

**District Public School & College Depalpur**

**Subject Science**

**E – Learning Project**

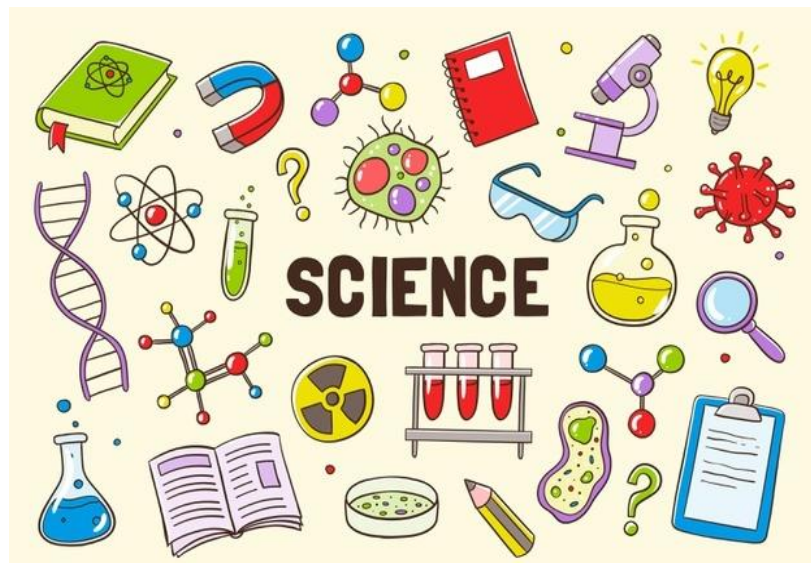
**Summer Task with Tutorial Links, Home  
Assignments, Work sheets and Activities**

**(Academic Session 2020-21)**

**Class: Seven**

**Student's Name:** \_\_\_\_\_

**Father's Name:** \_\_\_\_\_



## CHAPTER 3 THE HUMAN TRANSPORT SYSTEM

### Table of contents:

No.	Contents	Objectives
1	The movement of blood through the heart	To introduce the structure and function of human blood system
2	The blood circulation	To describe the circulatory system of humans
3	Arteries, veins and capillaries	To examine the structure and function of the blood vessels
4	What is blood?	To explain the composition of blood tissue
5	Diseases of the transport system	To explain some disorders of the blood system
6	Assessment	To evaluate the performance of students

### CHAPTER 3 THE HUMAN TRANSPORT SYSTEM

**Topic: The movement of blood through the heart**

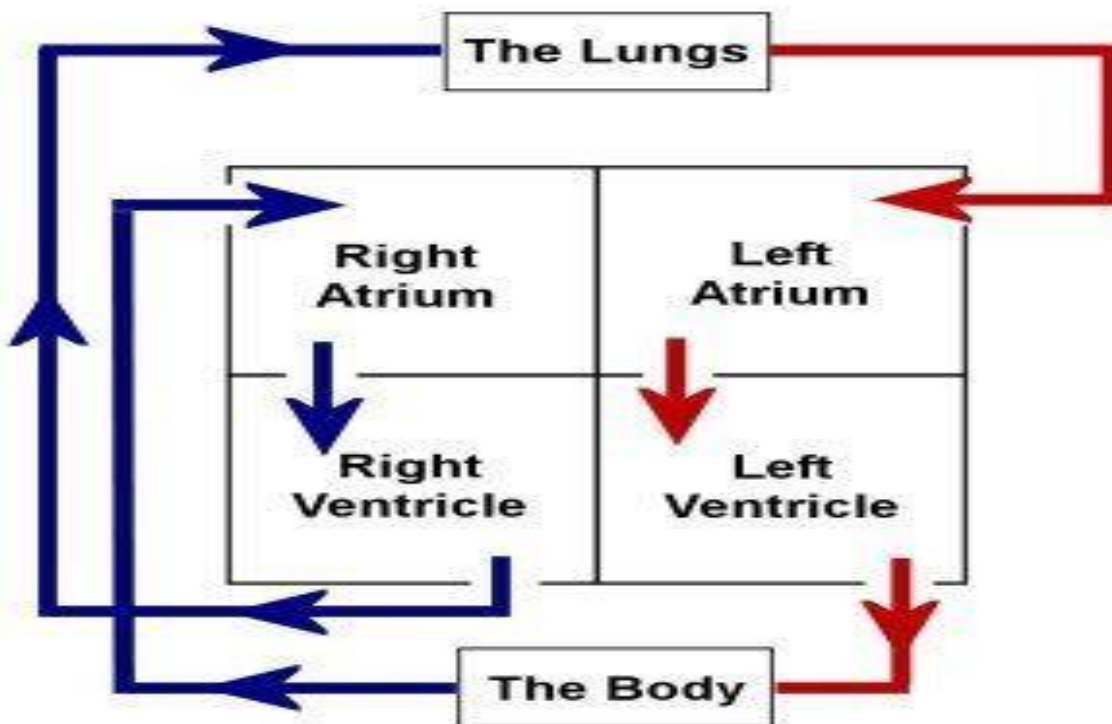
**Book page 19-20**

**Objective:** To introduce the structure and function of human blood system

**Tutor web link:** <https://youtu.be/qndcarLrUJw>

**Understanding:**

- Heart is a muscular organ. The aorta carries blood **towards the body**.
- Both atria contracts together then both ventricles contract together.
- **Bicuspid valve** is situated between the heart's left atrium and left ventricle.
- **Tricuspid valve** is situated between the heart's right atrium and right ventricle.
- The human blood circulation is called a **double circulation** because **the blood passes through the heart twice**. The backward flow of blood is controlled by the **valves**. Blood takes oxygen from the **lungs**. The blood passes from the heart to the lungs through **pulmonary artery**.



## Home Assignment

Tutor web link: <https://youtu.be/fOyEki4a-cc>

### Question 1

Encircle the correct option

- Why the human blood circulation is called a double circulation?  
(A) The blood passes through the heart twice.  
(B) The blood passes through each part of the body twice.  
(C) The blood takes twice as long as in other circulations.  
(D) The blood travels twice as fast as other circulations.
- To where does the aorta carry blood?  
(A) The heart                      (B) the lungs                      (C) towards the body      (D) the veins
- Blood passes from the heart to the lungs through the:  
(A) pulmonary vein              (B) pulmonary artery      (C) aorta              (D) renal artery

### Question 2

Fill in the blanks

- The backward flow of blood is controlled by \_\_\_\_\_.
- Blood takes oxygen from the \_\_\_\_\_.

### Question 3

Write answers of the questions on the lines below

- Describe the location of bicuspid and tricuspid valve. What is the function of valves?

**Answer:** Bicuspid valve is situated between the heart's left atrium and left ventricle.

**Tricuspid valve** is situated between the heart's right atrium and right ventricle.

**Function:** The valves stop the blood from going to wrong direction.

**Answer:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- All arteries carry oxygenated blood except pulmonary artery. Why?

**Answer:** Pulmonary artery transfer the blood to lungs where it mix with oxygen and come back through pulmonary vein.

**Answer:** \_\_\_\_\_

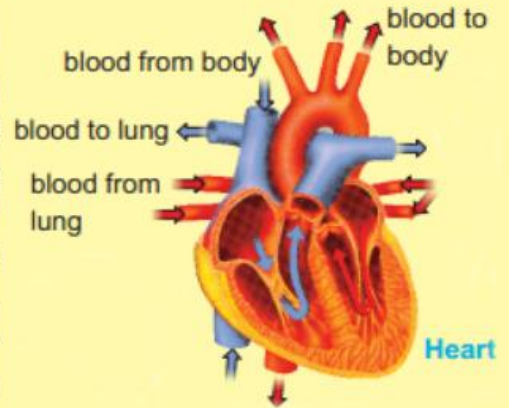
\_\_\_\_\_

- **Show the pathway of blood flow in human heart**

**Activity:**

**How Does Our Heart Work?**

Human heart acts as a double pump. Blood from lungs and other body parts enters the atria. The two atria contract at the same time and push the blood to ventricles. It is one pump. Now both ventricles contract at the same time and pump the blood to lungs and other body parts. It is the second pump. Our heart beats about 70 times a minute. We can feel our heart beat (pulse) while placing our fingers below the base of the thumb on the underside of our wrist.



- **Count how many times your heart beat in a minute.**

\_\_\_\_\_

## CHAPTER 3 THE HUMAN TRANSPORT SYSTEM

**Topic: The blood circulation**

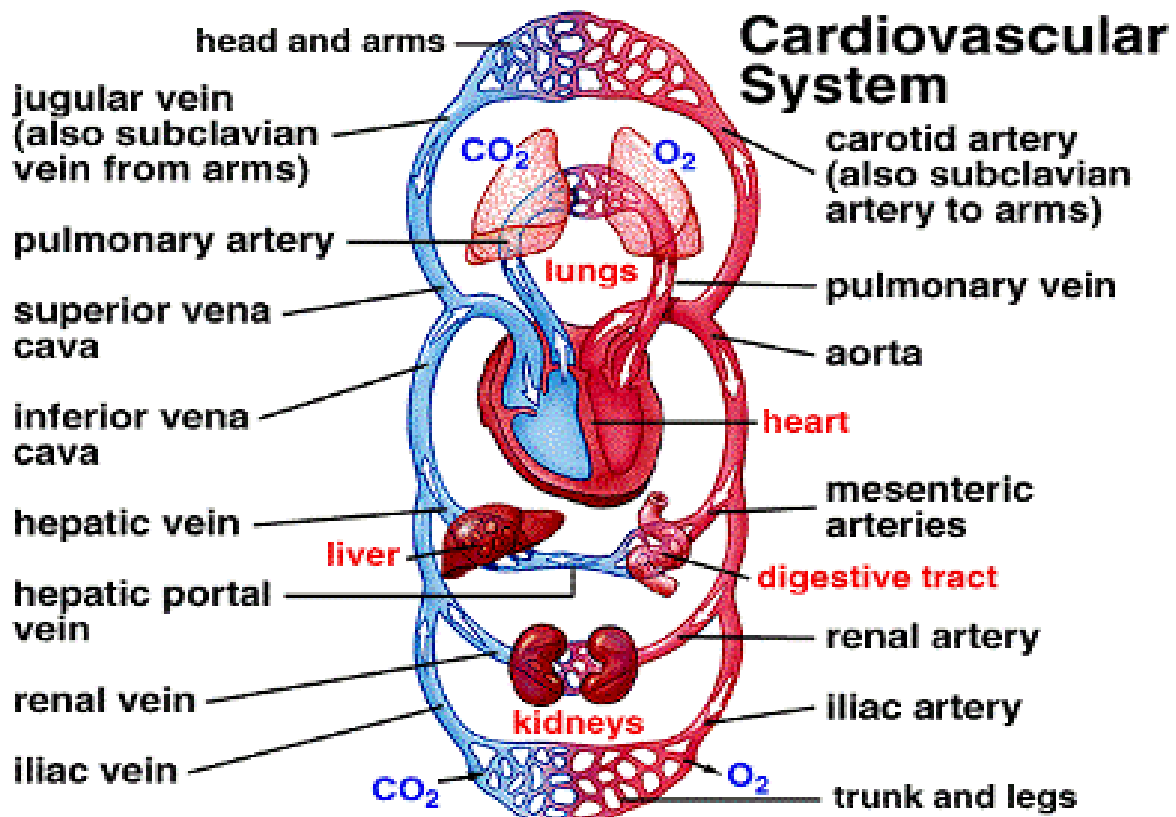
**Book page 21**

**Objective:** To describe the circulatory system of humans

**Tutor web link:** <https://youtu.be/R8Nb2LP2cCw>

**Understanding:**

- Human circulatory system is **double circulatory system**.
- Heart pumps blood to all parts of our body and the arteries helps in this transportation of blood to different body parts.
- The walls of left ventricle are much **thicker** than the walls of right ventricle because left ventricle pumps harder to push blood to all parts of the body.
- The arteries which provide blood to the liver is **hepatic artery**, **renal artery** provide blood to kidneys and blood passes from the heart to the lungs through **pulmonary artery**.



### Home Assignment

Tutor web link: <https://youtu.be/sMBIGTwQ9Dc>

**Question 1** **Encircle the correct option**

- Blood passes from the heart to the lungs through the:  
(A) pulmonary vein (B) pulmonary artery (C) aorta (D) renal artery
- The human circulatory system is a \_\_\_\_\_ circulatory system.  
(A) Single (B) double (C) triple (D) none of these

**Question 2** **Fill in the blanks**

- The walls of left ventricle are much \_\_\_\_\_ then the walls of right ventricle.
- The artery which provides blood to liver is named as \_\_\_\_\_ artery.

**Question 3** **Write answers of the questions on the lines below**

- **What is difference between pulmonary circuit and systemic circuit?**  
**Answer:** The **pulmonary circuit** is the portion of the circulatory system which carries deoxygenated blood away from the right ventricle, to the lungs, and returns oxygenated blood to the left atrium and ventricle of the heart. The **systemic circuit** is that part of your circulatory system that carries blood away from your heart, delivers it to most of your organs and tissues, and returns it to your heart again.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- **Why is it not correct to say that all arteries carry oxygenated blood and all veins carry deoxygenated blood?**

**Answer:** All arteries carry oxygenated blood, except for the pulmonary artery which carries deoxygenated blood from the heart to the lungs. All veins carry deoxygenated blood, except for the pulmonary vein which carries oxygenated blood from the lungs to the heart.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Activity

**Scientist: ibn-al-Nafis**

**Web link:** <https://www.youtu.be/jbaYGmhUi4Q>



**Ala-al-Din, Abu-al-Hassan, Ali-ibn, Abi-Hazam-al-Qarshi known as ibn-al-Nafis. There area of work included medicines, surgery, physiology, anatomy, biology and philosophy. He is mostly famous for being the first to describe the pulmonary circulation of the blood. He gave theories of blood circulation.**

- **Write down about the achievements of ibn-al-Nafis.**

\_\_\_\_\_  
\_\_\_\_\_



Date: 08-08-2020

Day: Saturday

## CHAPTER 3 THE HUMAN TRANSPORT SYSTEM

**Topic: Arteries, veins and capillaries**

**Book page 22-23**

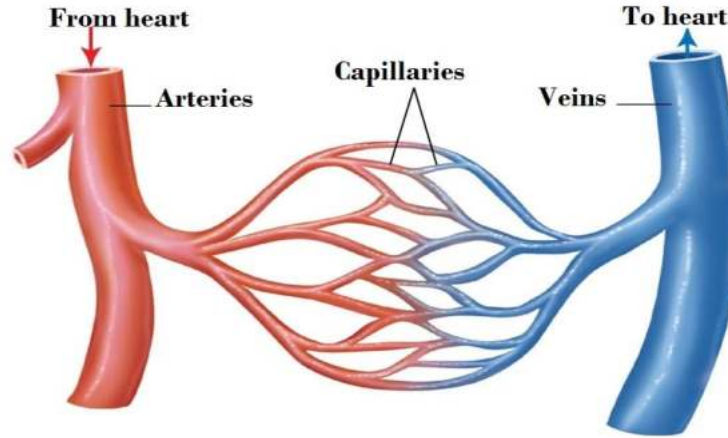
**Objective:** To examine the structure and function of the blood vessels

**Tutor web link:** <https://youtu.be/itxR8sXICsk>

**Understanding:**

- **Arteries:** Arteries are the blood vessels that carry blood **away from the heart**. Bright red blood flows in **artery**. Most of the arteries carry oxygenated blood, but pulmonary arteries carry deoxygenated blood to the lungs. The blood vessels which bear highest pressure are **arteries**. Blood flow steadily in **arteries**.
- **Capillaries:** Capillaries are the smallest blood vessels in the body. They are so small that red blood cells flow through them one cell at a time. Food and oxygen from the blood of capillaries diffuse into the cells. Waste materials and carbon dioxide from the cells diffuse into the blood of capillaries.
- **Veins:** Veins are the blood vessels that carry blood **towards the heart**. Most of the veins bring deoxygenated blood back to the heart, but pulmonary veins bring oxygenated blood from the lungs to the heart.

Arteries	Capillaries	Veins
Carry blood from the heart	Link arteries to veins	Carry blood to the heart
Have thick walls of muscles and elastic fibres	Walls are one cell thick.	Fairly thick walls which contain some elastic fibres
Valves present only where arteries leave the heart	No valves	Valves in the long veins of the arms and legs
Blood flows in pulses	Blood flows <u>steadily</u> .	Blood flows steadily.
Blood is under high pressure	Blood pressure changes.	Blood is under low pressure.
Blood is bright red and contains oxygen except pulmonary artery	Blood is losing oxygen and gaining carbon dioxide.	Blood is dull red and contains very little oxygen (except in the pulmonary vein).



Date: 10-08-2020

Day: Monday

### Home Assignment

Tutor web link: <https://youtu.be/WcNbg7-xJS4>

#### Question 1

Encircle the correct option

- \_\_\_\_\_ carry blood towards heart.  
 (A) Vein                      (B) artery                      (C) aorta                      (D) capillary
- Bright red blood flows in  
 (A) Vein                      (B) artery                      (C) aorta                      (D) capillary

#### Question 2

Fill in the blanks

- The blood vessel which bears highest pressure is \_\_\_\_\_.
- Blood flow steadily in \_\_\_\_\_.

#### Question 3

Write answers of the questions on the lines below

- Write difference between arteries, veins and capillaries.

**Answer:** understand it in the table above and write its answer

**Answer:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

- **Why does blood spurt out of a damaged artery?**

**Answer:** Blood spurts from a damaged artery because it is under high pressure, and the spurts are caused by each beat, or pumping action, of the heart.

**Answer:** \_\_\_\_\_  
 \_\_\_\_\_

**Activity:**

- **Write down the three differences between the following blood vessels.**

No.	Arteries	Capillaries	Veins
1.			
2.			
3.			

**Date:** 11-08-2020

**Day:** Tuesday

**CHAPTER 3 THE HUMAN TRANSPORT SYSTEM**

**Topic:** What is blood?

**Book page** 23-25

**Objective:** To explain the composition of blood tissue

**Tutor web link:** <https://youtu.be/RjFA-CGHcG0>

**Understanding:**

- Blood is a kind of **tissue**.
- Blood consists of four main parts: **red blood cells, white blood cells, platelets** and **plasma**.

### Red blood cells:

- Most of the cells in our blood are red blood cells.
- The work of the red blood cells is to **carry oxygen**.
- The red blood cells contain a pigment called **hemoglobin**.
- The main function of hemoglobin is to **carry oxygen around the body**.
- Red blood cells do not have **nucleus**.
- About 200 RBCs die and replaced every day.

## Red blood cells

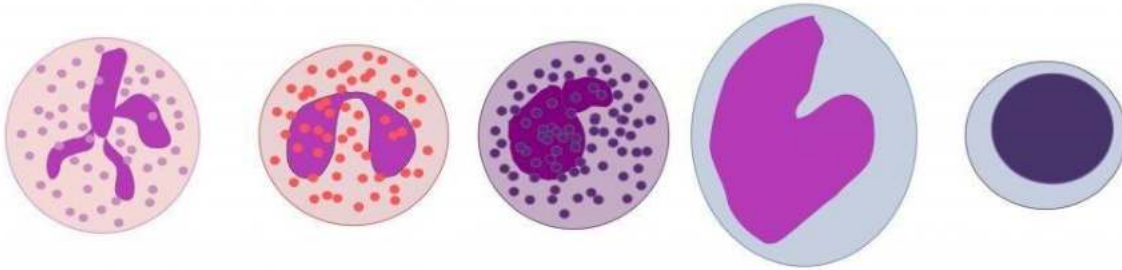


### White blood cells:

- There are several types of white blood cells.
- Each type has different shaped nucleus and each **WBCs** is twice as big as RBCs.
- The work of the white blood cells is to protect against **germs**.
- WBCs help to **defend** the body against diseases.
- They **WBCs** fight infection and diseases.

- Some WBCs produce antibodies. Antibodies kill the germs.

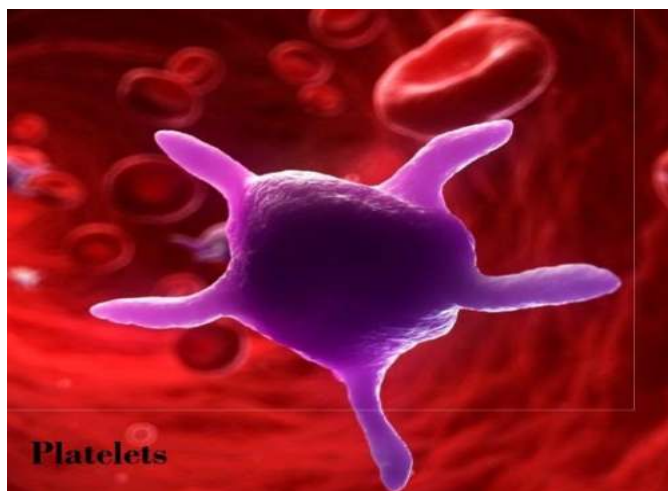
# White blood cells



neutrophil eosinophil basophil monocyte lymphocyte

## Platelets:

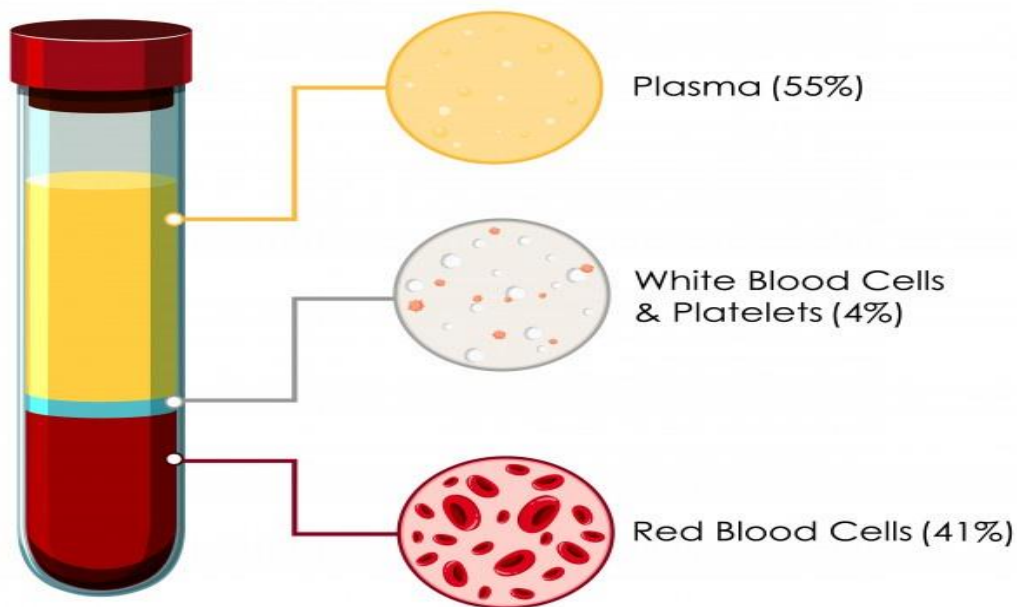
- Platelets are very small cell fragments made in the bone marrow.
- There are 250,000 platelets in  $1\text{mm}^3$  of blood.
- Each platelet has a sticky membrane but no nucleus.
- The work of the **platelets** is to **clot the blood** if you cut yourself.



## Plasma:

- The liquid part of the blood is called **plasma**.
- The red and white cells and platelets float on it.
- Plasma is the part of the blood which is mainly **water**.
- The **plasma** is a watery liquid that contains dissolved food, mineral salts etc.

# COMPOSITION OF BLOOD



Date: 12-08-2020

Day: Wednesday

## Home Assignment

Tutor web link: <https://youtu.be/PmIN00sUCWU>

### Question 1

Encircle the correct option

- The main function of hemoglobin in the red blood cells is to:  
(A) Help the blood to clot  
(B) Distribute heat

(C) Destroy bacteria  
body

(D) Carry oxygen round the

- What is the work of the red blood cells?

(A) To carry oxygen

(B) to prevent disease

(C) To clot the blood

(D) to carry dissolved food

- What is the work of the platelets?

(A) To protect against disease

(B) to clot the blood

(C) To carry hormones

(D) to carry oxygen

- What is the work of the white blood cells?

(A) To clot the blood

(B) to carry oxygen

(C) To carry food

(D) to protect against germs

- Which part of the blood is mainly water?

(A) Red blood cells

(B) white blood cells

(C) platelets

(D) plasma

- Which cells of the body do not have a nucleus?

(A) Red blood cells

(B) white blood cells

(C) skin cells

(D) epithelial cells

## Question 2

### Fill in the blanks

- Blood is a kind of \_\_\_\_\_. It is made up of four main parts.
- There are the red blood cells, white blood cells \_\_\_\_\_ and plasma.
- The \_\_\_\_\_ is a watery liquid that contains dissolved food, mineral salts etc.
- The red blood cells contain a pigment called \_\_\_\_\_.
- The \_\_\_\_\_ fight infection and disease.
- The \_\_\_\_\_ clot the blood if you cut yourself.

## Question 3

### Write answers of the questions on the lines below

- **What are the four parts of the blood? Describe what each of them does.**

**Answer:** The four main parts of the blood are: red blood cells which carry oxygen, white blood cells which help to kill germs and produce substances called antibodies. Plasma is

the liquid part of the blood. The plasma also carries carbon dioxide, urea, hormones, proteins, one called fibrinogen, which helps the blood to clot. There are platelets in the blood. These cell fragments help to seal wounds by clotting the blood.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- **Name four of the materials carried by the blood.**

**Answer:** The materials carried by the blood include dissolved food, water, oxygen, carbon dioxide, urea and hormones.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_

- **What does hemoglobin do in the body?**

**Answer:** Hemoglobin is a protein combined with iron which enables the red blood cells to carry oxygen.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_

**Activity:** Write functions of different parts of the blood in the table below

Parts of blood	Function
Red blood cells	
White blood cells	
Platelets	



Date: 13-08-2020

Day: Thursday

## CHAPTER 3 THE HUMAN TRANSPORT SYSTEM

**Topic: Diseases of the transport system**

**Book page 26-27**

**Objective:** To explain some disorders of the blood system

**Tutor web link:** <https://youtu.be/B TV9FvEtxs>

**Understanding:**

Diseases of the transport system kill more people than any other disease.

**Anaemia:** it occurs due to **iron deficiency**. Iron is an important part of hemoglobin.

- The skin color becomes yellow due to iron deficiency.
- It is treated with tablets containing iron salts.



**Skin colour becomes yellow due to anaemia**

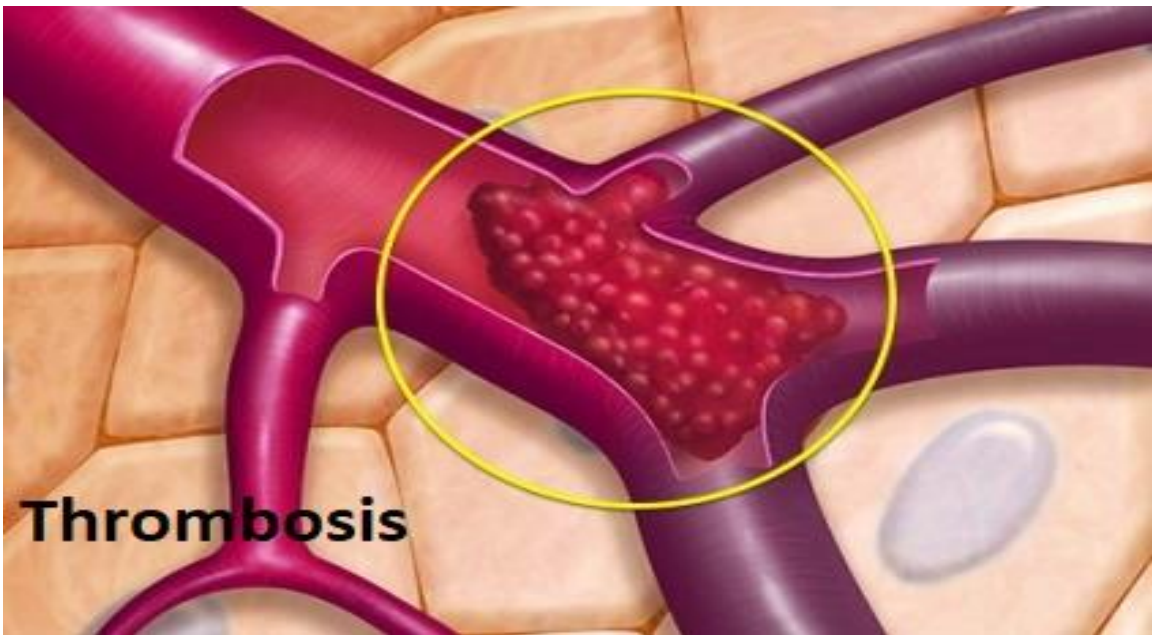
**Haemophilia:** it is a disease that may pass on by parent to their child.

- The haemophiliac cannot make the chemicals needed to make the blood clot and heal wounds. Even a small cut may bleed dangerously.

### Thrombosis:

- **Thrombosis** is the formation of a blood clot, known as a thrombus, within a blood vessel.

A thrombosis stops the passage of blood and supply of oxygen to the **heart**.



### Varicose veins:

- It occurs when the valves in the veins of the legs do not work properly.
- The veins swell and become varicose veins.
- The vein may have to be taken out of the leg.

**The veins of the leg swell and become varicose veins**

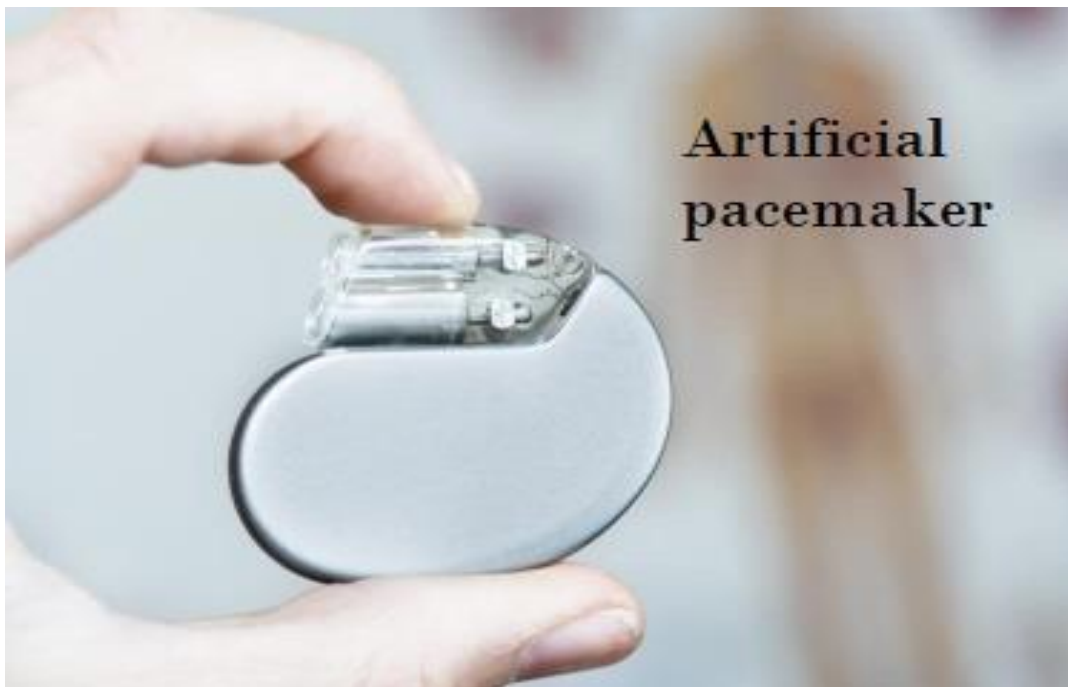


**Leaking of heart valves:**

- It occurs when the valves of the heart do not shut properly.

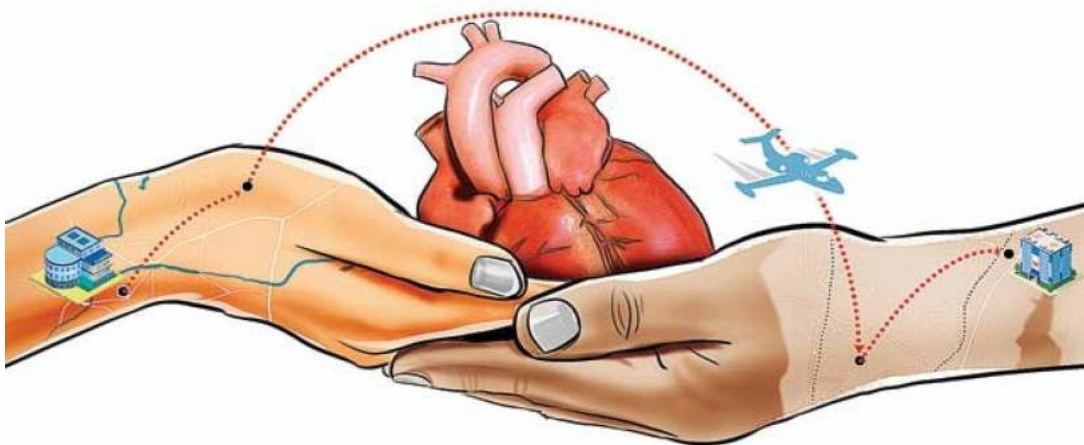
**Faulty pacemaker:**

- It is a condition that occurs when the natural pacemaker of the heart stops keeping a steady pulse.
- The pacemaker is a group of cells in the right atrium of the heart these produce a small pulse of electricity (about 70 times a minute).
- Today a person who has a faulty pacemaker can have a small artificial pacemaker that is fitted with a small battery inserted under a skin.

**Heart transplant:**

- The heart transplant patient is connected to a heart lung machine. This collect the blood before it reaches the heart oxygenates it and circulates.

- It to the rest of the body the patient chest is cut open and the new heart is stitched in place.
- The blood vessels are reconnected to the heart and the new heart takes over its job of pumping blood all around the body. It takes about six months for a patient to recover fully.



## Home Assignment

Tutor web link: <https://youtu.be/13PY-R3Rn80>

### Question 1

Encircle the correct option

- The iron deficiency is called  
A) Anemia                                      (B) hemophilia                      (C) asthma              (D) varicose vein
- A thrombosis stops the passage of blood and supply of oxygen to the \_\_\_\_\_.  
A) Heart                                      (B) liver                                      (C) stomach              (D) kidney

### Question 2

Write answers of the questions on the lines below

- **Why does lack of iron in the diet sometimes lead to anaemia?**

**Answer:** The body may not be able to make enough hemoglobin and so the blood will not be able to carry sufficient oxygen and the person will lack energy.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_

- **What is pacemaker and when it is needed?**

**Answer:** A pacemaker is a device which produces a small but regular pulse of electricity to the heart to keep it beating steadily. It is needed by a person whose natural pacemaker is faulty.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- **What are the advantages and disadvantages of heart transplant?**

**Answer:** A heart transplant is a life-saver for someone with heart failure. However, it is very difficult to find a replacement heart, usually from someone who has died in an accident, which the patient's own body will not reject. A major operation is needed to transplant a heart and special drugs have to be taken for the rest of the patient's life to reduce the risk of the body rejecting the new heart. Heart transplants lengthen the life of someone who would otherwise die from a seriously faulty heart.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- **What are varicose veins? What cause their development?**

**Answer:** Varicose veins are veins that have swollen because the valves in the legs do not work properly. Blood collects in them instead of making its way back to the heart.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_

Date: 17-08-2020

Day: Monday

## CHAPTER 3 THE HUMAN TRANSPORT SYSTEM

### Assessment

Marks: 20

**Objective:** To evaluate the performance of students

#### Question 1

Encircle the correct option

/5

- Which part of the heart has the thickest walls?  
(A) Left atrium                      (B) right atrium                      (C) left ventricle                      (D) right ventricle
- To where does the aorta carry blood?  
(A) The heart                      (B) the lungs                      (C) towards the body                      (D) the veins
- Which side of the heart carries oxygenated blood?  
(A) The right                      (B) the left                      (C) neither side                      (D) both sides
- The iron deficiency is called  
A) Anemia                      (B) hemophilia                      (C) asthma                      (D) varicose vein
- Blood passes from the heart to the lungs through the:  
(A) pulmonary vein                      (B) pulmonary artery                      (C) aorta                      (D) renal artery

#### Question 2

Fill in the blanks

/5

- The backward flow of blood is controlled by \_\_\_\_\_.
- Blood takes oxygen from \_\_\_\_\_.
- The walls of left ventricle are much \_\_\_\_\_ then the walls of right ventricle.
- The artery which provides blood to liver is named as \_\_\_\_\_ artery.
- The blood vessel which bears highest pressure is \_\_\_\_\_.

**Question 3**

**Write answers of the questions on the lines below**

**/10**

- **Write difference between arteries, veins and capillaries**

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- **Name four of the materials carried by the blood.**

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- **Why does lack of iron in the diet sometimes lead to anaemia?**

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- **All arteries carry oxygenated blood except pulmonary artery. Why?**

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- **What is the function of human heart?**

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## CHAPTER 4 Transport in plants

### Table of contents:

No.	Contents	Objectives
1	What is transport?	To introduce that what is transport and how it takes place in the plants
2	The importance of phloem and xylem	To explain the role of xylem and phloem in the transport system of plants
3	The structure of plant stem and plant root	To explain the absorption of water by plant roots and transfer of water through plant stem
4	The entrance of water and mineral salts into the plant	To illustrate how the roots of plants are adapted to allow the movement of water and gases.
5	Transpiration	To examine and explain the functions of stomata
6	The transport of food and the transport of gases	To illustrate how the stem and leaves of plants are adapted to allow the movement of water and gases.
7	Questions/Answers	To enhance student learning ability
8	Assessment	To evaluate the performance of students

Date: 18-08-2020

Day: Tuesday

## CHAPTER 4 Transport in plants

Topic: What is transport?

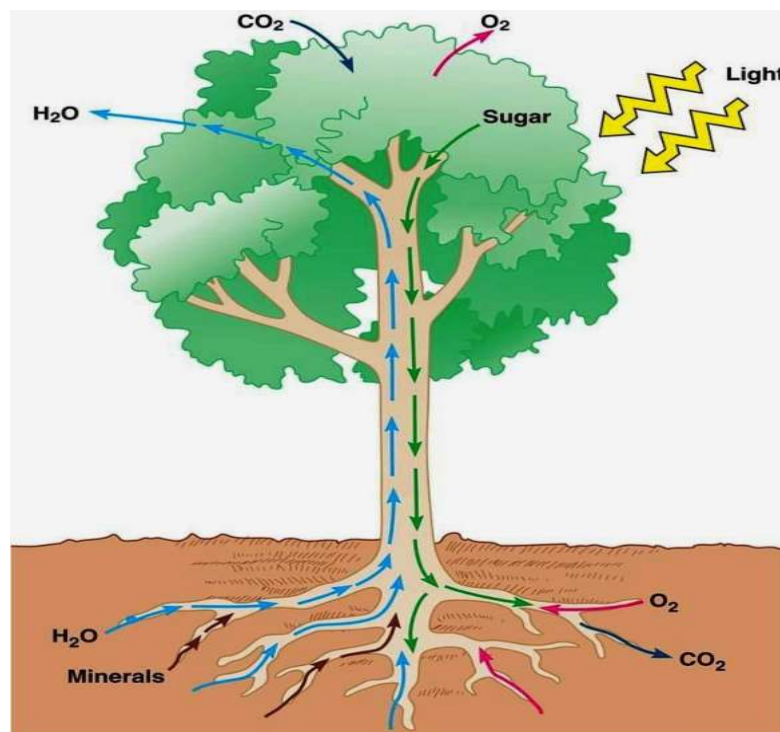
Book page 30

Objective: To introduce that what is transport and how it takes place in the plants

Tutor web link: <https://youtu.be/VFiHM5L3oGE>

Understanding:

- Green plants need water and carbon dioxide for photosynthesis.
- Chlorella is a single-celled **algae** and Simple single-celled organisms move materials in and out of their bodies by **diffusion**.
- Larger plants are made up of **many cells** and have two transport systems. **Carbon dioxide** gas is essential for photosynthesis. Plants have tissues to **transport** water, nutrients and minerals.
- Xylem transports water and mineral salts from the roots up to other parts of the plant.
- Phloem transports sucrose between the leaves and other parts of the plant.



## Home Assignment

Tutor web link: <https://youtu.be/aBYTZyDQMEI>

### Question 1

Encircle the correct option

- Larger plants are made up of  
(A) One cell            (B) two cells            (C) many cells            (D) none of these
- Which gas is essential for photosynthesis?  
(A) Oxygen            (B) carbon dioxide            (C) nitrogen            (D) helium

### Question 2

Fill in the blanks

- Chlorella is a single-celled \_\_\_\_\_.
- Simple single-celled organisms move materials in and out of their bodies by \_\_\_\_\_.

### Question 3

Write answers of the questions on the lines below

- **Define diffusion.**

**Answer:** Diffusion is the movement of a substance from an area of high concentration to an area of low concentration.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_

- **What is the need of transport system in plants?**

**Answer:** plants need a transport system to move food, water, and minerals around because plants do not have a circulatory system.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Activity

**Scientist: Joseph Banks**

**Web link:** <https://youtu.be/BALdOdoNqlc>



Sir Joseph Banks (24 February 1743 – 19 June 1820) was an English naturalist and botanist. He is credited for bringing 30,000 plant specimens home with him; amongst them, he discovered 1,400. Banks was a major supporter of the internationalist nature of science, being actively involved both in keeping open the lines of communication with continental scientists during the Napoleonic Wars, and in introducing the British people to the wonders of the wider world.

**Write down the discoveries of Joseph Banks**

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**Date:** 20-08-2020

**Day:** Thursday

## **CHAPTER 4 Transport in plants**

**Topic:** The importance of phloem and xylem

**Book page** 30-31

**Objective:** To explain the role of xylem and phloem in the transport system of plants

**Tutor web link:** <https://youtu.be/a94a6XBls5A>

**Understanding:**

- Larger plants have two transport systems.
- They have tissues to **transport** water, nutrients and minerals.
- Xylem transports water and mineral salts from the roots up to other parts of the plant.

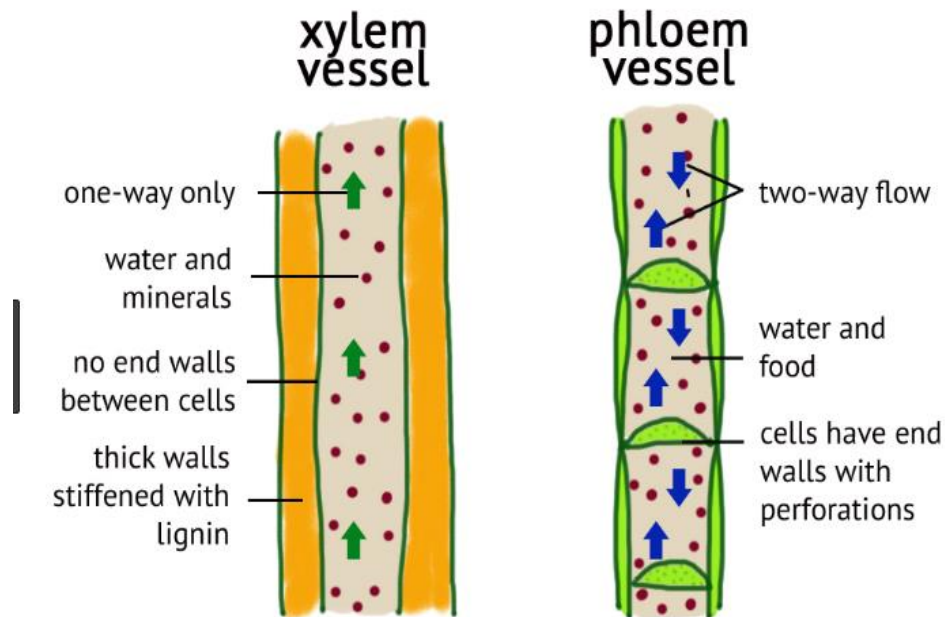
- Phloem transports glucose (food) between the leaves and other parts of the plant.

### Structure of xylem and phloem:

- Xylem consists of long empty dead cells which form tiny tubes called vessels.
- Phloem consists of living cells arranged end to end unlike xylem vessels.
- These cross walls in phloem are called **sieve plates** .while the tubes are called sieve tubes.
- **Companion cells** are essential for the movement of **food**.
- Xylem cells are **dead** hollow cells.
- Phloem cells are **living** cells.

### Functions of xylem and phloem:

- Water and mineral salts are transported by **xylem tubes** from the root to the leaves. This process is called transpiration.
- The process by which foods made by photosynthesis are moved in a plant is called **translocation**.
- The xylem and phloem do not transport Oxygen and carbon dioxide.



## Home Assignment

Tutor web link: <https://youtu.be/27AhtQf8occ>

### Question 1 **Encircle the correct option**

- Water and minerals are transported by  
(A) Xylem tubes                      (B) phloem vessels                      (C) leaves                      (D) stem
- Cross walls in phloem are called  
(A) Xylem tubes                      (B) companion cells                      (C) sieve tubes                      (D) sieve plates
- The process by which foods made by photosynthesis are moved in a plant is called:  
(A) Transpiration                      (B) translocation                      (C) transference                      (D) transmission

### Question 2 **Fill in the blanks**

- Xylem cells are dead hollow cells while phloem cells are \_\_\_\_\_ cells.
- Companion cells are essential for the movement of \_\_\_\_\_.

### Question 3 **Write answers of the questions on the lines below**

- **What are the names of two sets of tubes which make up the transport system of a plant?**

**Answer:** Phloem and xylem

**Answer:** \_\_\_\_\_

\_\_\_\_\_

- **Write the function of xylem and phloem vessels?**

**Answer:** Xylem transports water and mineral salts from the roots up to other parts of the plant. Phloem transports glucose (food) between the leaves and other parts of the plant.

**Answer:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Activity: Fill in the table below:

Tissues	Functions
Xylem	
Phloem	

Date: 22-08-2020

Day: Saturday

## CHAPTER 4 Transport in plants

Topic: The structure of plant stem and plant root

Book page 32

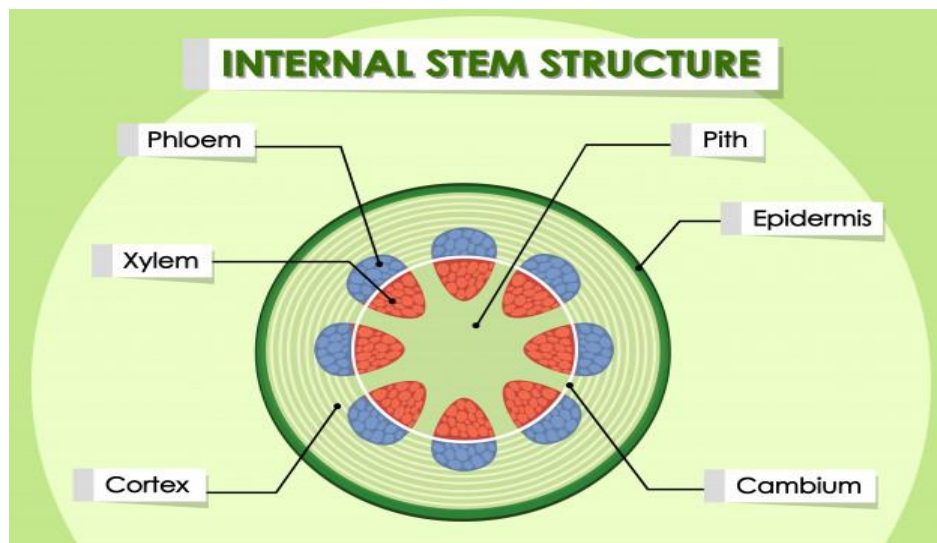
**Objective:** To explain the absorption of water by plant roots and transfer of water through plant stem

**Tutor web link:** <https://youtu.be/Ec MTwucNmQ>

**Understanding:**

**The structure of plant stem:**

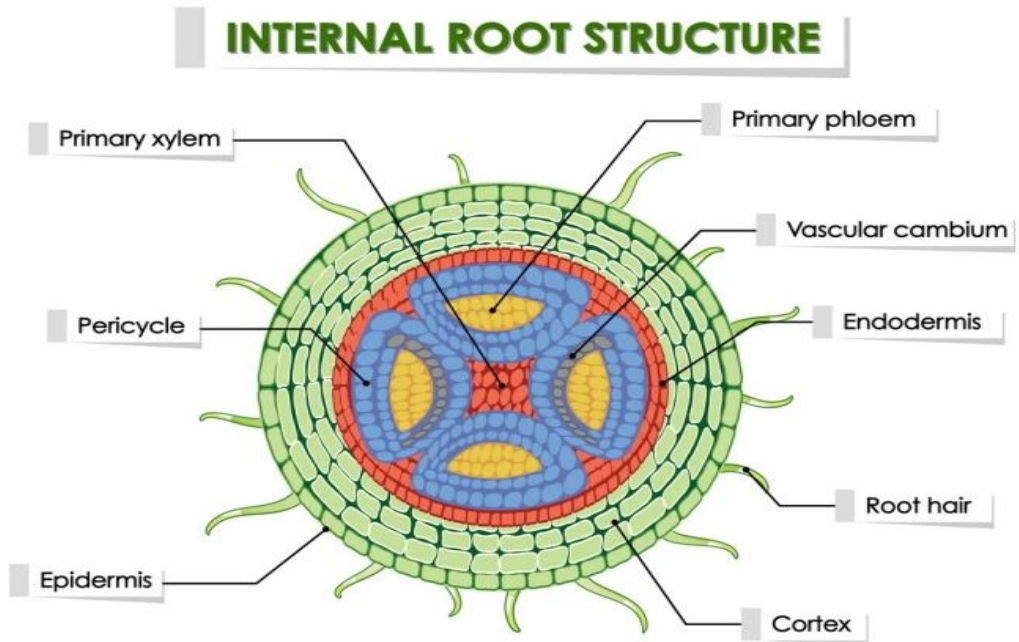
- The xylem and phloem cells are arranged in **veins** or vascular bundles in the stem and leaves. In the stem the vascular bundle are arranged in a circular pattern. Just beneath the outer layer of cells or epidermis. Cells which are full of water and rigid are **turgid**.



## The structure of plant root:

Function of xylem and phloem:

- The plant roots have to be able to resist the pulling or stretching force when the stem above is blown about by the wind. Xylem carries water and mineral salts from the root to the stem. Phloem brings food from the stem to the **root**, providing the root cells with all the food substances they need for their energy and growth.
- Roots absorb water through **root hairs**.
- Food is transported in the phloem as **sucrose**.



Date: 24-08-2020

Day: Monday

## Home Assignment

Tutor web link: <https://youtu.be/mOjlx1xMU6c>

### Question 1

Encircle the correct option

- Cells which are full of water and rigid are said to be:  
(A) Support cells      (B) flaccid      (C) turgid      (D) none of these
- Roots absorb water through:



(A) Epidermal hairs    (B) root hairs    (C) root xylem    (D) root phloem

- Food is transported in the phloem as:

(A) Glucose    (B) sucrose    (C) fats    (D) amino acids

**Question 2                      Fill in the blanks**

- Phloem brings food from the stem to the \_\_\_\_\_.
- The xylem and phloem cells are arranged in \_\_\_\_\_ or vascular bundles in the stem and leaves.

**Question 3                      Write answers of the questions on the lines below**

- **What is the name of the process by which water enter the root hairs?**

**Answer:** Osmosis

**Answer:** \_\_\_\_\_

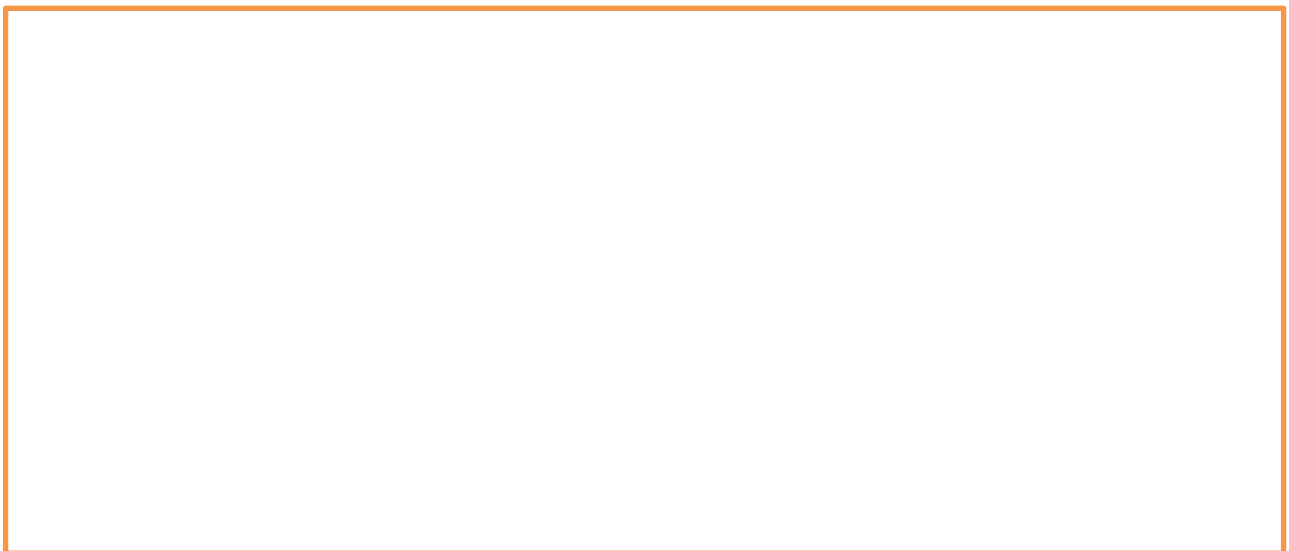
- **Describe the arrangement xylem and phloem in plant stem and leaves.**

**Answer:** They are arranged in veins or vascular bundles in the stem and leaves.

**Answer:** \_\_\_\_\_

**Activity:**

- **Draw the structure of plant stem and plant root and label its different parts. Book page 31-32**



Date: 25-08-2020

Day: Tuesday

## CHAPTER 4 Transport in plants

**Topic:** The entrance of water and mineral salts into the plant

**Book page** 33

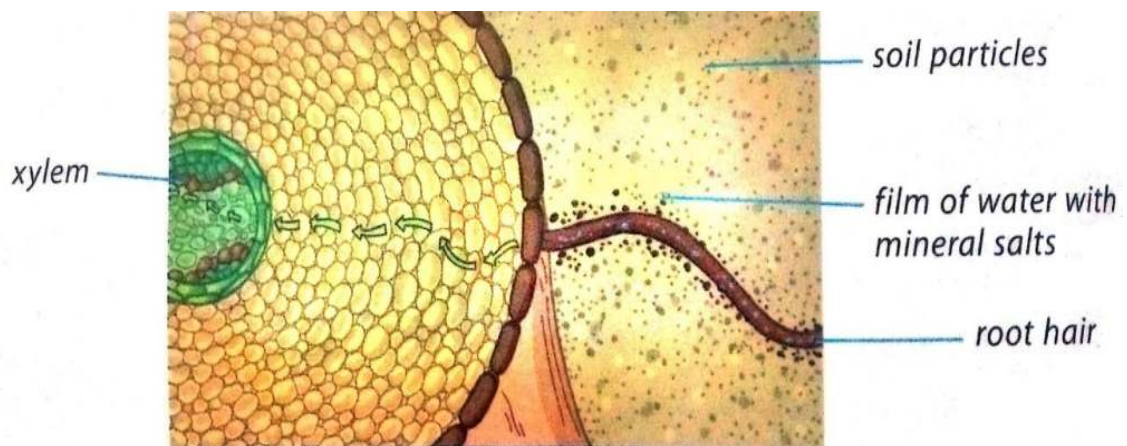
**Objective:** To illustrate how the roots of plants are adapted to allow the movement of water and gases.

**Tutor web link:** <https://youtu.be/-khu6HpAmYg>

**Understanding:**

**Water enters the plant**

- At the very tip of a root are several layers of cells which form the root cap.
- The root caps are thousands of tiny tube like growths called root hair.
- In the soil the root hairs grow between the soil particles. The root hairs take up water from the soil. This process is called osmosis.
- There is a concentrated solution of sugars, mineral salts, and other substances. This solution makes up **cell sap**.
- The plant tissue which allows water and mineral salts to pass from the roots to the leaves is **xylem**.



**How water and mineral salts move from the soil into the root of a plant**

### Mineral salts enter the roots

- Mineral salts are absorbed into cells by **active transport**.
- **Diffusion** is the spreading out of a substance from an area of high concentration to an area of low concentration.
- Sap rises in a plant because of both the **root pressure and transpiration pull**.
- The special proteins called **enzymes** are also involved in active transport.
- As a result of processes of osmosis and diffusion, the water and dissolved mineral salts in the roots move from cell to cell, until they reach the xylem. The water and dissolved mineral salts then travel up the xylem vessels of root stems and leaf veins.
- Food is transported in the phloem as **sucrose**.

Date: 26-08-2020

Day: Wednesday

### Home Assignment

Tutor web link: <https://youtu.be/mSqLPYZPrwA>

#### Question 1

#### Encircle the correct option

- The plant tissue which allows water and mineral salts to pass from the roots to the leaves is:  
(A) Phloem                      (B) xylem                      (C) epidermis                      (D) cuticle
- Mineral salts are absorbed into cells by:  
(A) Osmosis                      (B) diffusion                      (C) active transport                      (D) air pressure
- Food is transported in the phloem as:  
(A) Glucose                      (B) sucrose                      (C) fats                      (D) amino acids
- Sap rises in a plant because of:  
(A) Root pressure                      (B) transpiration pull                      (C) both (A) and (B)                      (D) osmosis

#### Question 2

#### Fill in the blanks

- The special proteins called \_\_\_\_\_ are also involved in active transport.

- There is a concentrated solution of sugars, mineral salts, and other substances. This solution makes up \_\_\_\_\_.

**Question 3**

**Write answers of the questions on the lines below**

- **What is cell sap?**

**Answer:** Concentrated solution of sugars, mineral salts, and other substances. This solution is called cell sap.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_

- **Explain how the water and mineral salts enter the roots?**

**Answer:** water enters in root hairs through osmosis. Other mineral salts enter the roots by **active transport**. As a result of processes of **osmosis, active transport** and **diffusion** the water and dissolved mineral salts enter in the roots.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date: 27-08-2020

Day: Thursday

## CHAPTER 4 Transport in plants

Topic: Transpiration

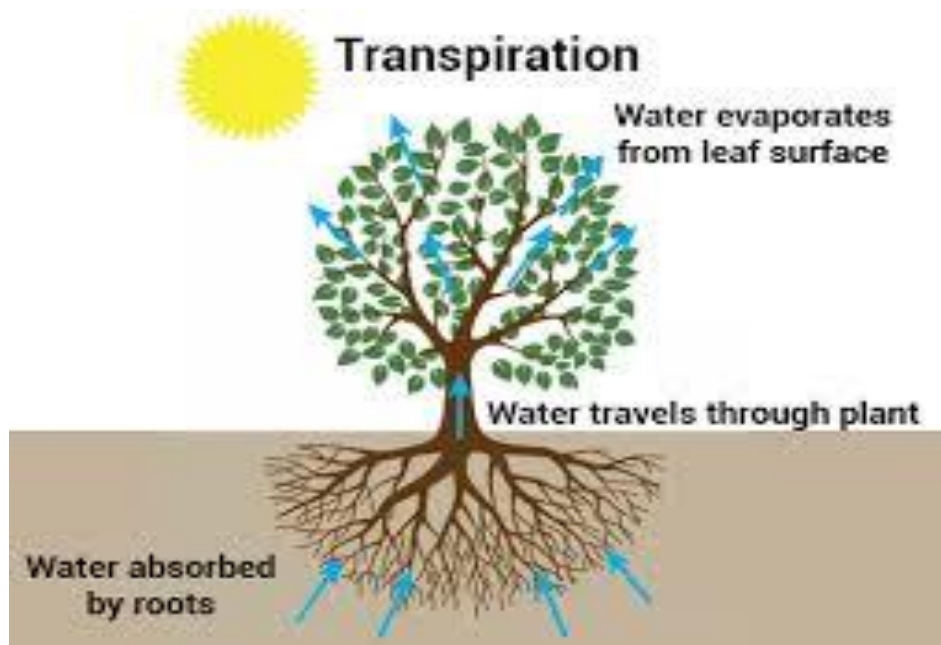
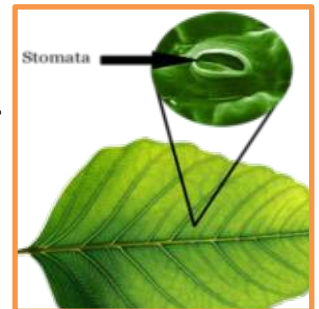
Book page 35-36

Objective: To examine and explain the functions of stomata

Tutor web link: <https://youtu.be/XPHPvZTn4hA>

Understanding:

- Water and dissolved mineral salts from the roots move very quickly through the xylem and up the stem and leaves. The process by which water is lost from the leaves of a plant is called **transpiration**.
- **Transpiration** takes place from the **above-ground parts of a plant**.
- Water evaporated from the leaves and diffuses out of the tiny pores, the **stomata**.
- Stomata open and close because of **water pressure** of the guard cells.
- Much of the transpiration from a plant takes place through the **stomata**.
- Stomata are present on **mostly lower** surface of leaves.
- A flow of water and dissolved mineral salts from the roots to the leaves, this flow is called the **Transpiration stream**.



Date: 28-08-2020

Day: Friday

## Home Assignment

Tutor web link: [https://youtu.be/pyvj0zml\\_lw](https://youtu.be/pyvj0zml_lw)

### Question 1 Encircle the correct option

- Stomata open and close because of:  
(A) The presence of valves (B) hormones  
(C) Water pressure of the guard cells (D) concentration of gases
- Much of the transpiration from a plant takes place through the:  
(A) Stomata (B) lenticels (C) epidermis (D) cuticle
- On which surface of leaves are stomata present?  
(A) Upper only (B) lower only (C) mostly upper (D) mostly lower
- The process by which water is lost from the leaves of a plant is called:  
(A) Condensation (B) decomposition (C) diffusion (D) transpiration
- Transpiration takes place from:  
(A) All parts of a plant (B) the leaves  
(C) The stem (D) the above-ground parts of a plant

### Question 2 Fill in the blanks

- Water evaporated from the leaves and diffuses out of the tiny pores called \_\_\_\_\_.
- A flow of water and dissolved mineral salts from the roots to the leaves, this flow is called the \_\_\_\_\_.

### Question 3 Write answers of the questions on the lines below

- Write difference between transpiration and transpiration stream.

**Answer: Transpiration** is the process of water movement through a plant and its evaporation from aerial parts, such as leaves, stems and flowers.

A flow of water and dissolved mineral salts from the roots to the leaves, this flow is called the **Transpiration stream**.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- **What are stomata? What is their role in transpiration?**

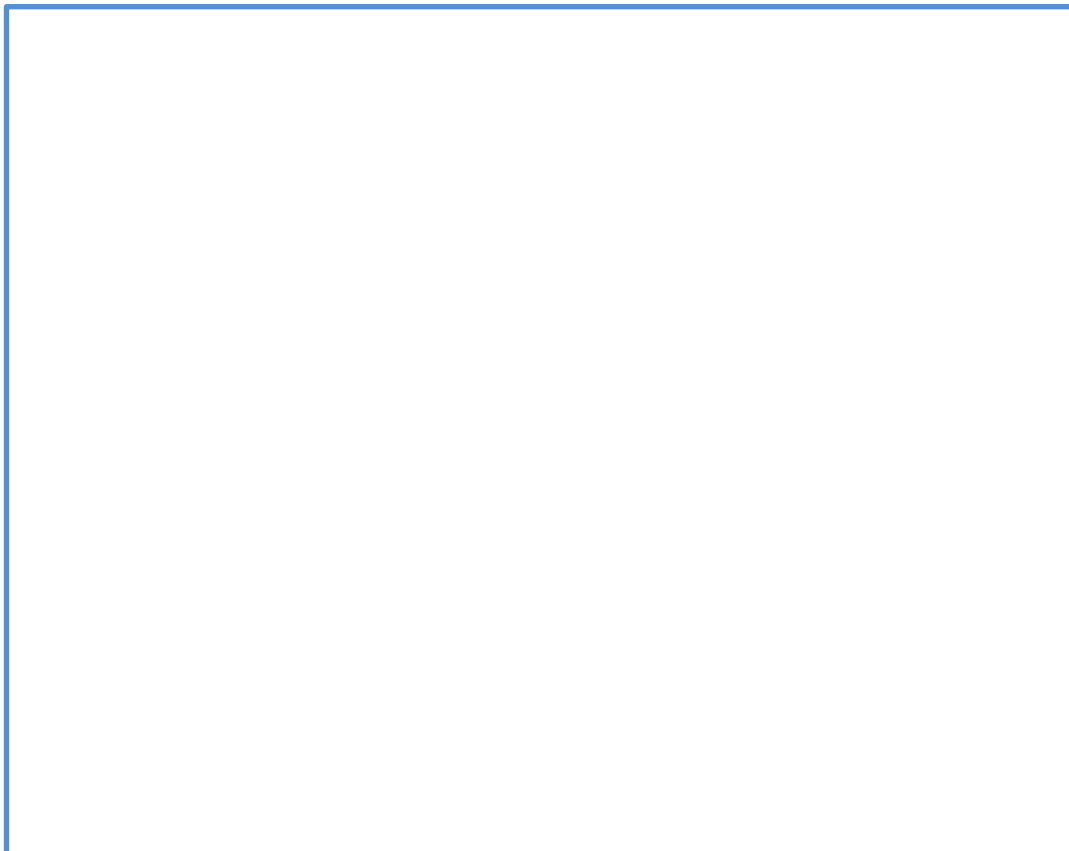
**Answer:** Tiny pores at the surface of leaves are called **stomata**. Stomata help in transpiration.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_

**Activity:**

- **Draw a tree and show the pattern of transpiration in it.**

**Book page 35**



## CHAPTER 4 Transport in plants

**Topic: The transport of food and the transport of gases**

**Book page 37**

**Objective:** To illustrate how the stem and leaves of plants are adapted to allow the movement of water and gases.

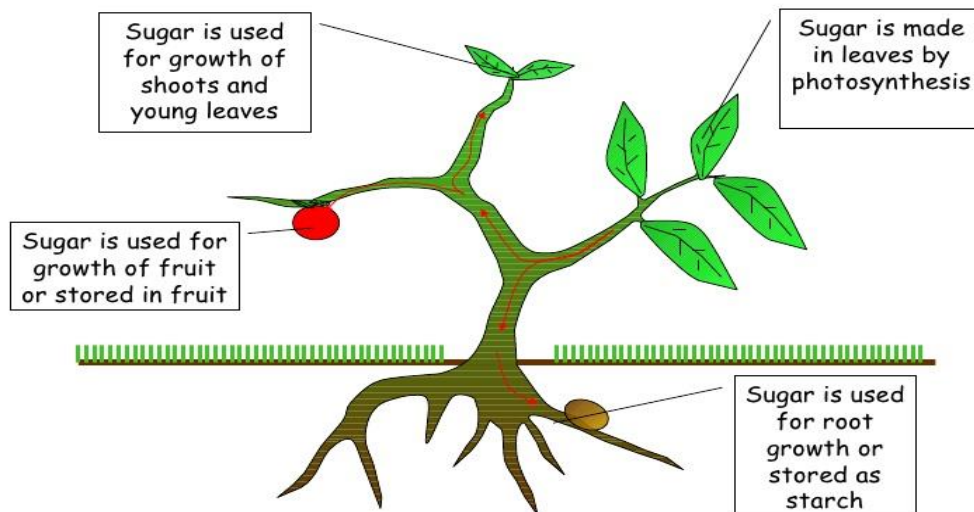
**Tutor web link:** <https://youtu.be/2blCfA7v-q0>

**Understanding:**

### The transport of food

- The food made in leaves by photosynthesis is carried away in the **sieve** tubes of the phloem.
- The Food may travel up or down the stem according to which parts of the plant need it at the time.

## Food Transport in Plants



### The transport of gases

- During respiration oxygen is taken in and carbon Dioxide is given out. At day time, rate of photosynthesis increase and the rate of respiration **decrease**.



- Carbon dioxide diffuses in while oxygen diffuses out.
- In the leaves and green stems of plants the gases enter and leave through the **stomata**. Then they diffuse between the air spaces between the cells to reach all parts of stem or leaf.
- There are no stomata in a woody stems of plants instead gases have to pass through small openings in the bark called **lenticels**.



### Home Assignment

Tutor web link: <https://youtu.be/RQOrosTV0dk>

#### Question 1

Encircle the correct option

- In the leaves and green stems of plants the gases enter and leave through  
 (A) Xylem                      (B) phloem                      (C) plant tissues                      (D) stomata
- At day time, rate of photosynthesis increase and the rate of respiration  
 (A) Also increase                      (B) decrease                      (C) becomes equal                      (D) zero

**Question 2**

**Fill in the blanks**

- There are no stomata in a woody stems of plants instead gases have to pass through small openings in the bark called \_\_\_\_\_.
- The food made in leaves by photosynthesis is carried away in the \_\_\_\_\_ tubes of the phloem.

**Question 3**

**Write answers of the questions on the lines below**

- **What is difference between stomata and lenticels?**

**Answer: stomata:** Tiny pores on the surface of leaves are called stomata.

**Lenticels:** Tiny pores on the surface of stem are called lenticels.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_

- **Why do you think the rate of transpiration is greatly reduced at night?**

**Answer:** The rate of transpiration is greatly reduced at night because light levels are lower, the stomata are closed, water is not needed for photosynthesis and the temperature is usually lower.

**Answer:** \_\_\_\_\_  
\_\_\_\_\_