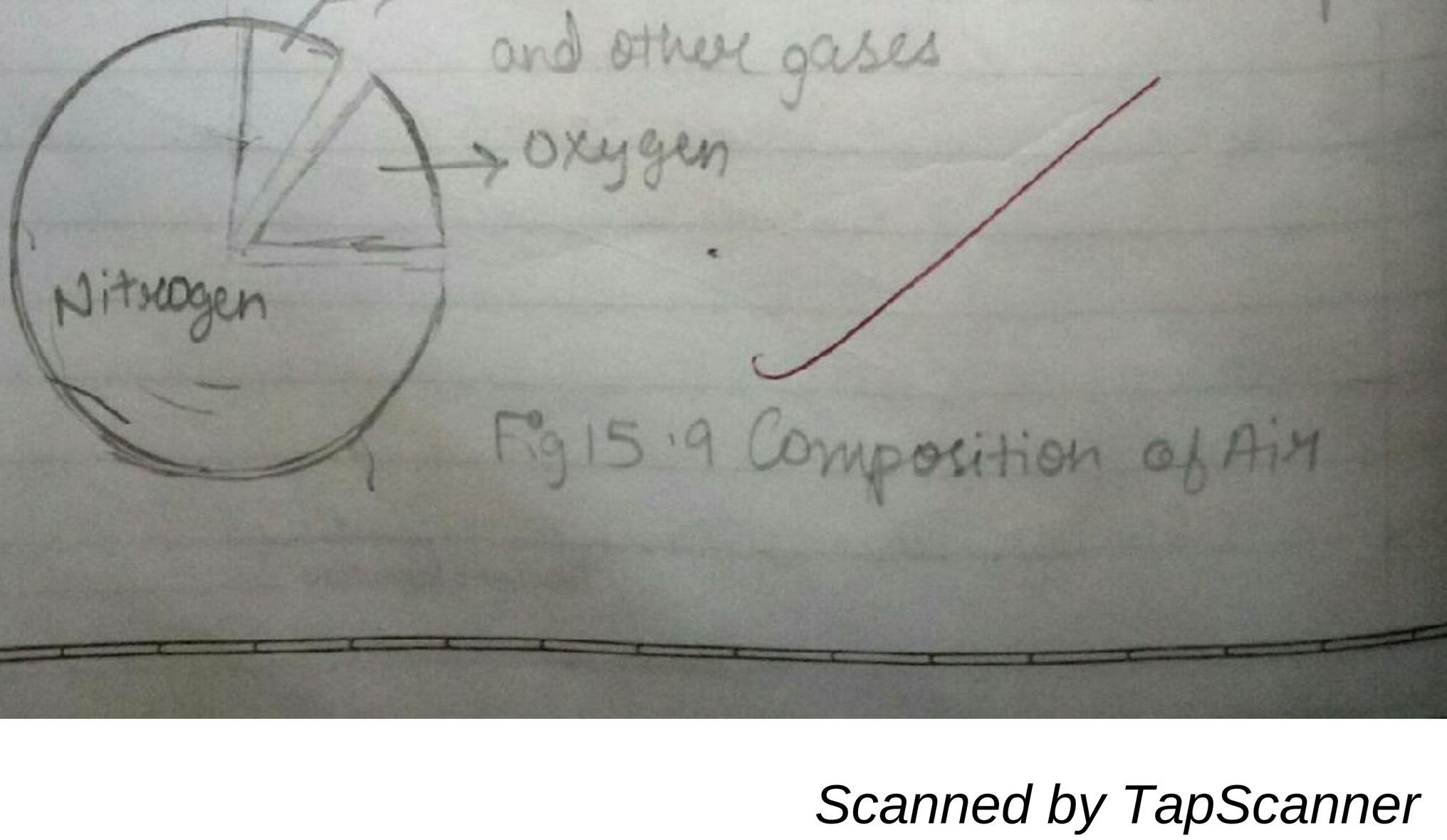



Fig 15·9 Composition of Air

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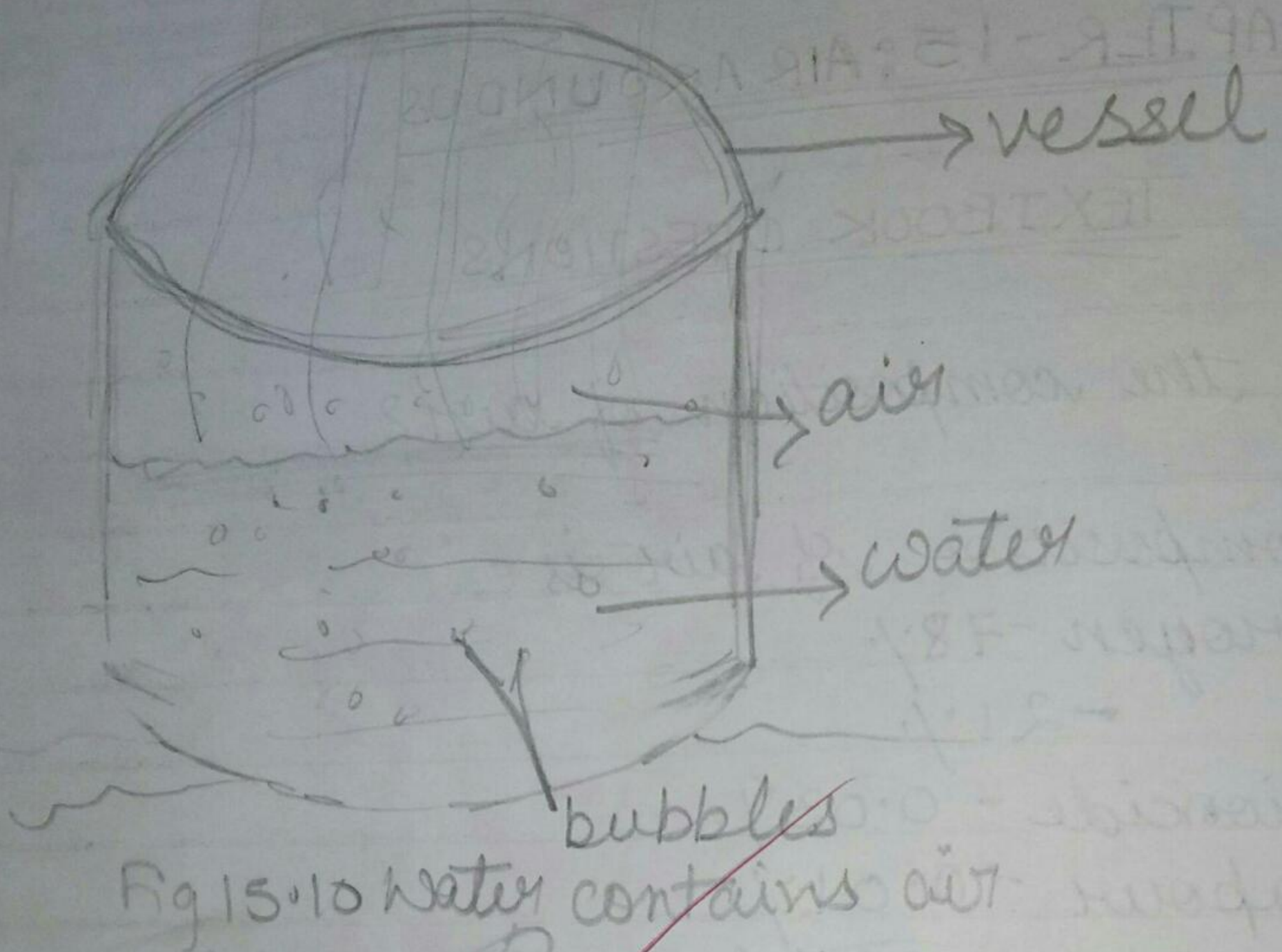



Fig 15.10 Water contains air

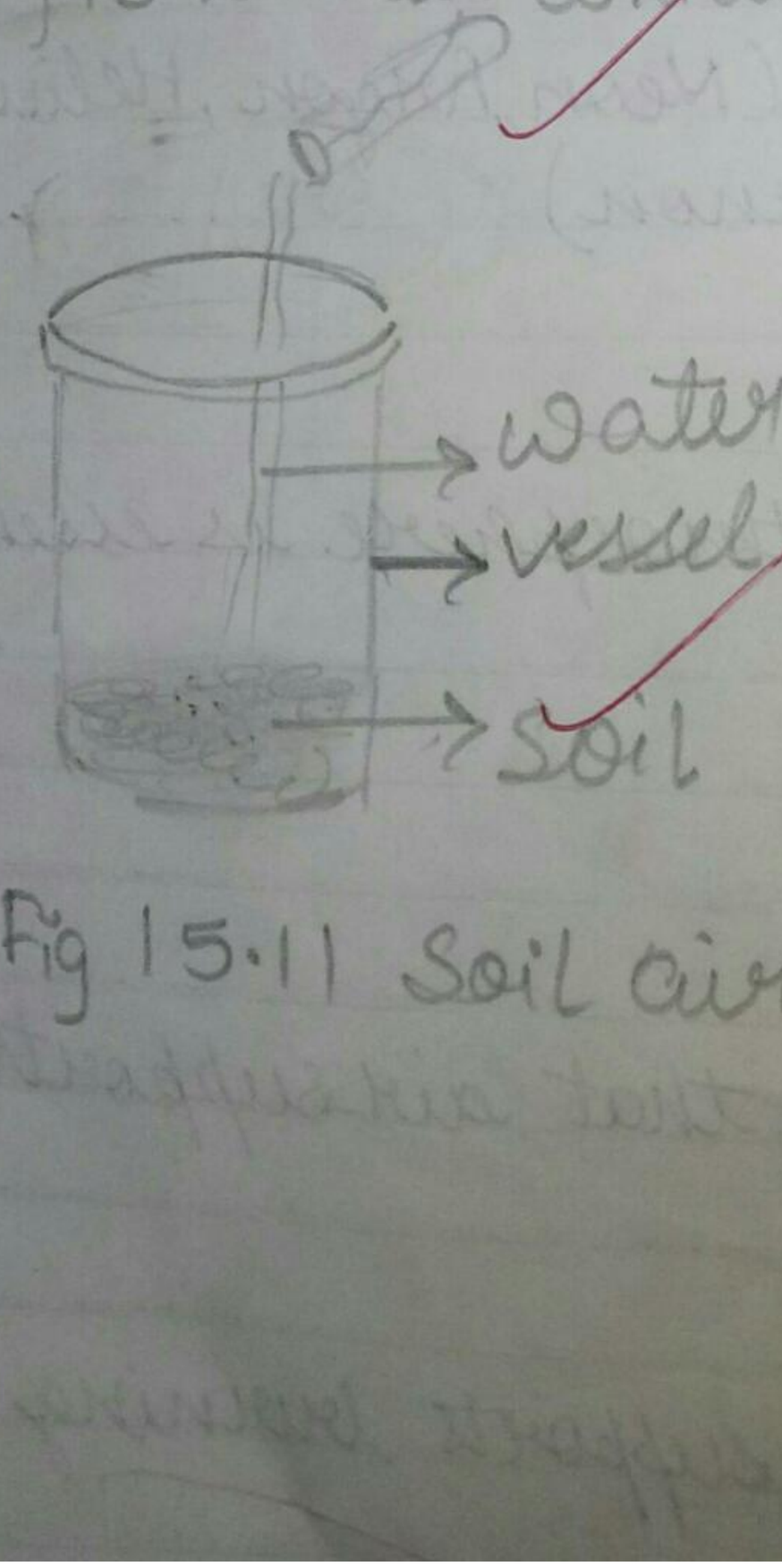



Fig 15.11 Soil air in it

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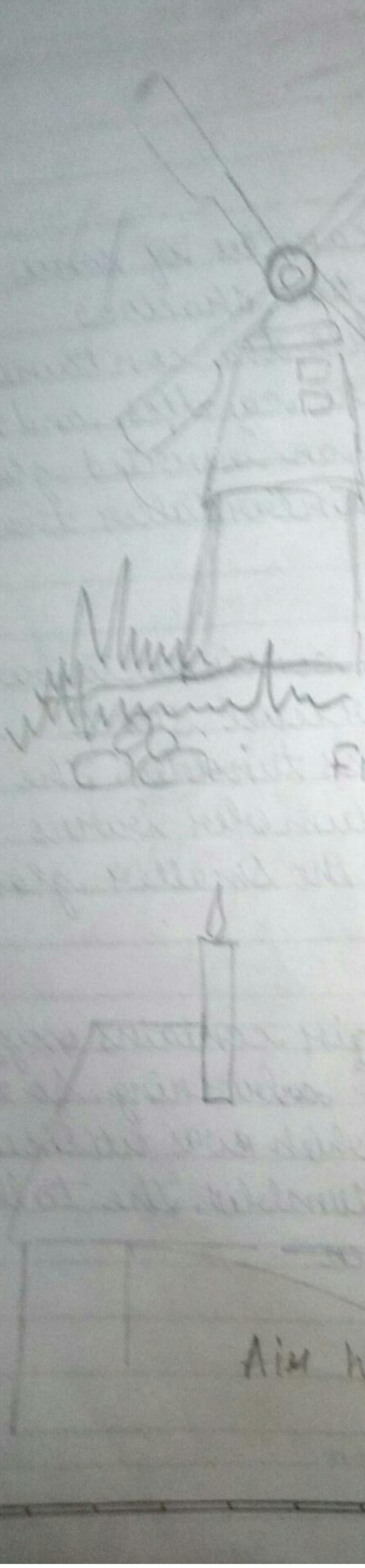



Fig 15.12 A windmill

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# CHAPTER-16 : GARBAGE IN, GARBAGE OUT

## → TEXTBOOK QUESTIONS

Q.1 → (a) Which kind of garbage is not converted into compost by the redworms?

Ans ⇒ The kind of garbage which is not converted into compost by redworms are all sorts of non-biodegradable material. eg → plastic, polythene, glass, tin, radio-active wastes, etc.

(b) Have you seen any other organisms besides redworms, in your pit? If yes, try to find out their names. Draw pictures of these.

Ans → Other than redworms the organisms available in the soil are earthworms, white ants, millipede, nematodes, centipedes, ants etc.

Q.2 Discuss:

2. (a) Is garbage disposal the responsibility only of the government?

Ans → Garbage disposal is not only the responsibility

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of the government but of every citizen of the country, we all are responsible for the degradation or the pollution of the environment. Thus, it is the first and foremost responsibility is to co-operate with the government to protect the quality of the environment.

(Q.7(b)) Is it possible to reduce the problems relating to disposal of garbage?

Ans → Yes, it is possible to reduce the problems related to disposal of garbage by following means :—

1. We can separate the garbage into biodegradable and non-biodegradable substances for smooth disposal of them.

2. The biodegradable waste can be converted into compost.

3. We can burn the non-biodegradable waste in an open space.

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(a)

Q.3 What do you with the left-over food at home?

Ans → 1. The left over food can be dumped ~~for~~ in a compost pit to get organic manure.

2. The left over food can be dumped for vermi-composting.

Q.3(b) If you and your friends are given the choice of eating in a plastic plate or a banana leaf platter at a party, which one would you prefer and why?

Ans → we should choose banana leaf platter because :-

1. Plastic plates are non-biodegradable and banana leaf platters are biodegradable..

2. Plastics are harmful to animals but banana leaf platters are not.

Q.4(a) Collect pieces of different kinds of paper. Find out which of these can be recycled.

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Ans 4 → Any type which are plastic coated or laminated or oily in nature cannot be recycled. Newspapers and papers made out of corn can be recycled.

Q.4(b) With the help of lens look at the pieces of paper you collected for the ~~both~~ above questions. Do you see any difference in the material of recycled paper and a new sheet of paper?

Ans → The recycled paper appear to be dull in colour and rough whereas the new sheet paper is shiny and almost plain and smoothe.

Q.5(a) Collect different kinds of packaging material. What was the purpose for each one was used?

Ans → Different kinds of packaging materials are as follows:
1.) Aluminium foils for wrapping ~~for~~ food.
2.) Thermocol for packing electronic equipments.
3.) Wooden Box used to carry fruits.
4.) Bubble wrap - Computer, Laptops.
5.) Tin Cap - storing oil

Q.5(b) Give an example in which packaging could have been reduced?

Ans → Packaging materials could be reduced in amount when we make a habbit of carrying jute bags while going to purchase articles.

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Fig. 11.4 → Redworms

Q.5(c) Write a story on how packaging increa
the amount of garbage?

Ans→ Packaging materials become waste after use because these become useless. These are thrown and become the part of garbage. There are various examples which show that these materials increase the volume of garbage. Thermocol which is used as packing materials are thrown as garbage. These later on increase in amount because these are non-biodegradable.

Q.6 Do you think it is better to use compost instead of chemical fertilizers? why?

Ans→ It is always better to use compost which is made up of organic matter and it supplies different nutrients to soil increasing the fertility of the soil.

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## EXTRA QUESTIONS

Q.1 What is Landfill? How is it useful to mela parks?

Ans→ Landfill is a low line area where garbage collected from a city or a town is dumped. The garbage collected is sorted into useful and non-useful components. The non-useful components are separated out. It is then spread over the landfill and then covered with a layer of soil. Once, the Landfill is completely full, it is usually converted into a park or a playground. For the next 20 years or so no building is constructed on it.

Q.2 What is composting? What are the types of composting?

Ans→ The rotting and conversion of some materials into manure is called composting. The two types of composting are -

1. Vermicomposting - This method of preparing manure with the help of redworms is called vermicomposting.
2. Traditional methods - Wastes are collected in large pits and covered to make compost. There are no use of redworms in this method.

Q.3 Describe the method of making manure by vermicomposting.

Ans→ The method of making manure by vermicomposting

1. Dig a pit of about 30 cm deep.
2. Spread a net of chicken mesh at the bottom of the pit.
3. Spread some vegetable wastes, green leaves, pieces of dried stalks, husk, pieces of newspaper, plants
4. Sprinkle some water.
5. Keep the layer of waste loose, so that it has sufficient air and moisture.

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Ans-3
6. Now put some redworms in the pit, cover it loosely with a gunny bag or an old sheet of cloth or a layer of grass.
7. Observe the contents of the pit after 3-4 weeks.
8. We use soil like materials inside the pit which is a vermicompost.

Q.4 What are the harmful effects of plastics?

Ans → The harmful effects of plastics are-
1. These are not suitable to store eatable for a long time.
2. It reacts with the stored eatables producing toxic substances.
2. plastics when burnt release harmful gases. These gases may cause many health hazards including cancer.
3. Stray animals like cows, when they eat the polythene they may die.
4. The plastics may get into drains and sewerage system. This may choke the drains causing overflow.
5. These are non-biodegradable and remains for a longer period of time. These may increase the garbage produced.

Q.5 Describe the methods of recycling of paper.

Ans → The method of recycling paper is as follows:
1. First of all we will collect all the different types of waste papers.
2. Tear the papers into small pieces.
3. Put them in a tub or bucket and pour water on it.
4. Make a thick paste of paper.
5. Now spread the paste on the wire mesh fixed into a frame.
6. Apply it gently to make a paste of uniform thickness.
7. Now carefully remove the layers of paste from the frame and spread on a sheet of newspaper in the sun.
8. The paste of now developed into paper mashe. This is one of the method to recycle the waste paper.

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Q.6 How can we minimize the use of plastics?

Ans → We can minimize the use of plastics in the following ways:-

1. We should not use plastic bags to store eatables.
2. We should not throw plastic bags here and there after use.
3. We should never burn plastic bags and other plastics items.
4. We should use vermicomposting and deal with our kitchen wastes usefully.
5. We should recycle plastics.

Excellent!

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