

Chapter - 7
Weather, Climate and
Adaptations of animals to climate.

- Q1. The tropical rainforest has large population of animals & plants. Explain why is it so? M2
- A: The tropical rainforest has large population of animals and plants because of :-
- ① Plenty of rainfall which helps in growing large number of plants. Because of continuous warmth & rain this region supports a wide variety of plants and animals.
 - ② Hospitable climate (pleasant and favourable for living) supports plants and animals.
 - ③ The climatic conditions are highly suitable for supporting enormous number and variety of animals.
 - ④ Plenty of food for all types of animals.

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Q2. List some adaptations of animals living in the tropical rainforests.

A: Some adaptations of animals living in the tropical rainforests are :-

- ① Living on the trees.
- ② Development of strong tails
- ③ Long and large beaks.
- ④ Bright colours.
- ⑤ Sharp patterns.
- ⑥ Loud voice.
- ⑦ Diet of fruits only.
- ⑧ Sensitive hearing.
- ⑨ Sharp eyesight
- ⑩ Thick skin
- ⑪ Ability to camouflage.

Q3. Which type of climate you find in Jammu and Kashmir?

A: We find cold climate in Jammu & Kashmir. Part of a year it has moderately ~~hot~~^{dry winter season} and wet climate.

Q1. Which type of climate do you find in Kerala?

A: We find hot & wet climate in Kerala.

Q2. Which type of climate do you find in Rajasthan?

A: We find hot & dry climate in Rajasthan.

Q3. Which type of climate do you find in North-Eastern India?

A: We find wet climate in north-eastern India.

Q4. Which type of the two changes frequently, weather or climate?

A: Weather changes frequently.

Q5. Following are some of the characteristics of animals. Write down whether it is adaptation for tropical rainforest or polar region or for both.

- A: ① Diet heavy on fruits - Tropical rainforest
 ② Need to migrate - Polar region.
 ③ White and large paws - Polar region P
 ④ Strong tails - Tropical rainforest M
 ⑤ White fur - Polar region.
 ⑥ Loud voice - Tropical rainforest.
 ⑦ Layer of fat under the skin - Polar region
 ⑧ Bright colours - Tropical rainforest.
 ⑨ Long & large ~~teeth~~^{teats} - Tropical rainforest.

Q3. How animals in the polar region are adapted to live in cold conditions?

- A: ① They have white fur to merge with the environment.
 ② They have a strong sense of smell.
 ③ They have a layer of fat under the skin.
 ④ They have white and large paws for swimming, walking, etc.

Q9. ^{10.} How do elephants living in the tropical rainforest adapt itself? B2

A: ① It uses the trunk as a nose because of which it has a strong sense of smell. The trunk is also used by it for picking up of food.

② It's tusks are modified teeth. These are helpful in tearing the bark of trees that elephants love to eat.

③ Large ears of the elephant helps him to hear very soft sounds. They also help the elephants to keep cool in the hot & humid climate of the rainforest.

Q10. When are the maximum and minimum temperature likely to occur during a day?

A: The maximum ~~tempent~~ ^{on} temperature occurs at noon (12 noon) and the minimum temperature occurs early in the morning (6 am).

¹²
Q12. Name the elements that determine the weather of a place.

OR

What are the elements of weather?

A: The elements that determine the weather of a place are :-

- ① Temperature of that place.
- ② Humidity.
- ③ Wind speed.
- ④ Rainfalls.

¹³
Q13. Differentiate between tropical rainforest and polar region.

Tropical Rainforest	Polar Region
(1) Generally it has hot and humid climate.	(1) Generally it is extremely cold.
(2) Animals are adapted in such a way that they eat different types of food to overcome the competition for food & shelter.	(2) Animals adapted with some special characteristics such as white fur, strong sense of smell, etc.

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(3) Days and nights are almost equal throughout the year.

(3) The sun does not set for six months and does not rise for six months. So, day and nights are not the same.

Q13 Write in detail about the adaptation of animals in the polar region also each write how each adaptation is useful to them.

A: Polar Bear :- ① Polar bear have white fur so they are not easily visible in the snowy white background. It protects them from their predators. It also helps them for catching their prey.

② To protect them from extreme layer of cold they have two thick layers of skin & fur. They also have a layer of fat under their skin.

③ They are well insulated so that have to move slowly & rest often to avoid getting overheated.

④ It is a good swimmer. Its paws are wide & large which help not only to swim well but also walk with ease on the snow.

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⑤ It has a strong sense of smell so that it can catch its prey for food.

* Penguin :- ① It is also white and merges with its background.

② It also has a thick skin and lot of fat to protect them from ^{severe} cold.

③ They are ~~thudot~~ huddled together that help them to keep warm.

④ They are good swimmers, their bodies are streamlined and their feet have webs making them good swimmers.

Q15. Write a brief note on migratory birds.

A: Some migratory birds travel as much as 15000 km to escape from the extreme cold. Generally they fly high where the wind flow is helpful and the cold conditions allow them to disperse the heat generated by the flight ^{muscles}. But how these birds travel to the same place every year after year is still a mystery. It seems that these

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birds have ~~bitten~~^{bright} sense of direction and know in which direction to travel. Some birds probably use the landmarks. Many birds may be guided by the sun during the day and the stars at the night. There is some evidence that birds may use the magnetic field of the earth to find direction.

Q15 Define weather.

A: The day to day condition of the atmosphere with respect to the temperature and humidity, rainfall, wind speed is called weather of that place.

Q16 Define climate.

A: The average weather condition over a long time say 25 years is called the climate of that place.

Q18 Explain the maximum and minimum thermometer.

A: There are special thermometers to record the maximum & minimum temperature of the day. These special thermometers are called maximum & minimum thermometers. Teacher's Signature _____

- Q19. Who prepares the weather report?
- A: Meteorologists prepare the weather report by the meteorological department of the government. This department collects data on temperature, wind, etc and makes the weather prediction.
- Q20. What is 'rain gauge'?
- A: Rainfall is measured by an instrument called as rain gauge. It is basically a measuring cylinder with a funnel on top to collect rainwater.
- Q21. Write any 2 ways to escape the harsh and cold conditions of the ~~hot~~ climate.
- A: Migration and hibernation are the 2 ways of escaping the harsh and cold conditions.
- Q22. Explain with eg. why we find animals of certain kinds living in particular climatic conditions?
- A: Animals living in very cold & hot climate

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possess special features to protect themselves against cold or heat. The Polar regions present an extreme climate. These regions are covered by snow and it is very cold for most of the part of the year. Polar Bear have white fur so they are not easily visible from the snow white background. It protects them from predators. It also helps them in catching their prey. The climatic conditions of rainforest are highly suitable for a variety of animals. Some of the adaptations are living on trees, developing ^{ment-} of strong tails, long and large beaks, sharp ^{parts}, loud voice, etc.

Q23 Write the adaptations of red eyed frog.

red eyed frog.

A: They develop sticky pad on its feet to help climb trees on which ^{they} leaves live.

Q24 Write the adaptations found in monkey:

A: They help them live on the trees they have long tails for grasping branches. Their hands & feet ^{are} such they can easily hold on to the branches.

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Q25 What are the adaptations found in burned bird Toucan.

A. These birds have long & large beaks it helps them to reach fruits on branches which are otherwise too weak to support its weight.

Q26 What are the adaptations found in Lion-tailed macaque?
(also called as Beard ape)

They live in main forest of western ghats. The most outstanding feature is silver white mane which surrounds the head from the cheeks down to its chin. It is a good climber and spend major part of its life on the trees. It feeds mainly on fruits. It also eats seeds, young leaves, stems, flowers and buds.

The beard ape also searches for insects under the bark of the trees. Since it is able to get sufficient food on the trees it rarely comes down to the ground.

Chapter - 8
Winds, storms and cyclones

Q1. Name the instrument used to measure wind speed.

Ans: Anemometer.

Q2. Suggest three methods to find out wind direction under given place.

Ans: Weather vane and winnowing.

Q3. State two experiences that made you think air exerts pressure (other than those given in the text)

Ans: (1) Blowing of air into balloon.
(2) Blowing of air into football.

Q4. Write the different names given to cyclone in the different parts of the world.

Ans: A cyclone is known by different names in different part of the world. It is called an hurricane in the American continent.

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In Philippines and Japan it is called typhoon.

Q5. What do you mean by the eye of the storm?

A: The center of the cyclone is a calm area. It is called the eye of the storm. The diameter of the eye varies from 10 - 30 km. It is a region free of clouds and has light winds.

Q6. What is the wind flow pattern in winter?

A: In winter the winds blow from land to the ocean.

Q7. What is the wind flow pattern in summer?

A: In summer winds blows from ocean towards the land.

Q8. State the main cause of wind movement.

A: uneven heating of the earth's surface is the main cause of wind movement.

Q9. Describe an activity in experimental form to show that air exerts pressure.

A-Activity: To show that air exerts pressure.

* Materials required: A thin can with lid, water, candle, metallic vessel.

* Method: (1) Take a thin can with a lid, fill it approximately half with water.

(2) Heat the can on a candle flame till the water boils.

(3) Let the water boil for few minutes.

(4) Blow off the candle.

(5) Immediately put the lid tightly on the can. Be careful while handling.

(6) Put the can carefully in a shallow metallic vessel or a wash basin.

(7) Pour some fresh water on the can.

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* Observation: The shape of the can gets distorted.

* Conclusion: When the water is poured over the can some ~~steam~~ ^{steam} in the can condenses into water reducing the amount of air inside. The pressure of air inside the can decreases than the pressure exerted by the air outside the can. ^{This activity confirms} As a result the can gets compressed. ^{This activity confirms} that ^{air} exerts pressure.

Q10. Describe an activity to show that (using a paper strip) increased wind speed is accompanied by reduced air pressure.

* Aim: To show that increased wind speed is accompanied by reduced air pressure.

* Material Required: strip of paper of any size.

* Method.: (1) Hold a strip of paper between your thumb and fore finger.

(2) Blow over the paper.

strip ~~it~~ went upwards.

- * Conclusion: Blowing over the paper reduce the air pressure above the strip. The air pressure below is high that is why a high pressure pushes the paper strip upwards. It is concluded that increased wind speed is accompanied by reduced air pressure.

Q11. Describe an activity in experimental form to show that air expands on heating.

Aim: To show that air expands on heating.

* Materials Required: Three beaker, 3 tubes, 3 balloons, plain water, cold water & hot water.

* Method : (1) Take the boiling tube. Stretch the balloon tightly over the neck of the tube.

(2) Pour some hot water in a beaker. Insert the boiling tube with the balloon in hot water & observe for 2-3 min. Also observe the change in the shape of the balloon.

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also observe the shape of the balloon.

(3) Take the tube out. Let it cool down to the room temperature.

(4) ^{Take} Place some ice cold water & place the tube with the balloon in cool water. Observe the change in the ^{shape} of the balloon now.

* Observation: When the boiling tube was placed in cold water it made the balloon deflated.

* Conclusion: From the above observations we can conclude that air expands on heating and occupies more space and that is the reason that the balloon becomes inflated. Air contracts on cooling and occupies less space that is why balloon becomes deflated.

Q12 Describe an activity to show that warm air being lighter than cold air rises up.

A: Aim: To show that warm air being lighter than cold air rises up.

Materials Required: 2 paper bags, wooden

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stick, thread & candle.

Method: (1) Take 2 paper bags of the same size.

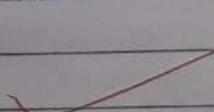
(2) Hang the 2 bags in the inverted position on the 2 ends of the wooden stick.

(3) Hold the stick by the thread as in the balance.

(4) Put a burning candle below one of the bag.

Observation: The balance of the paper bag gets disturbed.

Conclusion: It's the warm air rises up it pushes the bag up above the candle. This shows that warm air being lighter than cold air rises up.



Q13 List some precaution to be taken after a cyclone.

OR

List some precaution if you are staying in a cyclone hit area.

A: (1) Do not drink water that can be contaminated.

(2) Do not touch wet switches and fallen power lines.

(3) Do not go out just for the sake of fun.

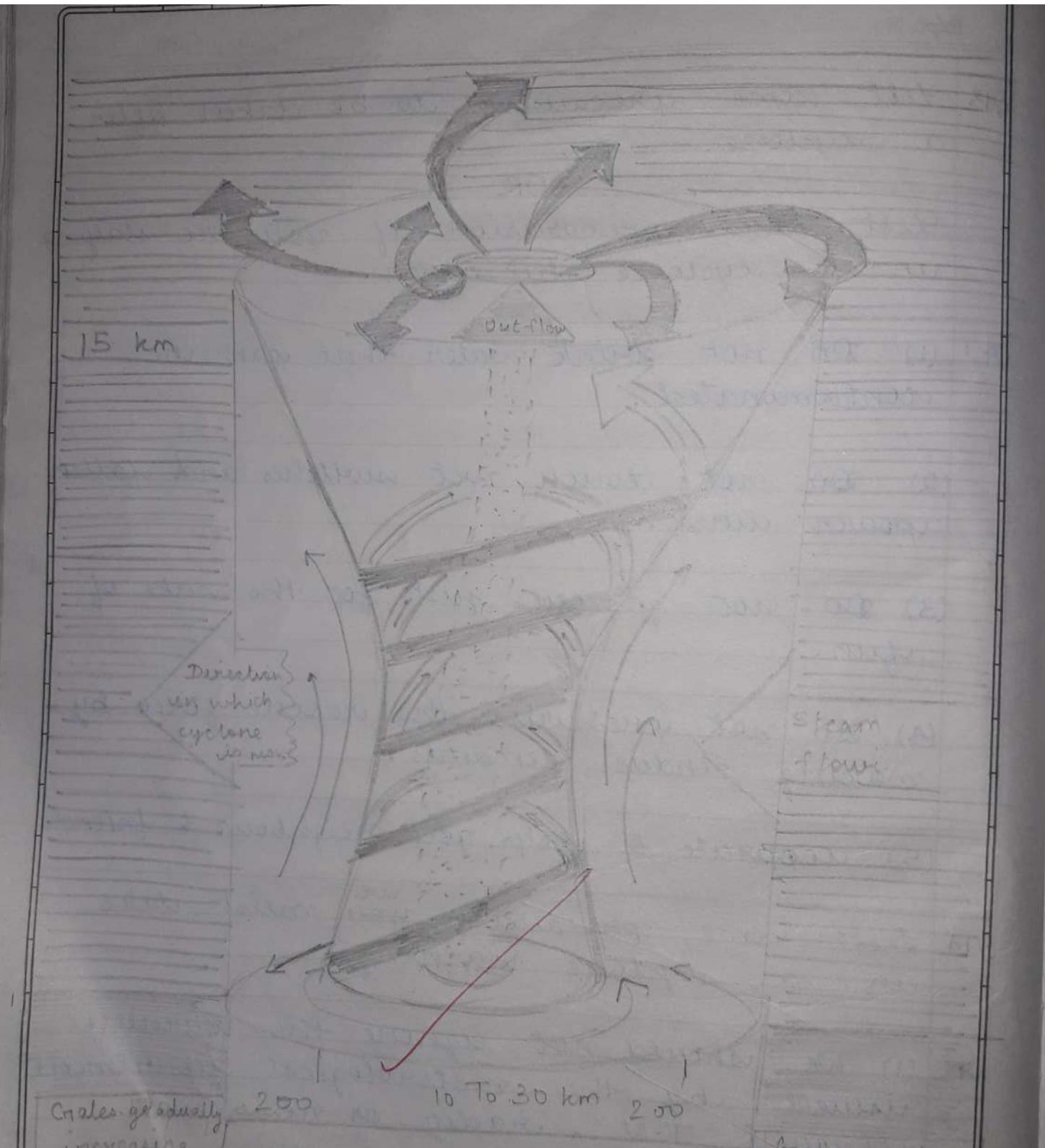
(4) Do not pressurise the rescue force by making undue demands.

(5) Cooperate & help your neighbour & friends.

Q14 List some precaution ^{we} you must take in a cyclone warning.

A: (1) We should not ignore the warning issued by the meteorological department through T.V., radio or news paper.

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- (2) We should make necessary arrangement to shift the ^{essential} ~~essentials~~ outdoor goods domestic animals & vehicles to safer places.
- (3) Avoid driving on roads through standing water, as floods may have damaged the roads.
- (4) Keep ready the phone numbers of all emergency services like police, fire ~~brigade~~ and medical services.

Q15. What do you mean by cyclone?

A: Before cloud formation, water takes up heat from the atmosphere to change into vapour. When water vapour changes to liquid form the heat is released to the atmosphere. The heat released to the atmosphere warms the air around. The air tends to rise & causes a drop in pressure. More air rushes to the center of the storm. This cycle is repeated. The chain of events ends with the formation of a very low pressure system with very high speed winds revolving around it. It is this weather that we call a cyclone.

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Q16. What do you mean by a thunderstorm?

or

How is thunderstorm formed?

A: The swift movement of the falling water droplet along with the rising air create lightning and sound. It is this event that we call a thunderstorm.

Q17. List some precaution we must take when a thunderstorm is accompanied by lightning.

a lightning is accompanied by a thunderstorm.

A: If a storm is accompanied by a lightning, we must take the following precautions:-

(1) Do not take shelter under an isolated tree. If you are in a forest take shelter under a small tree. Do not lie (2) on the ground.

(2) Do not take shelter under anumber umbrella with a metallic end.

(3) Do not sit near a window. Open garages, storage sheds, meat metal

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sheds are not safe places to take shelter.

(4) A car or a bus is a safe place to take shelter.

(5) If you are in water get out & go inside a building.

Q18 What is a tornado?

A Tornado is a dark funnel shaped cloud that reaches from the sky to the ground. Most of the tornadoes are weak. A violent tornadoes can travel at speeds of about 300 km/h. Tornadoes may form within cyclones.

Q19 How does a thunderstorm develop into a cyclone or how is it formed?

OR

How is cyclone formed?

Before cloud formation water takes up heat from the atmosphere to change into vapour. When water vapour changes back into liquid forms as rain drops, this heat is released to the atmosphere. Heat released to the atmosphere warms the air around. The air tends to rise and causes a

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drop in pressure. More air rushes to the center of the storm. This cycle is repeated. The chain of events ends with the formation of a very low pressure system with very high speed winds revolving around it. This weather condition that we call a cyclone.

Q20 Explain why holes are made in hanging banners & board hoardings?

When when the wind blows hair exerts pressure on the banners and hoardings. Therefore the holes are made to release the air pressure on the banners & hoardings because the banners & hoarding cannot withstand the air pressure & they may get damaged.

Q21. How will you help your neighbours in case cyclone approaches in your village/ town?

- (1) I will advise them to shift to cyclone shelters
- ~~(2) I will advise them to make necessary arrangements to shift the essential~~

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- (3) house old good, essential animals & vehicles to safer places.
- (4) I will advise them to keep ready the phone numbers of emergency services like police, fire brigade & medical services.
- (5) I will also make the people aware of the consequences of the cyclone.

Q22. You want to ~~to~~ buy a house. Would you like to buy a house having windows ~~and~~ ^{but} no ventilators?

No, I wouldn't like to buy a house having windows and no ventilators because if even the ^{windows} are closed air pressure is released through the ventilator.

Q23. What planning is required in advance to deal with the situation created by a cyclone?

- A: (1) Proper cyclone-shelters should be made in the affected areas.

② Proper medical services facilities should be made available in the cyclone hit area.

→

③ Fire brigades should be kept ready for emergencies.

④ Proper rescue force should be made available.

⑤ Proper arrangement should be made for drinking water & healthy food well in advance.

⑥ Proper communication system through radio, newspaper, television etc should be made during this situation.

Q24. Why smoke always rises up on heating

On heating the air expands & occupies more space. When the same thing occupies more space it becomes lighter. The warm air is therefore lighter than cold air. That is the reason that smoke rises up.

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Q25. What do you mean by cyclone alert or cyclone watch?

A cyclone alert or cyclone watch is issued 48 hours in advance of any expected storm and a cyclone so that people can move to safer place.

Q26. What is cyclone warning?

The cyclone warning is issued 24 hours in advance so that people can move to safer places.

Q27. What is the difference between ^a cyclone alert and cyclone warning?

A cyclone alert is issued 48 hours in advance of any expected storm whereas a cyclone warning is issued 24 hours in advance.

Q28. From where is the word monsoon derived?

The word monsoon is derived from the Arabic word manas which means season.

Q29. Describe the structure of the cyclone.

A: The center of the cyclone is the ~~calm~~ area. It is called the eye of the storm. A large cyclone is violently rotating ~~in~~ ^{mass of air} in the atmosphere. 10 to 15 km high. The diameter of the eye varies from 10 to 30 km. It is a region free of cloud and has light winds. Around this calm and clear eye, there is a cloud region of about 150 km in size. In this region there are high-speed winds (150 - 250 km/h) and thick clouds with heavy rain. Away from this region the wind speed gradually decreases.

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Chapter - 10 Respiration in Organisms

Q1. Define cellular respiration.

A: The process of breakdown of food within the cell to release energy is called cellular respiration.

Q2. What is the percentage of oxygen & carbon dioxide in inhaled & exhaled air?

A: Inhaled air contains 21% oxygen & 0.04% carbon dioxide. Exhaled air contains 16.4% oxygen & 4.4% carbon dioxide.

Q3. Define breathing rate.

A: The number of times a person breathes in a minute is termed as breathing rate. An average adult human being at rest breathes in & out 15 times a minute.

Q4. Define inhalation. During heavy exercise the breathing rate can increase up to 25 times per minute.

A: The taking in of air rich in oxygen into the body is called inhalation.

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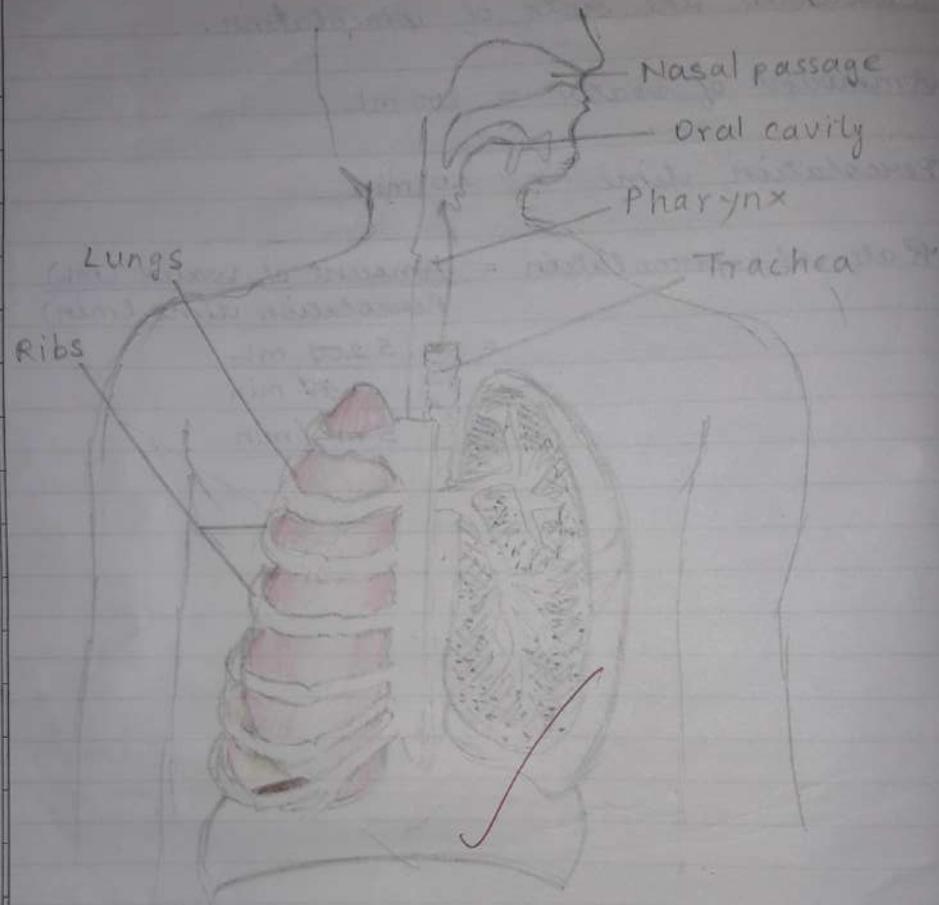


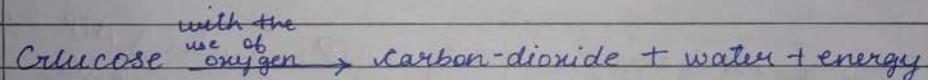
Fig. 10.4 Human respiratory system.

Q5. Define exhalation.

A: Giving out air rich in carbon dioxide is called exhalation.

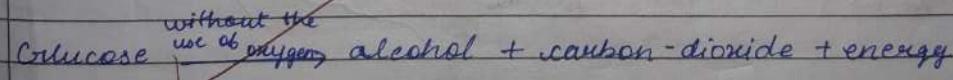
Q6. Define aerobic respiration.

A: In the cell the food (glucose) is broken down into carbon-dioxide & water using oxygen. When breakdown of glucose occurs with the use of oxygen it is called as aerobic respiration.



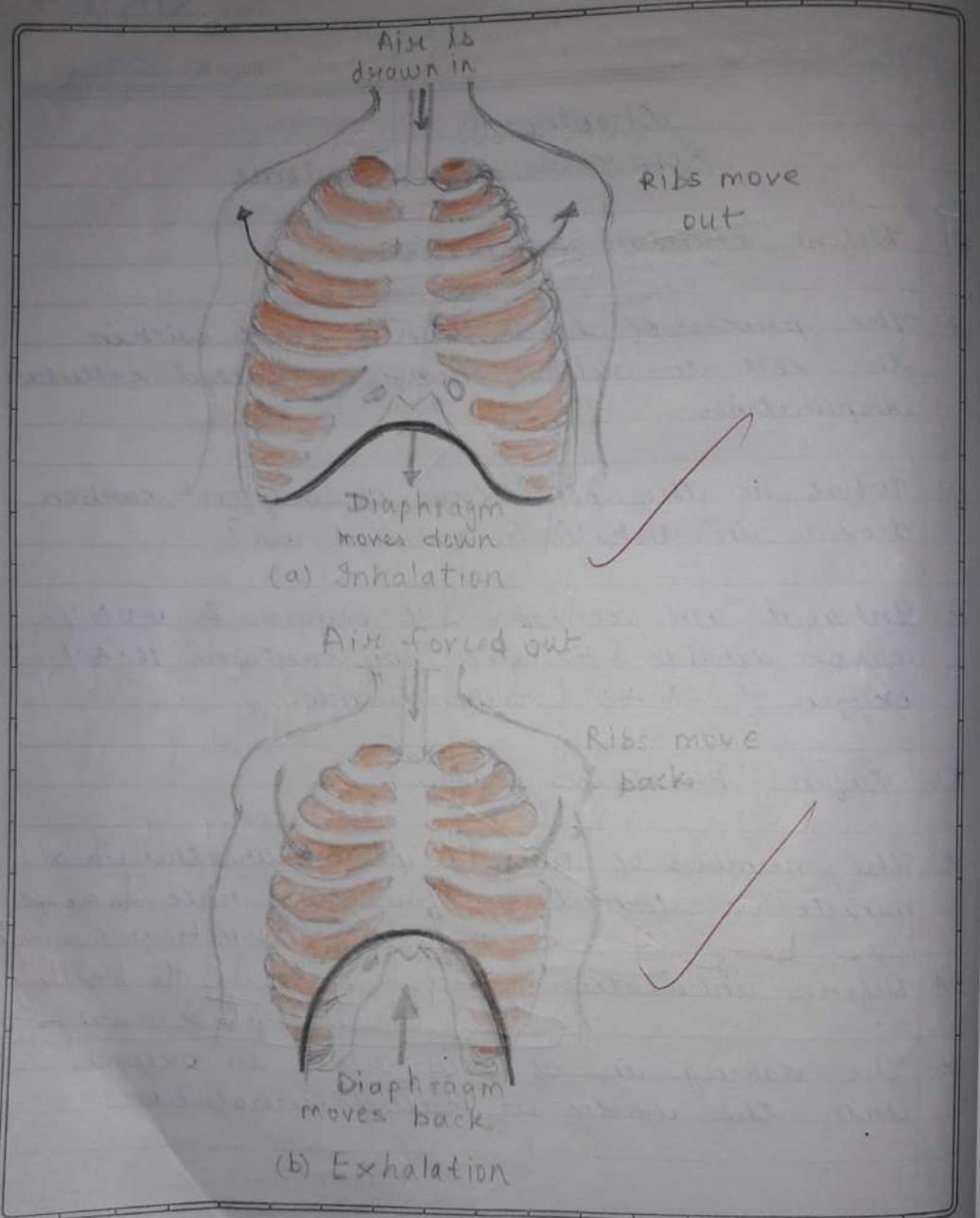
Q7. Define anaerobic respiration.

A: Food can also be broken down without using oxygen & this is called as anaerobic respiration.



Q8. What are the differences between aerobic & anaerobic respiration?

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Aerobic Respiration	Anaerobic Respiration
(i) In cells when the food (glucose) is broken down into carbon-dioxide & water & releasing energy using oxygen it is called as aerobic respiration. Glucose with the use of oxygen → + carbon-dioxide + water + energy.	(i) In muscle cells the food (glucose) is broken down into lactic acid without using oxygen it is called as anaerobic respiration. In the cells Food can also be broken down without the use of O_2 . Glucose without the use of oxygen → + Lactic acid + energy Glucose with out the use of oxygen → alcohol + carbon-dioxide + energy

Q9. What is meant by breathing?

A: Breathing means taking air rich in oxygen & giving out air rich in carbon dioxide with the help of the respiratory organs.

Q10. Why do we get ^{muscle} muscle cramps after a heavy exercise?
 Explain the anaerobic respiration taking place in muscle cells.

A: We get muscle cramps after a heavy exercise because:-

- ① The cramps occur when the muscle cells respire anaerobically.
- ② The partial breakdown of glucose produces lactic acid.
- ③ The accumulation of lactic acid cause muscle cramps.
- ④ There is a decrease in the supply of oxygen to the muscle cells.
- ⑤ we get relief from cramps after a hot water bath or a massage.

Q11. Explain the mechanism of breathing in human beings.

A: Normally we take in air through our nostrils. When we inhale air it passes through our nostrils into the nasal cavity. From the nasal cavity it reaches our lungs through the wind pipe. Lungs are present in the chest cavity. This cavity is surrounded by ribs on the ^{sides} ~~other~~. A large muscular sheet called diaphragm forms a floor of

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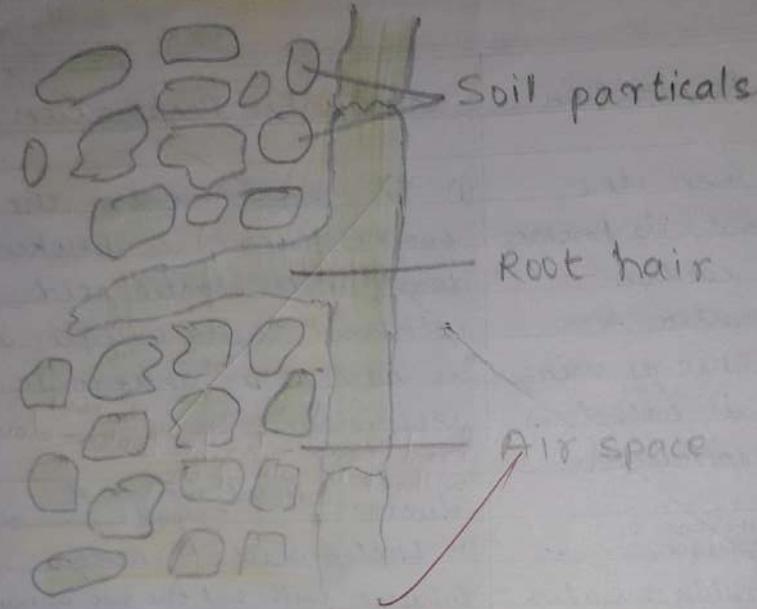


Fig. 10.11 Roots absorb air from the soil.

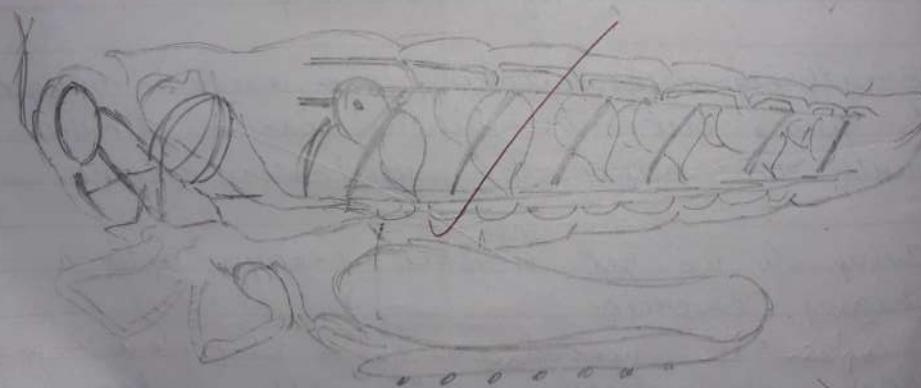


Fig 10.9 - Tracheal system

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the chest cavity. Breathing involves the movement of diaphragm & the rib cage.

During inhalation ribs move up & outwards & diaphragm moves down. This movement increases the space in our chest cavity & air rushes into the lungs. This process is called inhalation.

During exhalation the ribs move down & inwards while diaphragm moves up to its forward position. This reduces the size of the chest cavity & the air is pushed out of the lungs.

Q12. write an activity to explain the mechanism of breathing.

A: Aim: To explain the mechanism of breathing

Materials Required: A white plastic bottle, a 'Y' shaped glass or plastic tube, deflated balloon, a thin rubber sheet, a large rubber band.

Method: ① Take a white plastic bottle & remove the bottom.

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- ② Get a 'Y' shaped glass or plastic tube & make a hole in the lid so the the tube may pass through it.
- ③ Fix 2 deflated balloons on the forked end.
- ④ Now cap the bottle & seal it & make it air tight.
- ⑤ ~~The~~ To open the base of the bottle tie a thin rubber or plastic sheet using a large rubber band.
- ⑥ To understand the process of expansion of the lungs pull the rubber sheet from the downbase & ^{watch} ~~watch~~ the balloon.
- ⑦ Now, push the rubber sheet & observe the balloon.

Observation: when the rubber sheet is pulled down - the size of the balloon expands when the rubber sheet is pulled upwards then the size of the balloon decrease. In this activity balloon represents the lungs & the

rubber sheet represents the diaphragm.

Conclusion: From the above activity we can conclude that during inhalation the ribs move up & outwards. This movement creates space in the chest cavity & air rushes into the lungs. The lungs get filled with air. During exhalation the ribs move down & move inwards. The diaphragm moves upwards to its former position. This reduces the size of the chest cavity & the air rush out from the lungs.

Q13. How does breathing take place in cockroach?

A ~~not~~ cockroach has small openings on the sides of his body called spiracles.

- ② They have a network of air tubes called tracheae for exchange of gases.
- ③ Oxygen rich air rushes through spiracles into tracheal tubes ~~diffuses~~ diffuses into the body tubes & reaches every cell of the body.
- ④ Similarly, carbon dioxide from the cell goes into the tracheal tubes and moves out through spiracles.

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Q14. How does breathing takes place in an earthworm?

A: (1) Earthworm breathes through its ~~skin~~ ^{skin} ~~like~~.

(2) The skin of the earthworm is moist & slimy on touching.

(3) Gases can easily pass through them.

Q15. How does breathing takes place in a fish?

A: (1) Many organisms like fishes live in water.

Fishes have gills which helps them to breathe in water.

(2) Gills are well supplied with blood vessels for exchange of gases.

(3) The gills which are present in fish helps them to breathe in water.

What are the differences between aerobic and anaerobic respiration

① In cells the food glucose is broken down into Carbon-di-oxide and water and releasing energy using oxygen is called as aerobic respiration.

Glucose $\xrightarrow{\text{using } O_2}$ Carbon-di-oxide + water + energy.

② The amount of energy released is 36 ATP / per glucose molecule.

③ It takes place partly in cytoplasm and partly in mitochondria.

① Food can also be broken down without the use of oxygen.

Glucose not using Oxygen.
alcohol + Carbon-di-oxide + energy
In muscle cells:-
Glucose without using O₂ →
Lactic acid + energy

Only 2 molecules of ATP are produced per glucose molecule.

③ It takes place in the cytoplasm only.

Q16. Why does an athlete breathe faster & deeper usually after finishing the race?

A: During fast of running, cycling & heavy exercise, the demand for energy is very high but the supply of oxygen to produce the energy becomes limited. So the breathing rate can increase upto 25 times per minute. We take a deep breath to inhale more oxygen.

Q17 List the similarities between aerobic and anaerobic respiration.

A: ① In both the cases food is broken down (oxidation).

② In both the cases energy is released.

Q18 (a) Write an activity to show that exhaled air contains carbon dioxide.

A: Aim: To prove that exhaled air contains carbon-dioxide.

Material Required - A test tube with a lid.

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freshly prepared lime water, plastic straw.

Method :- (1) Make a hole in the test tube lid & fix it on a test tube.

(2) Pour some freshly prepared lime water in the test tube.

(3) Insert a plastic straw through a hole in the lid in such a way that it dips in lime water.

(4) Blow gently through the straw and observe.

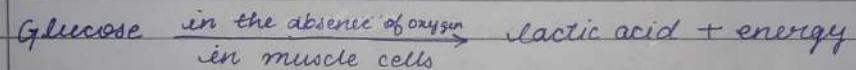
Observation : On blowing gently through the straw carbon-dioxide reacts with lime water & turns milky white.

Conclusion : The above experiment proves that exhaled air contains carbon-dioxide.

Q19. When does anaerobic respiration takes places in our muscle cells? Explain with an equation.

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A: Our muscle cells can also respire anaerobically but only for a short period of time. When there is temporary deficiency of oxygen. During heavy exercise, fast running, cycling, walking for many hours, weight lifting where the demand of energy is high but the supply of oxygen to produce energy is limited. There anaerobic respiration takes place in the muscle cells to fulfill the demand of energy. The equation for this event is as follows:-



Q20. How do plants respire?

A: Plants also respire & they take in oxygen from the air & give out carbon-dioxide. In the plant cell oxygen is used to breakdown glucose into carbon-dioxide & water. Each part can independently take in oxygen. The leaves of plants have tiny pores called stomata which helps for the exchange of gases like all other plants.

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the root cells also need oxygen to generate energy. The roots take up air from spaces present between the soil particles.

Q21. Why do we sneeze when we inhale a lot of dust laden air?

A: The air around us has various types of unwanted particles like smoke, dust, pollen etc. When we inhale these ^{particles} they get trapped in the hair present in the nasal cavity. However, sometimes these pass through the hair of the nasal cavity. Then they irritate the lining of the nasal cavity. As a result, we sneeze.

Q22(a) Name the air tubes of insect.

A: Tracheae

Q23(b) Name the skeleton structure surrounding the chest cavity.

A: Ribs Ribs

(c) Name the muscular floor of the chest cavity.

A: Diaphragm.

(d) Name the tiny pores on the surface of the leaf.

A: Stomata.

(e) Name the respiratory organ of human beings.

A: Lungs.

(f) Name the openings through which we inhale air.

A: Nostriils

(g) Name an anaerobic organism.

A: Yeast

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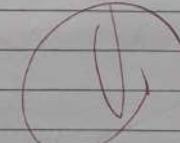
(h) Name an organism with ~~tracheal~~^{tracheal} system.

A: Cockroach

(i) Name the small openings present on the side of the body of an insect.

A: spiracles

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Chapter - 11Transportation in animals and Plants

Q1. What is blood? State three functions of blood.

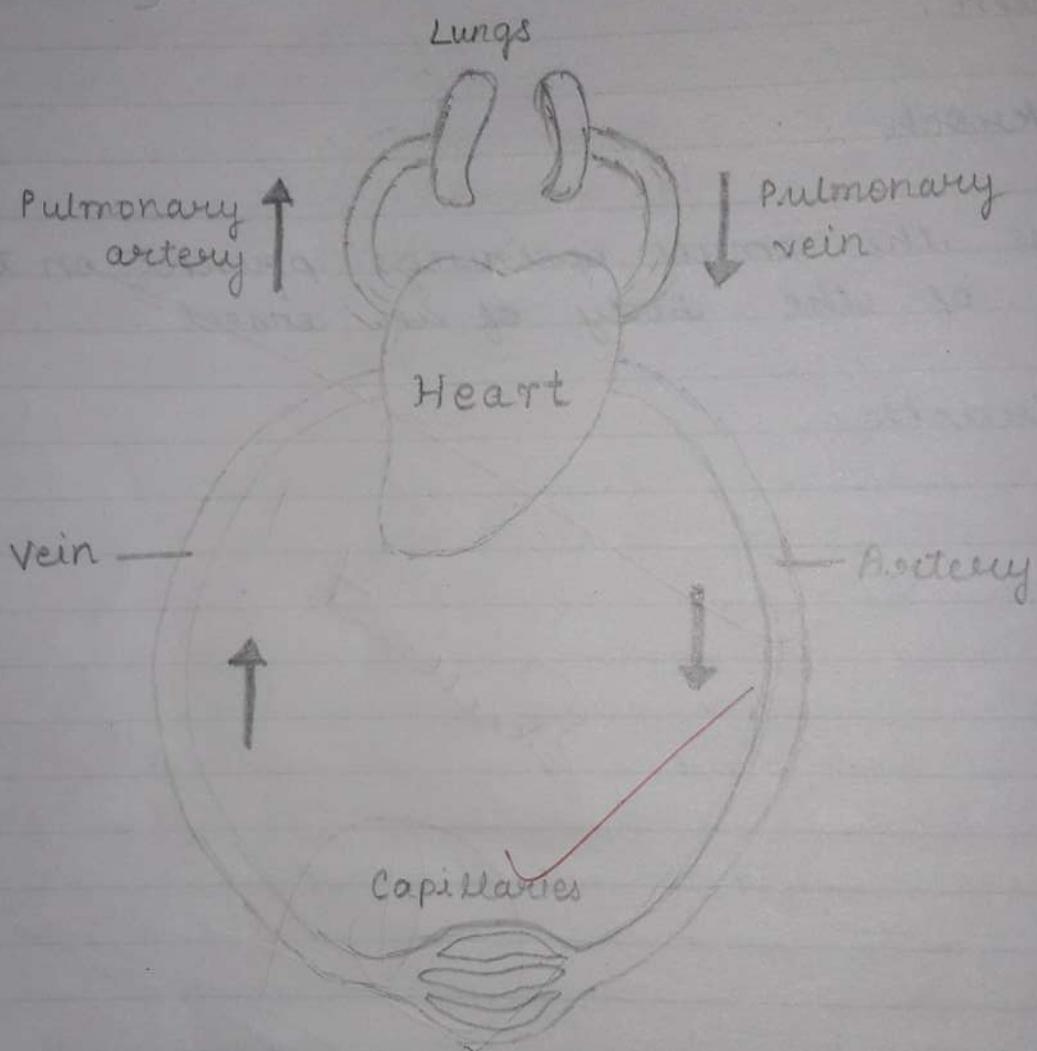
A: Blood is a red coloured fluid which flows in the blood vessels (arteries, veins & capillaries). The functions of the blood are as follows:-

- It transports substances like digested food from the small intestine to the other parts of the body.
- It also transports waste materials for removal from the body.
- It carries oxygen from the lungs to the cells of the body.

Q2. Explain the mechanism of human excretory system with the help of a diagram.

A: The filtration of the blood is done by the blood capillaries present in the kidney. When the blood reaches the two kidneys it contains both useful & harmful substances.

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Schematic diagram of circulation
Urgent
(Come in exam)

→ Kidney (blood capillaries) → urine (formed) → ureters → urinary bladder
urethra.

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The useful substances are absorbed back into the blood. The ^{wastes} dissolved in water are removed as urine. From the two kidney the urine goes into the urinary bladder through the tube like ureters. It is stored in the bladder and is passed out through the urinary opening at the end of the muscular tube called urethra. The two kidneys, ureters, urinary bladder and the urethra form the excretory system.

Q3. What are the components of blood?

OR

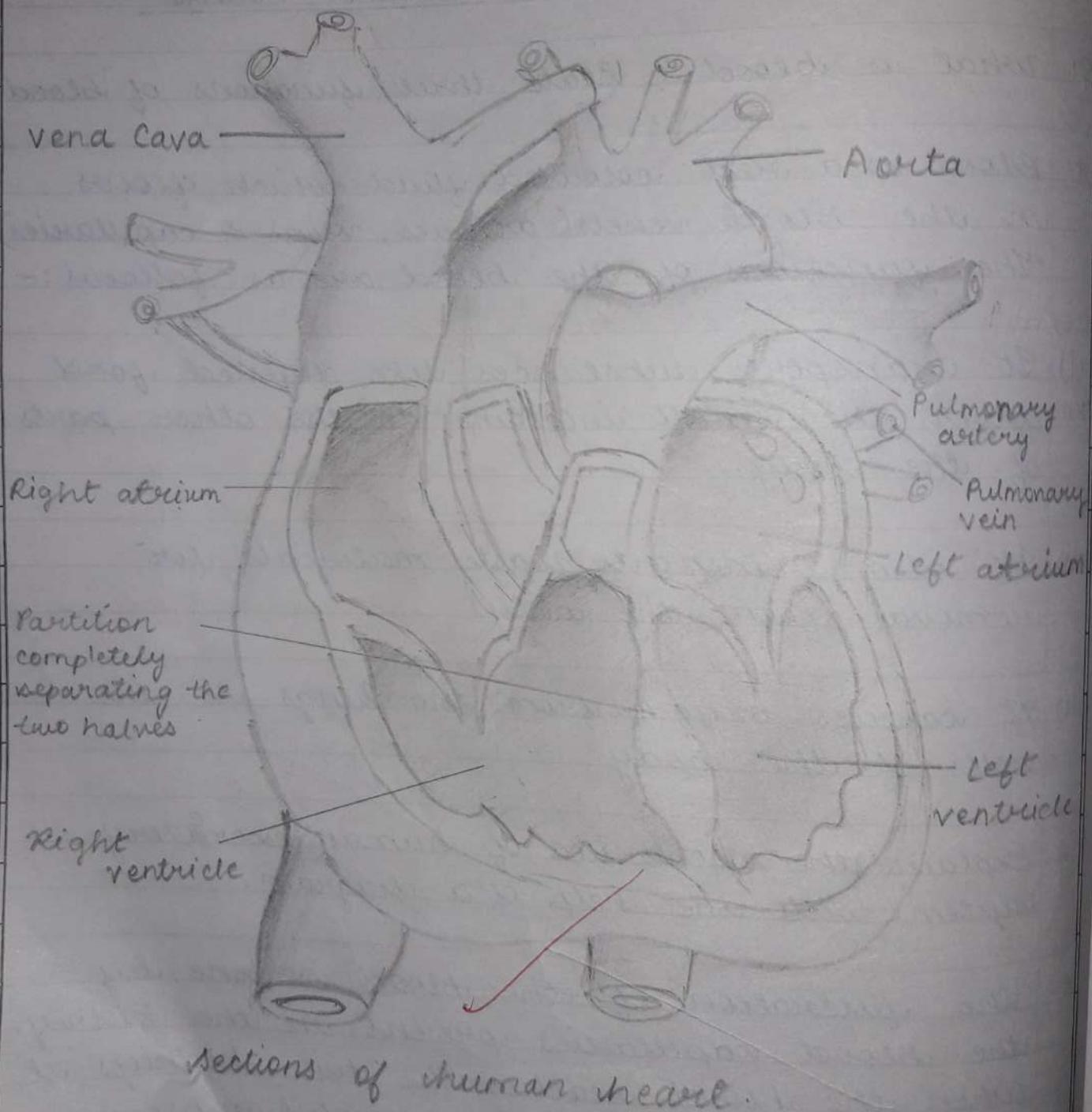
What are the constituents of blood? State their functions.

A: ① Plasma - The fluid part of the blood is called plasma.

② Red blood cells (RBCs) - One type of cell is the red blood cells which contains a red pigment called haemoglobin. Haemoglobin binds with oxygen and transports it to all parts of the body and ultimately to all the cells.

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filtration by B.C. \rightarrow U. absorbed \rightarrow Wastes as urine \rightarrow u. bladder through ureters
 \rightarrow stored in U.B. $\xrightarrow{\text{expelled out}}$ end of muscular tube called urethra.



sections of human heart.

- ③ White blood cells (WBCs) - The blood also has white blood cells which fights against the germs that may enter our body.
- ④ Platelets - The clot is formed because of the presence of another type of cell in the blood called platelets.
- Q4. Name the two types of blood vessels in our body and state their differences.

OR

~~The ans~~

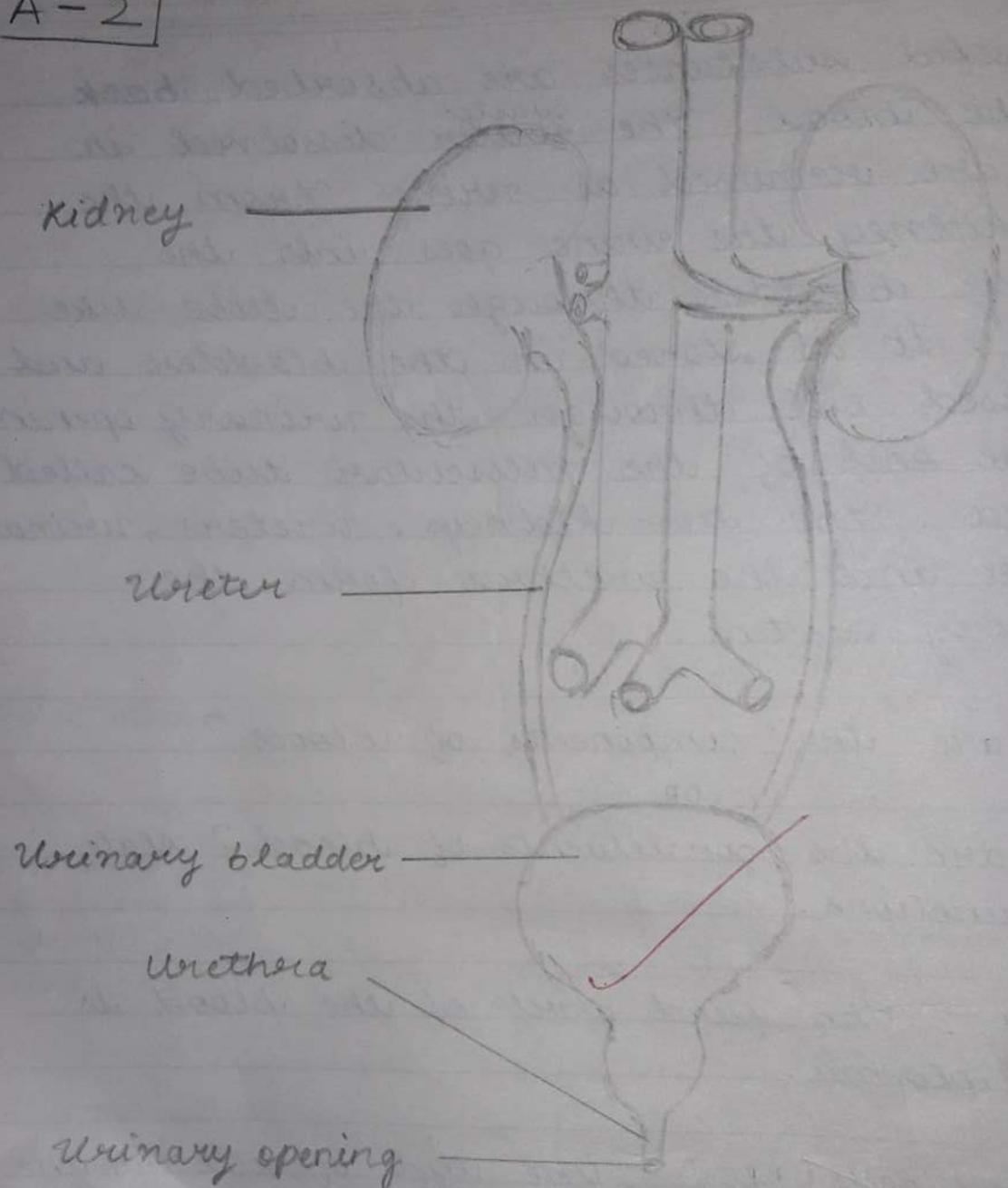
A: The two types of blood vessels are arteries and veins.

~~Arteries~~~~Veins~~

(i) They have thick walls.	(i) They have thin walls.
(ii) They have no valves.	(ii) They have valves.
(iii) Blood flow is rapid & is at high pressure.	(iii) Blood flow is slow & is at low pressure.

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A - 2



Human excretory system

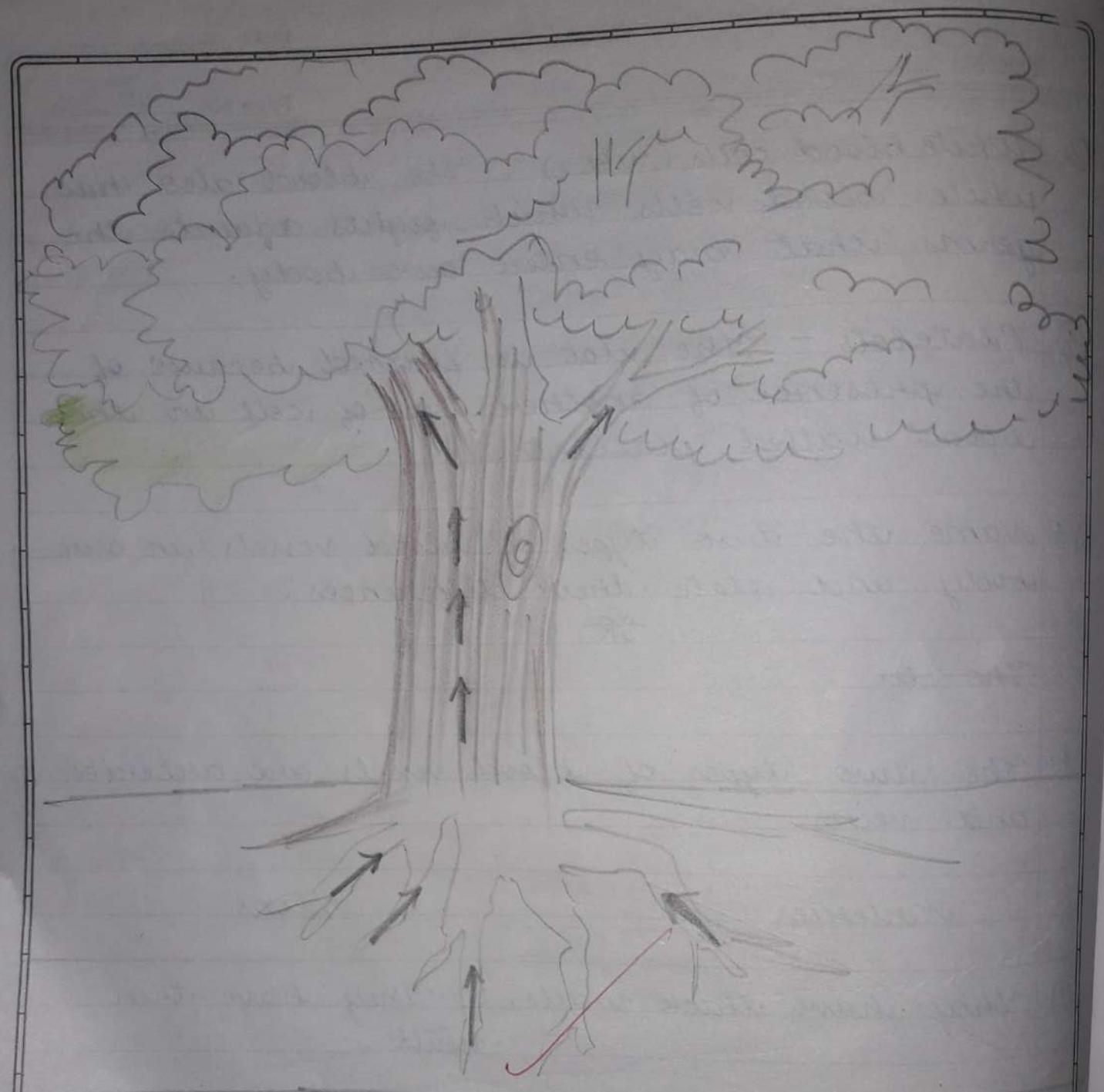
- (iv) They carry oxygen rich blood. (iv) They carry carbon dioxide rich blood.
- (v) Arteries lie deep under the skin. (v) Veins are superficial.

Q5. Write a short note on heart.

A: The heart is an organ which beats continuously to act as a pump for the transport of blood which carries other substances with it. The heart is located in the chest cavity with its tip slightly tilted towards the left. The heart has four chambers. The 2 upper chambers are called atria. The 2 lower chambers are called ventricles. The partition between the chambers helps to avoid mixing up of blood rich in oxygen with the blood rich in carbon dioxide.

Q6. What is the relationship between rate of heart & the rate the pulse rate.

A: The relation between the rate of heart & the pulse rate, each heart beat generates 1 pulse in the arteries & the



Transport of water & minerals in
a tree (b)

pulse rate per minute indicates the rate of heart beat.

Q7. How much urine is excreted by a normal adult in 24 hr?

A: An adult human normally passes 1 to 1.8 l of urine in 24 hours.

Q8. What is the normal composition of human urine?

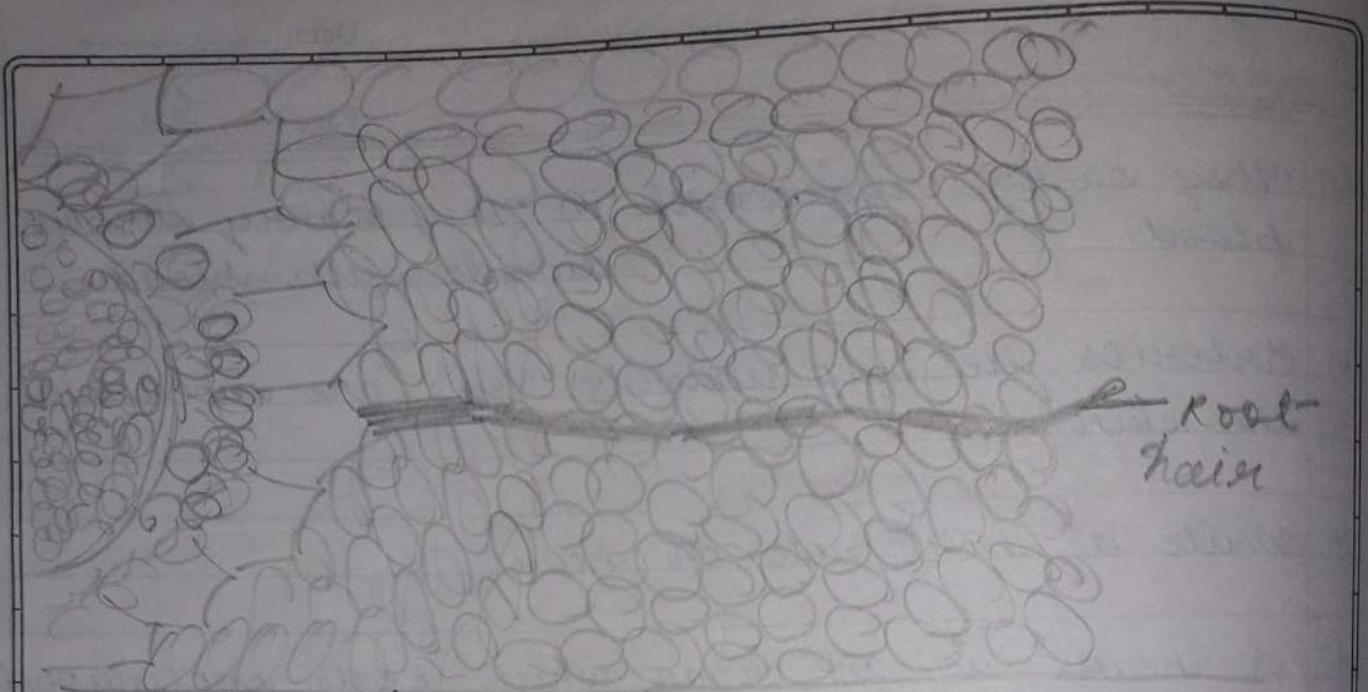
A: A human urine consists of 95% of water, 2.5% of urea & 2.5% of other substances.

Q9. Draw the sections of a human heart.

A: Fig - 11.4

Q10. Draw a neatly labelled diagram of transportation of water through cells.

A: Fig - 11.8 (Pg. 129)

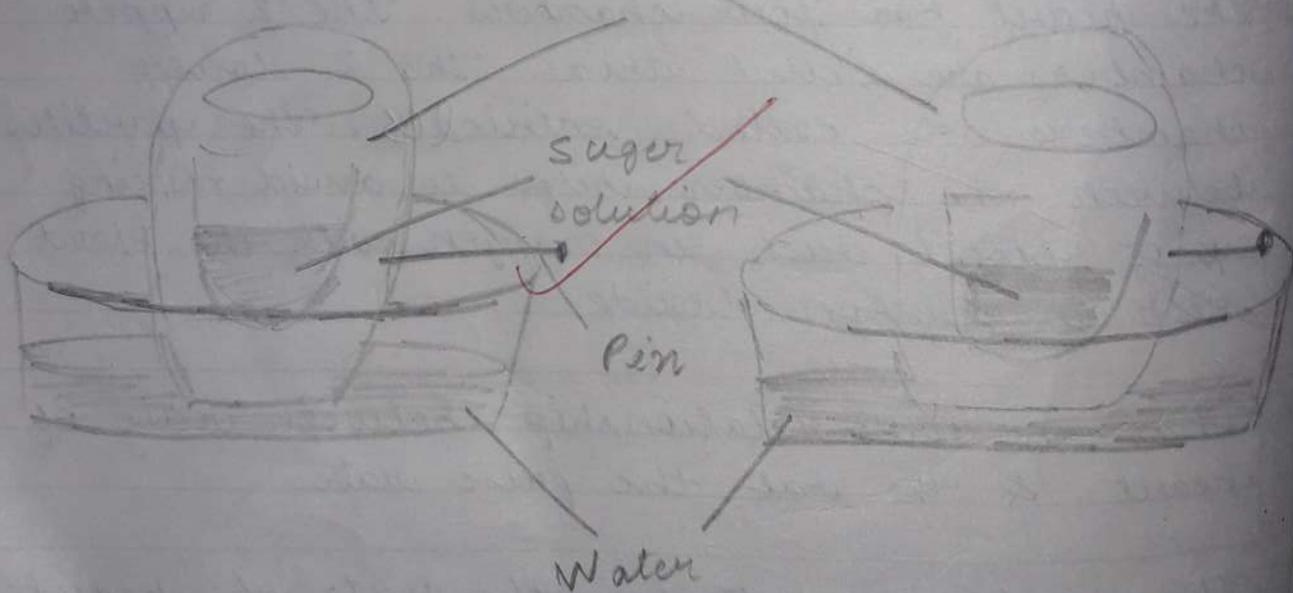


Transport of water & minerals

in a section of roots (a)

95-60%
+ 2.5
+ 2.5
100-00%

Potato



Osmosis of water through cells.

- Q11. Draw a schematic diagram of circulation.
OR
- Q12. Draw a schematic diagram of human circulatory system. (Fig - 11.3)
- Q13. Draw a neatly labeled diagram of transport of water & minerals ⁱⁿ (a) section of root and (b) tree (Fig - 11.7)
- Q14. Draw a diagram of the human excretory system & label the parts. (Fig - 11.6)
- Q15. Explain why dialysis is to be done in the person suffering from kidney failure?
- A: Some times a person's kidneys may stop working due to infection or injury. It's a result of kidney failure waste products start accumulating in the blood. Such persons cannot survive unless their blood is filtered periodically through an artificial kidney. This process is called dialysis.
- Q16. Why is it necessary to excrete waste products?

How will you prove that water and minerals are conducted by stem with the help of xylem cells

Aim To show that stem conducts water.

Materials required — Red ink, tender leafy (yashen) & water blade tumbler

Method Pour water to fill one third of the tumbler. Add a few drops of red ink to the water. Cut the base of the stem of the herb and place it in the glass. observe it next.

Observation — We can observe red colour inside the stem.

Conclusion — We can conclude that water moves up the stem. In other words stem conducts water. Just like the red ink minerals also dissolved in water also move up the stem along with water. Water dissolved in minerals is transported through narrow tubes (xylem) inside the stem.

A: When our cells perform their functions, certain waste products are released. These are toxic and hence need to be removed time to time from the body. The process of removal of waste products ^{from} the cells of the living organisms is called excretion. The parts involved in excretion form excretory system.

Q17. Define excretion.

A: The process of removal of waste products produced in the cells of the ^{living} organisms is called excretion.

Q18. Describe the function of heart.

A: Heart is an organ which beats continuously to act as a pump for the transport of blood, which carries ^{other} substances with it. The heart has 4 chambers. The 2 upper chambers are called the atria and the 2 lower chambers are called the ventricles. The partition between the chambers helps to avoid mixing up of blood rich in oxygen with blood rich in carbon dioxide.

* The functions of the heart are as follows:-

- (i) Blood from the various parts of the body enters ^{the right} atrium which then contracts the sending the blood to the right ventricles.
- (ii) Now the right ventricle contracts & the blood passes into the pulmonary artery & then to the lungs for purification.
- (iii) In the lungs the blood is aerated & then it enters left atrium through the pulmonary vein.
- (iv) When the left atrium contracts the blood is pushed into the left ventricle.
- (v) Now the left ventricle contracts and the blood passes into the aorta which supplies blood to the various parts of the body.

Q18 (a) What is heart beat?

- A: The ^{walls} of the chambers of the heart is made up of muscles. These muscles contract and relax ~~very~~ rhythmically. This rhythmic contraction ^{followed by its} relaxation constitute a heartbeat.

(b) Explain the mechanism of transportation of water & minerals in plants.

- Ans: Plants absorb water & minerals by the roots. The roots have root hair. The root hair increases the surface area for absorption of water & minerals dissolved in water. The root hair is in contact with the water present between the soil particles. Plants have pipe like vessels to transport water & nutrients from the soil. The vessels are made up of special cells forming the vascular tissue. A tissue is a group of cells that performs a special function. The vascular tissue for the transport of water & nutrients in the plants is called xylem. The xylem forms the a continuous network of channels that connects the roots to the leaves through the stem & branches and thus transports water to the entire plants.

Q19(a) What are capillaries.

The arteries divided into smaller vessels on reaching the tissues they divide further into extremely thin tubes called capillaries. The capillaries join up to form veins which empty into the heart.

(b) Name the major excretory products in human.

Ans: urea - 2.5%.

(c) Explain how transpiration helps in ~~cooling~~ ^{putting} the water to great heights in tall trees.

OR

Does transpiration serve any useful function in the plants? Explain.

Ans: A plant absorbs mineral, nutrients & water from the soil. Not all the water absorbed is utilised by the plants. The water evaporates through the stomata present on the surface of leaves by the process of transpiration. The evaporation of the water from the leaves generated suction pull & (the same that you produce when we suck the water through the straw) which can pull water ~~to~~ to great heights in tall trees. Transpiration also cools the plants.

(d) Why is blood needed by all parts of the body?

(i) It carries oxygen from lungs to all the cells of the body.

(ii) It transports waste for removal from the body.

(iii) It transports substances like digested food from the small intestine to the other parts of the body.

(e) what makes the blood look red?

The red blood cells (RBC) contain a red pigment called haemoglobin. The presence of haemoglobin makes the blood appear red.

(f) what is stomata? write the functions of stomata.

A: i) The tiny pores present on the surface of the leaves are called stomata. Its functions are as follows:-

(i) It helps in the exchange of gasses.

(ii) It helps in transpiration.

Ques. Why is the transport of materials necessary in plants? or in an animal?

OR

In an animal. Explain.

(i) Plants take water, minerals, nutrients from the soil & transport it to leaves.

- (iii) The leaves prepare food during photosynthesis.
- (iv) Food is a source of energy & every cell of an organism by breaking down of glucose.
- (v) The cells use this energy for vital activity of life.
- (vi) In animals substances like digested food is to be carried from the small intestine to all parts of the body.
- (vii) The waste products have to be removed from the body.
- (viii) Therefore the transports of materials are necessary in plants and animals.

(b) Write a note on stethoscope.

A: A doctor uses the stethoscope to amplify the sound of the heart. It consists of a chest piece that carries a sensitive diaphragm, two ear pieces & a tube joining the parts. Doctors can get clue of the heart by listening through a stethoscope.

21.(a) Why organism like sponges & hydra do not possess any circulatory system?

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A: The water in which they live brings food and oxygen as it enters the body. The water carries away waste materials & carbon dioxide as it moves out. Thus, these animals do not need a circulatory fluid like blood.

(b) What is the function of xylem & phloem?

A: (i) The xylem is a vascular tissue which transports water & nutrients in plants.

(ii) It phloem is a vascular tissue which transports the food in different parts of the ~~body~~ plants.

(c) Define tissue. Give examples.

A tissue is a group of cells that perform specialised function in an organism. Eg. - The vascular tissue of phloem transports food to the different parts of the plant. The vascular tissue of xylem transports food to the other parts of the plant.

(d) What are excretory products of aquatic animals like fishes?

A: Aquatic animals like fishes excrete cell waste as ammonia which directly dissolve in water.

(e) What is excretory product of birds, lizards and snake?

A: Some land animals like birds, lizards & snakes excrete semi solid white coloured compound that is uric acid.

(f) Who discovered circulation of blood?

A: William Harvey

21. (g) Sometimes in summer white patches are formed on our clothes. Explain.

A: These marks are left by the salts in the sweat.

(h) Water kept in the earthen pot is cooler. Why?

A: This is because water evaporates from the pores of the pot which causes cooling.