

## **REVISION ON CHAPTER II (group A)**

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### **Complete**

1. Higher plants have specialized vascular tissues for..... these are..... and.....
2. In primitive plants different substances are transported by..... or .....
3. ....and..... tissues represent together vascular bundle in.....plants.
4. The xylem tissue is composed of.....and.....
5. The phloem tissue consists of.....and.....
6. The ruptured root epidermis is replaced by .....
7. The stem pericycle consists of.....and.....
8. Xylem tissue is composed of .....and .....
9. .... and..... are common forms of signification in protoxylem but and.....are common in metaxylem.
10. ....are pans (points) in the primary outer wall of xylem vessels and tracheids where these is no thickening by lignin.
11. ....is the force which pulls water column upwards through xylem vessels.

### **Tell why**

- 1) *Exodermis is absent in the stem cortex but present in the root cortex.*

.....

- 2) *Collenchyna cells can take part in photosynthesis.*

.....

- 3) *Xylem is a dead tissue.*

.....

- 4) *Ligin is added to the outer walls of xylem vessels.*

.....

- 5) *Water can ascend through xylem vessels by the effect of root pressure for a short I distance*

.....

- 6) *Root pressure theory cannot explain the ascent of water to high levels. I Water can ascend through pinus although in has no pressure.*

.....

- 7) *The walls of xylem vessels can imbibe water.*

8) *Imbibition has a limited effect on the ascent of sap through xylem vessels.*

9) *Capillarity is a weak secondary force for the ascent of sap through xylem.*

10) *There is a continuous water column in xylem vessels*

11) *The water column ascending through xylem vessels does not fall down by the effect of gravity.*

**Put (✓) or (X) and correct**

1. Primitive plants have vascular tissues.
2. The corners of sclerenchyma cells are thickened by cellulose.
3. Starch sheath is the outermost layer of the stem cortex.
4. Xylem can also acts as a supporting tissue.
5. Both the wall and the cavity of xylem vessel can imbibe water.
6. Cytoplasmic moves from one sieve tube element to another in the form of cytoplasmic strand (threads)
7. What causes the cytoplasm to flow from one sieve tube element to another cytoplasmic streaming.
8. Both lignin and cellulose are impermeable to water and salts.
9. The ends of xylem vessel elements are pitted and pointed.
10. Some plants have no root pressure.
11. Water ascends through the xylem vessel cavity by imbibition.
12. Cohesive force is the attraction between water molecules and xylem vessels molecules.

**Define:** absorption - diffusion - active transport- osmosis - guttation - imbibition -capillary action - capillary tube.

- **D r a w** a diagram for a T.S. in the root of a young dicot plant.

**Say the function of**

*Xylem tissue - phloem tissue - the stem epidermis - parenchyma - starch sheath -cambium - pith - xylem - Adhesive force between water and xylem molecules.*

- **Name she three tissue of the stem vascular bundle.**

## Compare between

1- *Protoxylem and metaxylem*

2- *xylem vessels and tracheids (use drawing).*

-Describe xylem vessel

- Name the Conditions that must be fulfilled in xylem vessels to increase transpiration pull.

## Give a scientific expression

1- The process in which chemical bonds in food molecules are broken down and energy stored in them is released.

2- Is the loss of water in the form of water vapour through stomata.

3- Is the force which causes the transfer of water from where it is a lot to where it is little.

4- A nucleated cell which accompany each sieve tube element in phloem tissue.

5- Are perforated cross plates (walls) which separate sieve tube elements from each other

6- The circular movement of the cytoplasm inside the plant cell.

Is the energy stored in chemical bonds.

## Complete

1) The amount of water decreases in the air chamber of the stoma due to.....

2) The mesophyll of the leaf consists of.....and..... tissue.

3) When a cell loses water, its water content..... but its ..... increases.

4) Sieve tube elements of phloem tissue contain .....without.....

5) Any energy needed by a living cell is obtained from.....

## Tell why

1. *Spongy cells surrounding the stomatal air chamber can pull water easily from their surrounding cells.*

2. *Each sieve tube element has a companion cell.*

3. *The transport of organic molecules through phloem delays when temp. or oxygen decreases.*

## Put (✓) or (x) and correct

1 - The energy released from the breaking down of bonds in food molecules is used directly by the living organism.

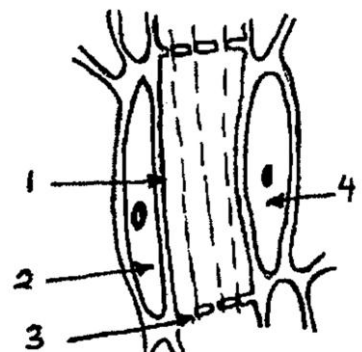
• Draw a diagram for ATP

Define : - *Oxidation in three ways*

What do the following exp. prove.

-Raper and Bohr exp.

- Mittler's experiment.



**Say the function of:**

*Phloem - companion cell of the sieve tube element*

*-Label the opposite drawing and name it. - State the function of each part.*

- Draw a diagram for a mitochondrion.

**Choose the correct answer:**

- 1) A continuous water column is formed inside xylem vessels due to (cohesion -adhesion - transpiration force - imbibition)
- 2) (Urea - Antigens - Globulin - Myosin) is a plasma protein.
- 3) The closure of the two valves between atria and ventricles causes (lubb - dupp) sound.
- 4) Red blood cells are produced in (bone marrow - spleen - pancreas - liver)
- 5) Hemoglobin is a plasma protein and its function is related to (clotting - digestion -respiration - metabolism).

**E X E R C I S E 1**

**Complete**

1. *in higher plant, xylem consists of.....and.....*
2. *There is a .....valve between right auricle and right ventricle but a ..... valve is between the left ones.*
3. *..... are blood vessels that carry blood to the heart but..... carry blood from the heart*
4. *The flow of water through the root xylem vessels causes a pressure called .....vessels explains.....phenomenon.*
5. *Some veins are provided with internal.....that allows the blood flow to the heart and prevents its.....*

**Join the two pairs**

1- Pericardium	- Transmit oxygenated blood to the heart
2- Purkinje tissue	- Transmits nerve impulse to ventricles walls
3- Sino - atrial node	- Protects the heart
4- Pulmonary veins	- Pace-maker of the heart
5- Aorta	- Carry deoxygenated blood to the heart
6- Vena cava	- Carry oxygenated blood to the tissues
7- Pulmonary artery	- Transmit deoxygenated blood from the heart

## Exercise 2

### 1- Match:-

Column (A)	Column (B)
a. Medullary rays	1. Consists of sieve - tubes and companion cells.
b. Xylem	2. Consists of collenchyma cells.
c. Phloem	3. Consists of chlorenchyma cells.
d. The stem epidermis	4. Are cells that join the cortex and the pith.
	5. Consist of tracheids and vessels.
	6. Formed of cells covered with a layer of cutin

### 1- Complete the following statements

- 1) Formation of starch in the green Plant leaves can be tested by.....
- 2) .....theory is the best one which explains the ascent of water through xylem vessels in large trees to very high levels.
- 3) .....is the parenchyma layer which surrounds the vascular bundle of the leaf
- 4) The phloem in higher plants consists of .....without..... and companion cells.
- 5) Phloem vessels are separated from each other by.....
- 6) ..... is the inner most layer of the cortex in the stem while is the innermost row of the root cortex.
- 7) The heart is surrounded by a membrane called.....
- 8) ..... is the pace-maker of the heart which exists in the..... atrium

### Give reasons for each of the followings:

- 1) Transfer of water to high levels in large -trees cannot be explained by the root pressure phenomenon.
- 2) We can distinguish two different sounds in the heart beat
- 3) Increase of heart rate when exerting more effort
- 4) Formation of blood clot when scratching the skin.
- 5) Blood never clots inside blood vessels in the normal conditions.
- 6) Imbibition has a limited effect in the ascent of sap.

### I- Match

Column (A)	Column (b)
a. Red blood cells. b. White blood cells. c. Platelets.	1. Distinguish human blood from others 2. Control the speed of pulses 3. Help in contraction and relaxation of the blood vessels 4. Responsible for the production of antibodies 5. Carry oxygen 6. Secrete a substance to help in blood clotting

- ❖ Explain how does the blood clot in man.
- ❖ What is the difference between the structure of each of the following: artery - vein - blood capillary

### EXERCISE 3

Choose the correct answer for each of the followings:

- A ..... sound is produced due to the closure of the two valves between the atria and ventricles
  - Short and high-pitched
  - Long and low-pitched
  - Long anhigh pitched
  - Short and low-pitched
- The function of haemoglobin in red blood cells is related to.....
  - Respiration
  - digestion
  - Blood clot
  - Metabolism
- The epidermis of the stem is coated with a layer of:
  - Suprein
  - cutin
  - lignin
  - Celulase
- Red blood cells are produced in the.....
  - spleen
  - bone marrow
  - pancreas
  - liver
- The vagus nerve
  - speeds heart beat
  - slows down heart beat
  - speeds respiration
  - slows down respiration

**Match:-**

<b>Column (A)</b>	<b>Column (b)</b>
<i>a. Pericycle</i> <i>b. Phloem</i> <i>c. Cambium</i> <i>d. The xylem</i>	<i>1. a layer which is coated with cutin</i> <i>2. is the innermost layer of the cortex</i> <i>3. consists of meristematic cells</i> <i>4. consists of sieve - tubes and companion cells</i> <i>5. surrounds the vascular bundle in the root</i> <i>6. lost its Protoplasmic contents</i>

**\* Compare between the red blood cell and the white blood cell concerning:**

**a) Shape and structure**

**b) Function**

**\*What are the forces which affect the ascent of sap in the plant and what is the role of each one?**

**\*Mention the experimental evidences which explain the role of the phloem in the transport of sap**

**-Match:-**

<b>Column (A)</b>	<b>Column (b)</b>
<i>a. Adhesive forces</i> <i>b. Transpiration pull</i> <i>c. Cohesive force</i> <i>d. Capillary action</i>	<i>1. Explains the ascent of water column upwards inside the xylem vessels for short distances</i> <i>2. Explain the connection of water column in xylem vessels</i> <i>3. Explain pulling of water upward in xylem vessels.</i> <i>4. Explains the flow of food substances in one direction</i> <i>5. Explains the ascent of water column inside the xylem vessels against gravity.</i>

### Exercise 4

**\*What is the importance of each of the following:**

**thromboplastin - prothrombin - carbonic anhydrase enzyme.**

**\* Explain the hepatic portal circulation in Man.**

**What is the number of the heart beats? How does the heart beat? and what is the real reason of these beats?**

**\* Mention the site and function of each of the following:**

- a ) cutin                      b) starch sheath                      c) tracheids                      d) the cambium
- e) pith                      f) pits                      g) pericardium                      h) haemoglobin
- i) atrio-ventricular node                      j) pulmonary veins

**-Match:-**

Column (A)	Column (b)
a. The pulmonary vein	1. Transfers the blood from the heart to the lungs
b. The pulmonary artery	2. Transfers the blood from the liver to the heart.
c. Hepatic vein	3. Transfers the blood from the intestine to the liver.
d. Hepatic portal vein	4. Transfers the blood from the liver to the digestive system.
e. Aorta	5. Transfers the blood from the lungs to the left atrium.
	6. Transfers the blood from the lungs to the right atrium
	7. Transfers the blood from the heart to the limbs.

**Choose the correct answer for each of the followings**

1) The xylem vessel in the plant is lineal with

- a) suberin                      b) lignin                      c) cutin                      d) cellulose

2)The manufactured food is translocated in the plant

- a )     **upwards and downwards in the stem**
- b)     **downwards in the stem**
- c)     **in the lateral direction of the leaves**

**-Choose:-**

Column (A)	Column (b)
a. The left atrium	1. Receives the blood from the body.
b. The right atrium	2. Pushes the blood to the body.
c. The left ventricle	3. Pushes the blood to the lungs.
d. The right ventricle	4. Receives the blood from the lungs.
	5. Receives the blood from the digestive system.
	6. Pushes the blood to the brain.

### **EXERCISE 5**

**-Choose:-**

Column (A)	Column (b)
a. Stem pericycle	1. Collenchyma cells thickened at corners with cellulose.
b. The stem cortex	2. Parenchyma cells alternated with fibers.
c. The pith	3. Meristematic cells.
d. The cambium	4. Parenchyma cells for storage.
	5. Non-living cells.
	6. Lignified cells.

**\* The plant body has tissues which are concerned with transport.**

**a) Name these tissues.**

**b) Explain how they can be identified under the microscope**

**Using your information about photosynthesis, answer the following questions:**

**a) determine the site where carbon dioxide diffuse**

**b) Trace the path of water, mineral salts and carbon dioxide until being utilized.**

**c) What are the final products.**

**d) Locate when the final products are produced.**

**e) Locate where these products are consumed .**

**f) Trace the path of the produced substances from their place of production to where they are consumed.**

### **I Complete:**

- 1) The right ventricle of the heart is filled with.....blood.
- 2).....is the movement of molecule or ions through plasma membrane with the help of energy.
- 3) .....Phenomenon explain the ascent of sap in tall trees.
- 4) The pulmonary circulation starts from the right ventricle and ends at.....

### **II Choose the correct answer**

1. The unglified areas in the xylem vessels are called [seive plants- tracheids - pits - tenticlels]
2. The blood which feeds the brain leaves the heart through [right atrium -right ventricle - left atrium - left ventricle]
3. When blood platelets are exposed to air.....is produced [prothrombin - thrombin - thromboplastin - all the previous]
- 4.....is protein which is not found in the blood [Arginin - fibrinogen globulin]
- 5.From the proteins which are found in the blood plasma Albumin-Globulin - Fibrinogen - all the previous]
- 6.....is the protein substance secreted by the liver which can form blood clot.[Thromboplastin - Prothrombin - Methionin - Thrombin]

### **III Give reasons for:**

1. *The blood does not clot inside the blood vessel.*
2. *The theory of root pressure does not explain the ascent of sap down upward.*
3. *By using doctor stethoscope we can differentiate between two different sounds of, heartbeats.*
4. *Transplanting of some plants does not succeed if they are removed and exposed to the sun for a long time*

### **IV Write the scientific term:**

- 1- Tinny blood vessels that connect between the end of arterioles and venules
- 2-A nerve node that regulates the decrease or increase of heart beats.
- 3- A tissue formed by meristematic cells which causes stem thickening

### **V- Correct the following without changing the underlined sentences.**

- 1- The scientist Rapoden managed by using the Aphid insect to collect the contents of seive tubes.

## **VI -Draw:**

- 1- A simple diagram to represent the mechanism of blood clot
- 2-A labelled diagram for a vascular bundle in young dicot. Stem.
- 3-A labelled diagram for the structures that regulate the heart beats.
- 4- Explain and draw an experiment to show the role of xylem vessels in the ascent of sap from the root to the leaves.

## **VII Correct the only wrong words:**

- a- Aphid insect gets its food by piercing its mouth in plant pith.
- b - The human blood contains 5-6 litres of blood plasma.

## **VIII-Give short account on:**

*Effect of the phenomenon of root pressure in the ascent of sap in plants.*

## **VIII- Write the position and function of each of the following:**

**Sino-atrial node.**

## **IX- Explain the mechanism of the blood clot**

- X- *Recorrect:* Mitller collected the contents of the phleom by using Aphid insect.

## **\* Complete each of the following**

- 1- A young dicot stem consists of 3 main structures, are .....,.....,.....
- 2- Cambium consists of one row of ..... cells, when it divides, give .....internally and.....externally.
- 3- The vascular tissues in a dicot plant are ..... and .....
- 4- The xylem consists of two transport structures which are ..... and .....
- 5- The vascular cylinder of a dicot stem consists of.....,.....,..... and.....
- 6- .....and .....discovered the transpiration pull, cohesion and adhesion theory.
- 7- The phloem tissue consists of .....and.....
- 8- Continuous flowing of water inside the xylem vessels of the roots causes pressure known as ..... pressure to which the ..... phenomenon is attributed.
- 9- Blood circulatory system consists of..... and.....

## **\* Give a scientific term for each of the following:**

- 10- The inner row of cortex in a young stem of a dicot plant.
- 11- Parenchyma cell to join the cortex with the pith in a dicot stem.
- 12- A cell, its corners is thickened by cellulose.
- 13- A tissue for the translocation of water and salts in the plants.
- 14- The parenchyma layer which encloses the vascular bundle of both the root and the stem.
- 15- The attraction between water molecules with the wall of xylem vessels.

- 16- The attraction between water molecules and the others inside xylem vessels.
- 17- The attraction of water column upwards inside xylem vessels due to the continuous process of transpiration.
- 18- A tissue for the translocation of high energy organic substances in the plants.
- 19- A membrane around the heart, protect the heart .....

**\* Put (✓) or (X) in front of each of the following statements.**

- 20- Hydra has a specialized transport sys. for transport food substances and gases.
- 21- The companion cell of phloem tissue are devoid from a nucleus.
- 22- Guttation is due to the root pressure.
- 23- The epidermis of the stem is coated with a layer of cutin.
- 24- Cells of the sieve tube are devoid of the nucleus.
- 25- Artery vessels carry blood from the body to the heart.
- 26- Blood capillaries consist of one row of endodermal cells.
- 27- The middle layer of blood vessels consists of connective tissue.
- 28- The walls of xylem vessels are thickened by cutin....
- 29- Malpighi discovered the blood circulation.
- 30- About 20 million red blood cells will formed/ minute.

**\* What is effort of each one:.**

- |                       |               |                      |
|-----------------------|---------------|----------------------|
| 31. Rapeden and Bohr. | 32-Mittler    | 33. Thain and Canny. |
| 34. William Harvey.   | 35. Malpighi. | 36. Dixon and Joly.  |

**\*what is: meant by each of the following**

- |                           |                         |                            |
|---------------------------|-------------------------|----------------------------|
| 37. Root pressure theory. | 38. Capillary theory.   | 39. Cohesive force.        |
| 40. Adhesive force.       | 41. Transpiration pull. | 42. Cytoplasmic streaming. |

**Choose the correct- answer**

43. ....Has a pentagonal form. (xylem - vessels - phloem - tracheids).
44. ....explain the ascent of sap to very high level in xylem tissue.  
(Root pressure - Capillary - Imbibition - Transpiration pull, adhesion and Cohesion).
45. The outer layer of blood vessels consists of .....  
(unstriated muscle - bundle of elastic fibers - connective tissue - epithelial cells).
46. The structure which passes through sieve tubes pores in the phloem is.....  
(Glucose - nucleus - water - Cytoplasmic strands).
47. ....discovered the blood capillaries.(Mittler - Rapeden - Malpighi - William Harvey).
48. From the substance which has high imbibition force for water is ..... (lignin -

cellulose - glucose - ATP).

49. Back flow of blood is prevented in the veins by means of .....

(lymph vessels - muscles - valves - tendons).

50. Whenever a person suffers from inflammation of the appendix, his blood shows an increase in the no. of..... (*hormones - leucocytes - Red blood cells - blood platelets*).

51. The human body contains about ..... liters of blood on average. (7 - 6 - 8 - 4).

52. Plasma proteins which play a role in the formation of blood clot is .....

(Fibrinogen - Heparin - Albumin - Globulin).

\* Match each, statement of column (B) With the suitable of column (A)

Column (A)	Column (B)
53. Purkinje system.	1. Regulates heart beats.
54. Pericardium.	2. Transfers the impulse to ventricle walls.
55. Sino atrial node.	3. Surrounded the heart and protect it.
56. Pulmonary veins.	4. Transfers food substances to the cell.
	5. Transfers deoxygenated blood to the heart.
	6. Transfers oxygenated blood to the heart.

**60. Draw a section of the human heart showing its structure and blood vessels connected to it, then explain the functional adaptations of the heart.**

**\* Give reasons:**

**61. The phenomenon of root pressure can not explain the ascent of water to the tops of trees.**

**62. The vessels and tracheids of xylem tissue has pits.**

**63. The phenomenon of imbibition has a very limited effect on the ascent of sap.**

**64. The capillary theory is a weak force for the ascent of sap.**

**65. During the transportation of some seedlings from a nursery to an open soil, fail to grow, if they remain exposed to the sun for a long time.**

**66. Water have a high pulling force in xylem vessels.**

**67. The companion cell contains large no. of ribosome and mitochondria.**

**68. The transpiration phenomenon play a role for the ascent of sap.**

**69. The heart is surrounded by a double membrane.**

**70. The ventricle wall is thicker than the atrium wall.**

**\* Complete each of following:-**

**71. Human transport system consists of..... and .....**

**72. Arteries carry oxygenated blood except ..... while veins carry the deoxygenated blood except .....**

**73. The heart is surrounded by a membrane called ..... while the pace-maker of the heart is called.....**

**74. Phloem vessels are separated from each other by .....**

**75. .... Valve is present between the left atrium and..... Ventricle**  
**76. ....are the vessels through which the blood flows from ..... while..... Valve between the right atrium and the right ..... to the body.**

**77. ....increases the no. of heart beats while ..... nerve decreases the no of heart beats.**

**78. The components of human blood are .....and.....**

**79. Some veins are characterized by the presence of.....which allow the flow of blood in the direction of the heart not vice versa.**

**80. blood circulation in Man is divided into ..... and .....**

**Give a scientific term for each of the following: -**

**81. Blood vessels carry the blood from the heart to other organs of the body.**

**82. A blood vessel does not pulsate.**

**83. A valve controls the passage of blood from right atrium to right ventricle.**

84. *A type of blood vessels, facilitates quick exchange of substance and gasses between then blood and the tissue cells.*
85. *A scientist discovered a system of internal valves in veins.*
86. *A type of blood vessels has tiny pores.*
87. *A blood vessel carries the blood from the heart to lungs.*
88. *A liquid contains most the components of the blood and large number of white blood cells.*
89. *From the blood components, is important for blood clotting.*
90. *A type of ions is important to converted prothrombin into thrombin.*

**\* Put ( √ ) or ( × ) in front each orate following statement: -**

91. *The xylem vessels face the center of the stem.*
92. *Ascent of cell sap to the high tall trees can be explained by the imbibition.*
93. *Gases are transported inside the plant tissue by imbibition.*
94. *The wall of right ventricle is thicker than the wall of left ventricle.*
95. *The wall of arteries is thinner than the wall of veins.*
96. *Leucocytes has no nucleus.*
97. *The blood plasma has inorganic salts.*
98. *The platelets important for gas exchange.*
99. *The no. of heart beats increases during sleeping time.*
- The sieve tube are devoid form nucleus.*