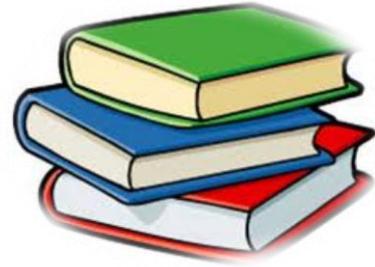


# Biology

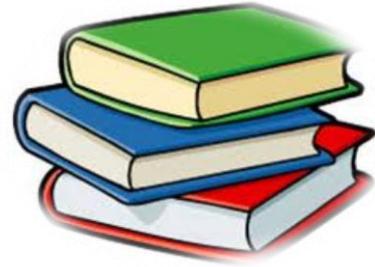


## Questions

### A-Complete:

1. The types of nutrition are .....and .....
2. .... Cells produce root hairs.
3. Heterotrophic organisms can be classified into ..... ,.....and .....
4. Movement of molecules or ions from a region of higher concentration to the one of lower concentration is called .....
5. Plants need ..... In considerable quantities, while it needs .....in very small quantities.
6. The walls and cell membranes are divided according to the phenomenon of permeability into ..... , ..... and .....
7. The absorbed water passes across the root cells to xylem vessels through 3 ways which are ....., ..... and .....
8. The osmotic pressure in ..... ranges from (5 to 20 ) atmosphere while in ..... and ..... , the osmotic pressure may reach ( 50 to 200) atmosphere.
9. Photosynthesis consists of two kinds of reactions , ..... reaction and .....reaction.
- 10.The mesophyll in the leaf consists of 2 main tissues which are ..... and .....tissue.
- 11.The vascular bundles in the leaves of dicotyledon plants have two kinds of tissues which are ..... and .....
- 12.The active transport of salts increases in ..... conditions and decreases in .....conditions.

# Biology

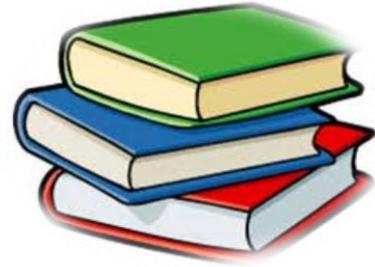


13. Phenomenon of diffusion depends on the movement of .....or .....but phenomenon of permeability depends on the ability of ..... or ..... to control the passage of substances through them.
14. The main product of photosynthesis is ..... while the secondary product is .....
15. The hydrogen is used in reducing  $\text{CO}_2$  in photosynthesis is produced from splitting of water in ..... by using .....energy.
16. In the light reaction , ..... Is the Limiting factor while in dark reaction, ..... Is limiting factor.
17. The light reaction occurs inside .....of the chloroplasts , while the dark reaction occurs inside the .....
18.  $6 \text{CO}_2 + 12 \text{H}_2\text{S} \xrightarrow[\text{bacterial chlorophyll}]{\text{light}}$  .....+.....+ .....
19. The function of HCL in stomach is to activate ..... .kill .....and create .....to stop ptyalin action.
20. .... nutrients are needed in considerable amount such as ..... and ..... while .....nutrients are needed in trace amount such as ..... and .....
21. Osmotic pressure .....by the increase of the solute in the solution.
22. Deficiency of mineral salts may cause..... in plant growth or no production of ..... and.....

## **B-What is the function of each of the following:**

- 1- Chlorophyll
- 2- Root hairs

# Biology

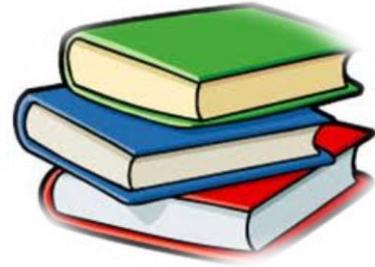


- 3- Casparian strips
- 4- Digestive system.
- 5- Amylase (ptyalin)
- 6- Macro and micro nutrients
- 7- Pepsin enzyme
- 8- Trypsin
- 9- Lipase enzyme
- 10- Villi
- 11- Photosynthesis process
- 12- Salivary glands
- 13- Oesophagus
- 14- Stomach
- 15- Bile
- 16- Stomata

## **C-What's meant by:**

- 1- Nutrition
- 2- Osmosis
- 3- Osmotic pressure
- 4- Diffusion
- 5- Permeability
- 6- Imbibitions
- 7- Active transport
- 8- Selective permeability
- 9- Autotrophic nutrition

# Biology



- 10- Heterotrophic nutrition
- 11- Mesophyll
- 12- Digestion
- 13- Enzymes
- 14- Metabolism
- 15- Peristalsis

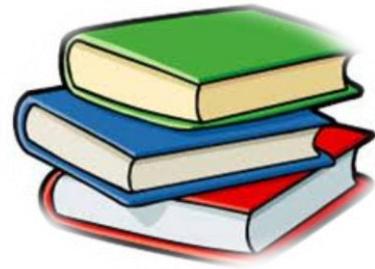
## **D- Put (√) or (x) and correct the wrong one:**

1. Root hairs secrete viscous substances. ( )
2. Endodermis cells which are facing the xylem are completely thickened. ( )
3. Cell walls are characterized by selective permeability. ( )
4. Macro nutrients have an important role to activate the action of some enzymes. ( )
5. Temperature is the Limiting factor in dark reaction. ( )
6. The activity of enzyme depends on the temperature and the pH of the medium. ( )
7. Xanthophyll pigment represents 70% of the chloroplast pigments. ( )
8. Dark reaction takes place in the grana. ( )

## **E- Compare between:**

1. Light reaction and dark reaction.
2. Autotrophic and hetero trophic nutrition.
3. Spongy tissue and palisade tissue.
4. Macro nutrients and micro nutrients.

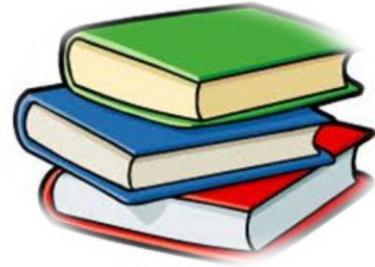
# Biology



## **F- Choose the correct answer:**

- 1- Water passes through endodermis to the xylem by.....
  - a) Imbibitions
  - b) osmosis
  - c) permeability
- 2- The first stable organic compound produced in photosynthesis is.....
  - a) Glucose
  - b) ATP
  - c)phospho glyceraldehyde (PGAL)
- 3- The dark reaction takes place in stroma in the presence of .....
  - a) CO<sub>2</sub>, water and ATP
  - b) CO<sub>2</sub>, water and NADPH<sub>2</sub>
  - c) CO<sub>2</sub>, NADPH<sub>2</sub> and ATP
- 4- One of the following isotopes was useful in revealing dark reaction.....
  - a) <sup>14</sup>C
  - b) <sup>18</sup>C
  - c) <sup>35</sup>C
- 5- ATP is formed by the union of.
  - a) ADP + PO<sub>4</sub>
  - b) AMP + PO<sub>4</sub>
  - c) ADP + AMP
- 6- Endodermal cells facing xylem vessels in root are called .....
  - a) Phloem
  - b) Passage cells
  - c) Piliferous layer

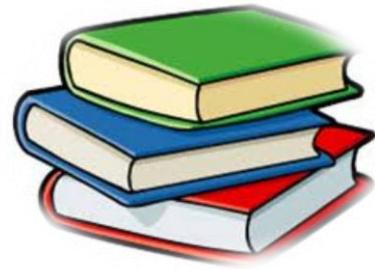
# Biology



## **G-Give reasons:**

- 1- The concentration of cell solution in vacuole of root hairs is higher than the concentration of the soil solution.
- 2- The root hairs secrete a viscous substance.
- 3- Root hairs have thin walls and they are found in large numbers.
- 4- Many plants die if they are cultivated in high saline soil.
- 5- Osmosis phenomenon is very important for the plants.
- 6- Photosynthesis is one of the most important chemical processes.
- 7- Both upper and lower epidermis is covered with cutin except stomata.
- 8- Sugar and oxygen are essential for absorption of salts by roots.
- 9- Most of the water is absorbed through large intestine not small intestine.
- 10- The green color dominates the other colors in the chloroplast.
- 11- The lower surface of the leaf contains more stomata than the upper surface.
- 12- Upper surface of leaf appears greener than the lower surface.
- 13- Stomach digestive juices don't digest the stomach walls.
- 14- The presence of certain type of bacteria in large intestine.
- 15- The presence of many convolutions in the large intestine.
- 16- Temperature is the limiting factor in dark reaction.

# Biology

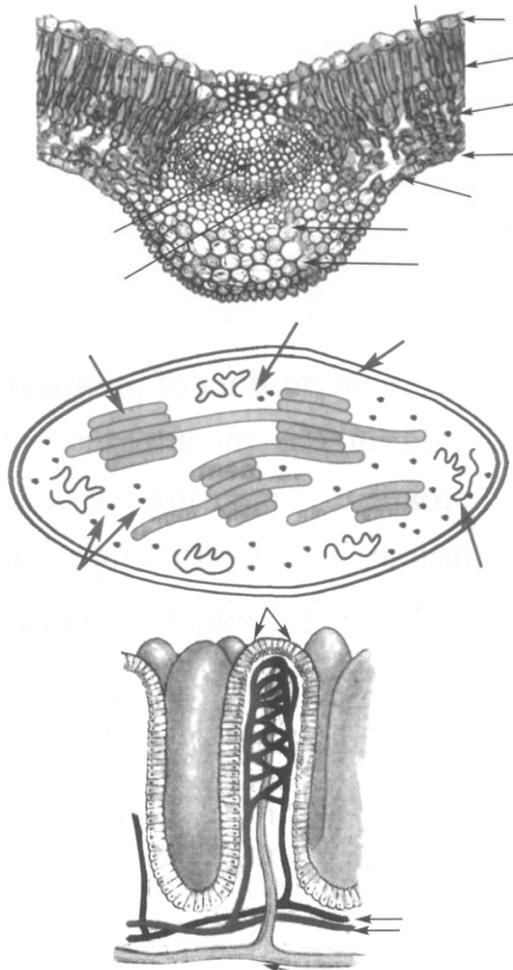


**H-**

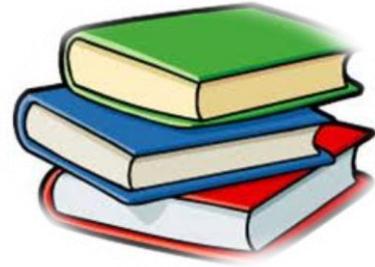
- 1- At which part of small intestine absorption occurs?
- 2- What are the absorbed materials in this part flow the path of these materials until they reach to the heart.
- 3- What happens to the undigested food? How does the body get rid of it?

**I- Lable the following diagrams:**

- a. The figure represents .....
- b. Write the lables.



# Biology

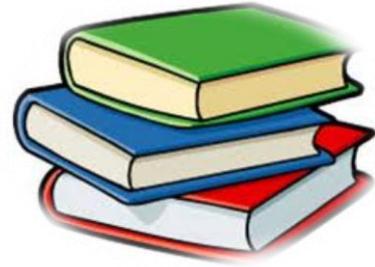


## Model answers

### A-Complete :

- 1- Autotrophic , heterotrophic
- 2- Epidermis
- 3- Holozoic , saprophytes , parasites
- 4- Diffusion
- 5- Macro nutrients, micro-nutrients.
- 6- Permeable , impermeable , semi-permeable
- 7- Through cell sap, cytoplasm, cell walls and intercellular spaces.
- 8- Mesophytes , xerophytes and halophytes.
- 9- Light , dark
- 10- Palisade , spongy tissue
- 11- Xylum , phloem.
- 12- Aerobic , anaerobic
- 13- Molecules or ions, cell wall or plasma membrane.
- 14- Monosaccharide (glucose) , oxygen.
- 15- Grana – light
- 16- Light , temperature
- 17- Grana , stroma
- 18-  $C_6H_{12}O_6 + 6H_2O + 12S$
- 19- Gastric enzymes, harmful bacteria, create acidic medium.
- 20- Macro nutrients, nitrogen ,calcium, micronutrients , zinc, copper
- 21- Increases
- 22- Disturbance or stop – fruits- flowers

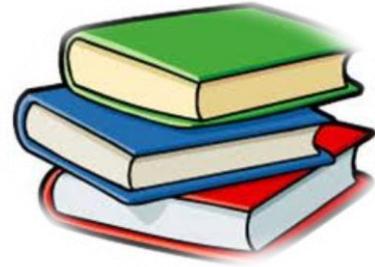
# Biology



## **B-What's the function of:**

- 1- Absorption of light energy required in photosynthesis.
- 2- Absorption of water and salts and transfer it to the plant leaves through xylum vessels.
- 3- Prevent the lateral movement of water by imbibitions or diffusion and direct water and salts from cortex to xylem by osmosis.
- 4- Conversion of large molecules (polymers) in to smaller one (monomers) by means of hydrolysis by the help of enzymes.
- 5- Catalyzes the hydrolysis of starch to disaccharides.
- 6- Help in plant growth, production of fruits and flowers.
- 7- Catalyzes the hydrolysis of proteins into polypeptides.
- 8- Help in breaking down proteins into polypeptides.
- 9- Catalyzes the hydrolysis of emulsified fats into fatty acids and glycerol.
- 10-Help increase of surface area of absorption of food.
- 11-It is the main source of food (energy) and oxygen, source of fuel, a source of industry products such as fats, alcohol, vinegar.
- 12-Secrete saliva which contains mucus helps to swallow food. Amylase (ptyalin) enzyme which convert starch to maltose (disaccharide).
- 13-Lined with glands which secrete mucus, it delivers food to stomach by contractions and relaxations of circular muscular movement (peristalsis)
- 14-Churn food to mix it with gastric juice and convert it to chyme, stores food till it is digested, secretes pepsinogen and HCL

# Biology



15- Divide the large masses of fats to small globules to facilitate the enzymatic action

16- Exchange of gases, control of the rate of water evaporation.

## **c-What's meant by:**

1- The scientific study of food and various modes of feeding of living organisms.

### **Or**

- The characteristic through which the living organism obtains energy.

2- The diffusion of water from high conc. Of water to lower conc. Of water through semipermeable membrane.

3- The pressure which causes the diffusion of water through semipermeable membrane.

4- The movement of molecules or ions from highly concentrated medium of molecules to low concentrated one.

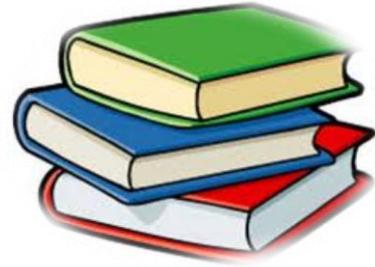
5- The ability of membranes or walls to allow the passage of water or minerals.

6- The ability of organic solid particles and colloidal ones to absorb Liquids, so it swells and increases in volume.

7- The passage of any substance through the cell membrane by the help of some chemical energy which is supplied during respiration of the root tissues.

8- The ability of the plasma membrane to pass freely some substance needed by the plant and prevent others which are not required.

# Biology

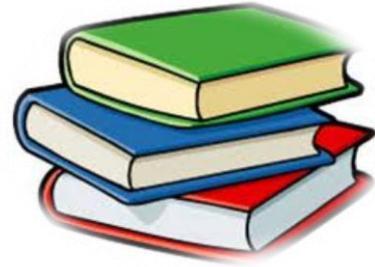


- 9- The living organisms can make their own food by using simple raw materials to produce high energy substances through photosynthesis process.
- 10-The living organisms which can't make their food, they depend on other organisms to obtain food.
- 11-The tissue lies between lower and upper epidermis of the green leaf which consists of 2 layers: the upper palisade layer which contains large number of plastids and the lower spongy layer which exchange gases & store food.
- 12-The conversion of large food molecules (polymers) into smaller one (monomers) by means of hydrolysis by the help of enzymes.
- 13-A protein substance which has the properties of a catalyst which has the ability to activate a particular chemical reaction.
- 14-The process by which the body utilizes the digested food which is absorbed to the blood.
- 15-A series of muscular contractions and relaxations which extend downward a long alimentary canal, it sweeps food, churns food with digestive juices and absorption.

## **C-Put (√) or (x):**

- 1- (√)
- 2- (x) facing the phloem
- 3- (x) cell membranes
- 4- (x) micro nutrients
- 5- (√)

# Biology



6- (✓)

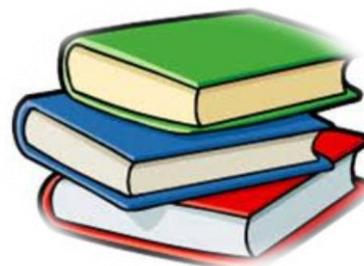
7- (x) chlorophyll A and B

8- (x) in the stroma outside grana

## **D-Comparisons:**

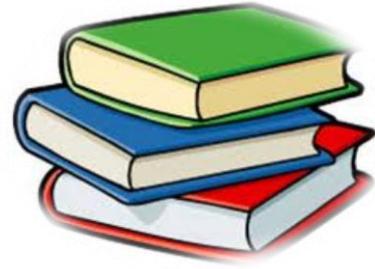
Light reaction	Dark reaction
<ol style="list-style-type: none"><li>1. Takes place in grana of chloroplast</li><li>2. Sensitive to light</li><li>3. Light is the limiting factor of the rate of the reaction.</li></ol>	<ol style="list-style-type: none"><li>1. Takes place in the stroma of chloroplast</li><li>2. Not affected by light</li><li>3. Temperature is the limiting factor</li></ol>
Autotrophic nutrition	Heterotrophic nutrition
Living organisms which can make their own food through photosynthesis Ex: Green plants Algae Some bacteria	Living organisms which depend on other organisms to obtain food. Ex: Man animals

# Biology



Palisade tissue	Spongy tissue
<ol style="list-style-type: none"><li>1. Consists of one row of parenchyma cylindrical elongated cells</li><li>2. Have narrow intercellular spaces</li><li>3. Have large number of chloroplasts.</li><li>4. Function: photosynthesis</li></ol>	<ol style="list-style-type: none"><li>1. Consists of irregular parenchyma cells</li><li>2. Have wide inter cellular spaces</li><li>3. Have a small number of chloroplasts</li><li>4. Function: store food, gas exchange and takes part in photosynthesis.</li></ol>
Macro nutrients	Micro nutrients
<ol style="list-style-type: none"><li>1. They are needed by the plant in considerable amounts</li><li>2. Important for plant growth and formation of flowers and fruits</li><li>3. Ex: Nitrogen , phosphorus , calcium, potassium , Magnesium , sulpher , iron</li></ol>	<ol style="list-style-type: none"><li>1. They are needed by the plant in trace amounts</li><li>2. They act as coenzymes which activate enzymes and also important for growth</li><li>3. Ex: chlorine , zine, Manganeze, Boron , Iodine, Molybdenum</li></ol>

# Biology



## E- Choose:

- 1- b
- 2- c
- 3- c
- 4- a
- 5- a
- 6- b

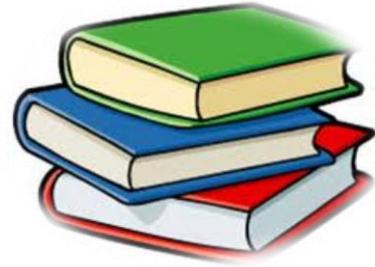
## F- Give reasons:

- 1- To help water to pass from the soil to the root hairs.
- 2- To move easily among soil particles and fix the plant in the soil.
- 3- To allow the passage of water and salts, and to increase the area of absorbing surface.
- 4- Because in saline soil the salt concentration is higher than the concentration of cell solution so the water transfers from the plant To the soil so the plant wilts and dies.
- 5- a. Because through it the water can transfer from the soil to the plant root.  
Or because it is important in the process of water absorption  
b. Overcome the shortage of water in xerophytes and halophytes.

## 6- Because:-

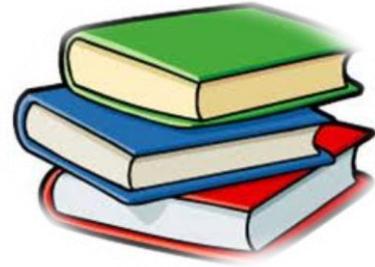
- a. Produces fibers used in textile fabrics.
- b. Source of oxygen.
- c. Source of fuel as coal, petroleum and natural gas.
- d. For exchange of gases.

# Biology



- 7- For exchange of gas through stomata
- 8- Because absorption of salts from the soil by active transport needs energy which produced as a result of aerobic respiration.
- 9- Because in small intestine, water is used to help enzymes to digest food but in large intestine there is no digestion.
- 10- Because chlorophyll pigment (A and B) represent 70% of the pigments and they are green in colour.
- 11- To decrease the evaporation of water as the upper surface is exposed to the sun
- 12- Because palisade layer which lies below the upper epidermis contains large number of green plastids while the spongy layer contains less chloroplasts.
- 13- Because :**
  - a. Mucous secretions protect the lining cells in stomach from enzymes.
  - b. Pepsin enzyme is not active except in stomach cavity by the effect of HCL which dilutes at once when it is mixed with gastric juice.
- 14- To break down (decay) of undigested food in order to facilitate expelling of faeces out.
- 15- To increase the surface area of absorption of water and salts.
- 16- Because it is an enzymatic reaction as enzymes are made of proteins which are affected by temperature.

# Biology



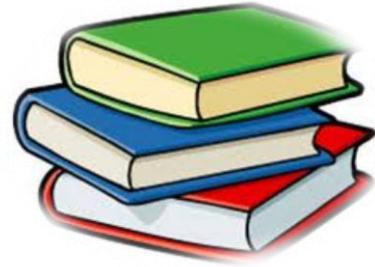
## E-

1. The epithelial that lines the internal surface of the small intestine called villi
2. Absorbed materials are:
  - a) Materials dissolve in fats as fatty acids , glycerol and some vitamins as k,D,A enter into lacteal vessels then lymphatic vessels to superior vena cava of the heart
  - b) Materials dissolve in water as mineral salts, monosaccharides as glucose, amino acids & rest of vitamins as B are collected to pass to hepatic portal vein which enters into the liver, then to the inferior vena cava to the heart.
3. Undigested food pass into large intestine which absorb most of the water and salts, the semi-solid remains are expelled out by contractions and relaxation of the anal muscles which consists of 2 anal sphincters, and mucus is secreted to make it easier to defecate.

## F- Lable the diagrams:

Answer by your self

# Biology

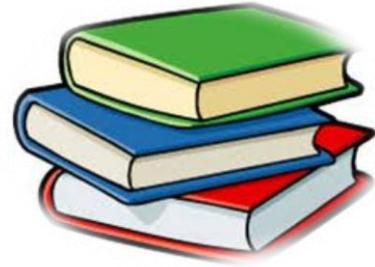


## Part (2)

### **H- Choose:**

- 1-From the proteins that is found in blood plasma  
( albumin – globulin – fibrinogen – all the previous )
- 2-The industry of cheese butter and yoghurt depends on .....  
process.  
( acidic fermentation – alcoholic fermentation – aerobic respiration )
- 3-During cellular respiration , glucose molecule split into into 2molecules  
of .....acid. ( Lactic – acetic – pyruvic )
- 4-Blood plasma contains .....  
(sugar – amino acids – hormones – all the previous )
- 5-All following are from components of phloem structure except .....  
(Sieve plate – companion cell – tracheids )
- 6-The energy needed for vital activities is released on conversion of  
..... ( ADP to ATP –  $\text{NADH}_2$  to NADP -  $\text{NADH}$  to  $\text{NAD}^+$  )
- 7-Blood vessel which carries blood from the lower part of the body to the heart  
is .....  
(aorta – superior vena cava – inferior vena cava – hepatic portal veins )
- 8-Xylem vessels in the green leaves are directed towards .....  
( upper epidermis - lower epidermis )
- 9-The nerve which slowdown heart beats during sleep and in slate of grief  
..... ( vagues nerve – sympathetic nerve )
- 10- Sympathetic nerve .....  
(Increases heart beats – slow down heart heats – increases the respiration)
- 11- The human body contains about ..... Liters of blood  
(7:6 – 6:4 – 5:6)
- 12- The cellular respiration process starts with a molecule of .....  
(Glucose – NAD – protein)

# Biology



13- The blood is prevented to flow down words by the effect of.  
(Valves – muscles – heart beats)

14- The tricuspid valve is found between .....( right Ventricle and right atrium – left atrium and left ventricle – aorta and the heart )

## Write the scientific term:

1- A membrane that surrounds the heart to protect it. ( )

2- The liquid tissue which is a red viscous Liquid , it is weakly alkaline  
( )

3- They are produced in bone marrow of back bone , round , biconcave ,  
enucleated and contain hemoglobin. ( )

4- Colourless nucleated cells , formed in spleen , bone marrow and  
lymphatic system and their function is to attack microbes.( )

5- Small , enucleated small bodies which are produced in bone marrow and  
play a role in blood clotting. ( )

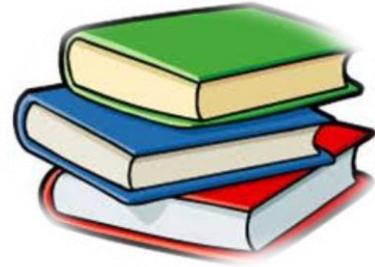
6- A substance secreted in Liver which prevent the conversion of  
prothrombin to thrombin. ( )

7- The circular movement of cytoplasm inside the sieve tubes and  
companion cells. ( )

8- Exists at the center of the stem and composed of parenchyma cells for  
storage. ( )

9- The outer tissue of the vascular bundle which transport organic food  
substances. ( )

# Biology

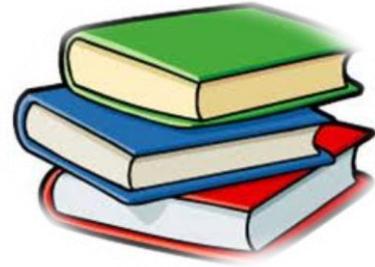


- 10- The tubes which are formed from vertical rows of elongated cylindrical cells joined end to end and the transverse walls dissolved forming one hollow tube with lignified walls. ( )
- 11- The coming out of water from the cutting surface if the plant stem is very near to the soil surface. ( )
- 12- The principle forces which pull water upwards through stems of very high trees. ( )
- 13- The Italian scientist who discovered blood capillaries ( )
- 14- Tiny microscopic vessels which connect arterioles with venules ( )
- 15- The device used in measuring blood pressure ( )
- 16- The doctor's tool which is put on the artery to hear the heart pulse. ( )
- 17- They form together with the destroyed cells a protein substance called thromboplastin . ( )
- 18- The cells which are destroyed in liver , spleen and bone marrow after their short age. ( )
- 19- Rows of cells that is present between xylem vessels in vascular bundles in plant's stem. ( )
- 20- One row or more of meristematic cells that divide giving secondary phloem out wards and secondary xylem in wards. ( )
- 21- It is considered (the pace maker ) for the heart beats.( )
- 22- It converts fibrinogen to fibrin ( )

## **Give reasons:**

- 1- Some seedling when transplanted from a nursery to an open soil , fail to grow if remain exposed to sun for a long time before transplantation.
- 2- Krebs cycle does not need oxygen.
- 3- At the end of expiration, part of the air is always left in the lungs.

# Biology



- 4- Sinoatrial node is considered the heart pace maker.
- 5- Respiratory system man plays an important role in excretion of water
- 6- Blood doesn't clot inside the blood vessels
- 7- The lymphatic system is considered the immune system of the body
- 8- Some veins have valves
- 9- The blood doesn't return back from pulmonary artery to the right ventricle when it relaxes

## Comparisons:

- 1- Xylem vessels – Tracheids
- 2- Artery – vein

## Complete:

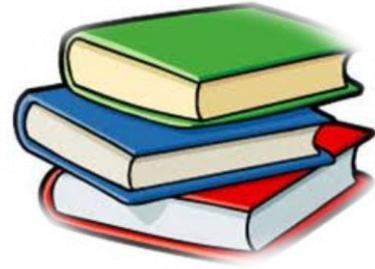
1- .....+ .....  $\xrightarrow{\text{blood clotting factors}}$  thrompoblastin

2- Prothrombin  $\xrightarrow{\text{Thrompoblastin}}$  .....

Clotting factors + .....

3-Fibrinogen  $\xrightarrow{\text{thrombin}}$  .....

# Biology

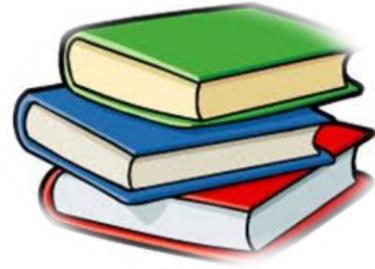


## Answers

### Choose:

- 1- All the previous
- 2- Acidic fermentation
- 3- Pyruvic
- 4- All the previous
- 5- Tracheids
- 6- ADP to ATP
- 7- Inferior vena cava
- 8- Upper epidermis
- 9- Vagus nerve
- 10- Increases the heart beats
- 11- 5:6
- 12- Glucose
- 13- Valves
- 14- Right atrium and right ventricle

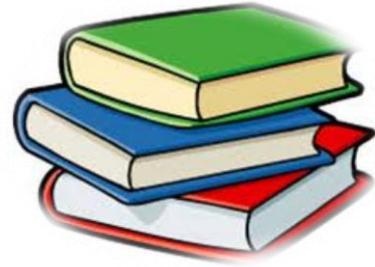
# Biology



## Write scientific term:

- 1- ( pericardium )
- 2- (blood )
- 3- (red blood cells )
- 4- White blood cells (leucocytes )
- 5- ( blood platelets )
- 6- ( Heparin )
- 7- Cytoplasmic streaming
- 8- Pith
- 9- Phloem
- 10- Xylem vessels
- 11- Exudation
- 12- Cohesive force , adhesive force and transpiration pull
- 13- Malpighi
- 14- Blood capillaries
- 15- Sphygmomanometer
- 16- Stethoscope
- 17- Blood platelets
- 18- Red blood cells
- 19- Xylem parenchyma
- 20- Cambium
- 21- Sino atrial node
- 22- Thrombin

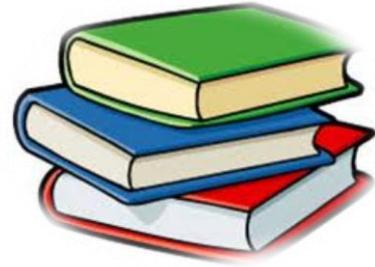
# Biology



## Give reasons :

- 1- Because this leads to dryness of seedling and let air bubbles to enter xylem vessels which causes breaking and descending water column.
- 2- Because all electrons and protons are removed during oxidation of carbon atoms and received by  $\text{NAD}^+$  and FAD molecules.
- 3- To warm the new air coming to the lungs and prevent the adhesion of alveoli membrane from inside.
- 4- Because it is the source of regular rhythm of heart beats.
- 5- Because expired air contains water vapour, man loses  $500\text{cm}^3$  of water daily through his lungs.
- 6- Because it runs in a normal fashion and does not slow down, also due to the presence of heparin which prevent conversion of prothrombin to thrombin and platelets slide easily in order not to be broken.
- 7- Due to its ability for defense and the production of antibodies that give the body its immunity.
- 8- To prevent the back flow of blood and only allow the passage of blood in one direction.
- 9- Due to the presence of semi lunar valves at the connection of the right ventricle and the pulmonary artery.

# Biology



## Compare between:

Xylem vessels	Tracheids
<ul style="list-style-type: none"> <li>1- Open at both ends</li> <li>2- Appears in T.S. cylindrical or hexagonal</li> <li>3- Pitted to allow water to pass from inside to outside</li> <li>4- Act as mechanical support and transport water and salts</li> <li>5- The walls are lignified</li> </ul>	<ul style="list-style-type: none"> <li>1- Closed and pointed</li> <li>2- Appears in T.S. pentagonal or hexagonal</li> <li>3- Pitted to allow water to pass from inside to outside.</li> <li>4- Act as mechanical support and transport water and salts</li> <li>5- Walls are lignified</li> </ul>

Artery	Vein
<ul style="list-style-type: none"> <li>1- Carry blood from heart to other body organs</li> <li>2- Carry oxygenated blood (except pulmonary artery)</li> <li>3- Pulsate</li> <li>4- Usually buried among the muscles</li> <li>5- Have high blood pressure</li> <li>6- Have no valves except aorta and pulmonary</li> <li>7- Have thick walls</li> </ul>	<ul style="list-style-type: none"> <li>1- Carry blood to the heart</li> <li>2- Carry deoxygenated blood (except – pulmonary vein)</li> <li>3- Not pulsate</li> <li>4- Usually very near to skin surface</li> <li>5- Have low blood pressure</li> <li>6- Some have valves</li> <li>7- Have thin walls</li> </ul>

## Complete :

- 1- Blood platelets + destroyed cells
- 2-  $Ca^{++}$  - thrombin
- 3- Fibrin