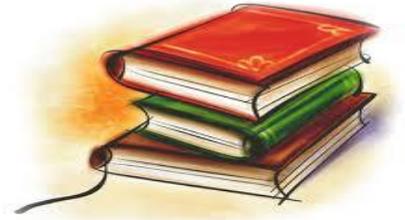


# Biology



## Part (1) Question

### A) Complete the following:

- 1- Carbohydrates are from..... molecules, while salts are from ...molecules.
- 2- The general formula of carbohydrates is ...
- 3- Biological macromolecules are formed by ..... Process
- 4- Sucrose polymer consists of ..... molecule and .....one bound together
- 5- fats can be also called....., while oils can be called.....
- 6- ..... and ..... are from derivative lipids
- 7- Lipids forming hormones are called .....
- 8- Lipids are formed from ..... bound to ..... molecules
- 9- The acidic functional group forming an amino acid is called....., while that basic one forming it is called.....
- 10- Proteins are formed from groups of amino acids linked together by .....bond
- 11-Hemoglobin protein is found in blood and it contains ..... element, while thyroxin contains ..... element.
- 12- A nucleotide consists of ..... , ..... and .....
- 13- ..... sugar molecule forms RNA, while ..... Sugar forms DNA molecule
- 14- Building proteins from amino acids is an example on ..... process, while breaking up glucose molecule to get energy is called .....

# Biology



15- Some enzymes work in acidic medium such as....., while some of them work in basic medium such as .....

16- Most enzymes work at pH of .....

17-Scientist ..... stated that cells are produced from pre-existing ones.

18- ..... microscope has magnification power of 1500x

19- ..... microscope works by sunlight and artificial light.

20- Cell membrane is composed of ..... And .....

21- Chromosomes appear in the form of 2 filaments in .....

Stage of cell division

## **B)Give reason for:**

1-Some birds' feathers are covered with oils

2- Waxes cover the leaves of desert plants

3- The biological importance of phospholipids

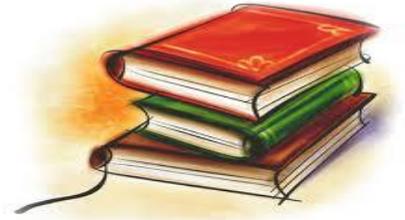
4- When the temp. of an enzyme increases more than its optimum temperature, its activity decreases gradually until it stops

5-Albumin is a simple protein while casein is a conjugated protein.

6- Plant cells have definite shapes

7- Plasma membrane plays an important role in cell

# Biology



## C)Mention the importance of:-

- 1- Carbohydrates
- 2- Starch
- 3- Glycogen
- 4- Lipids
- 5- Cellulose
- 6- Phospholipids
- 7- Steroids
- 8- Proteins
- 9- DNA
- 10- RNA
- 11- Light microscope
- 12- Electronic microscope
- 13- Scanning electronic microscope
- 14- Transmission electronic microscope

# Biology



## **D)Choose the correct answer:**

1-Animals and humans store carbohydrates in .....

- A- Liver                      B- Kidneys                      C- Muscles                      D- A&C

2- Starch is from .....

- A- simple sugars    B- complex sugars    C- Waxes                      D- Steroids

3- ..... forms the cell walls of plant cells

- A- Cellulose                      B- Starch                      C- Galactose    D- Glucose

4- A process which breaks some molecules to release energy from them is called .....

- A- Oxidation                      B- Reduction                      C- Anabolism    D-catabolism

5- Casein is a protein which contains ..... element

- A- Iron                      B- Iodine                      C- Phosphorus    D- Sulphur

6- ..... are the basic component of lymph and blood in human body.

- A- Proteins                      B- Carbohydrates    C- Lipids                      D- Nucleic acids

7- Polymers of proteins are composed of monomers called .....

- A- Nucleic acids    B- Amino acids                      C- Citric acids    D- Uric acid

## **E)Compare between:**

- 1-Simple sugars and complex sugars.
- 2- Fats and oils.
- 3- Structure of DNA and RNA.
- 4- Simple proteins and conjugated proteins.
- 5- Anabolism and catabolism.

# Biology



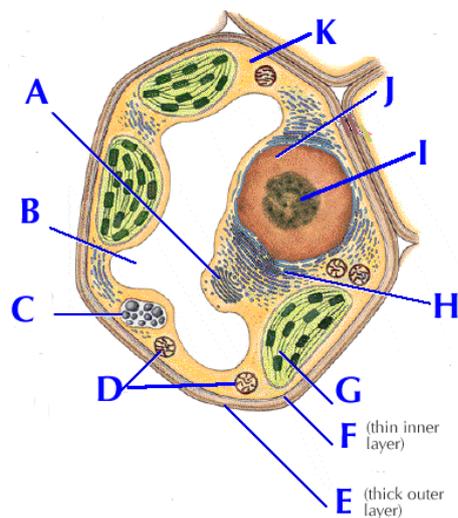
## F)What is meant by:

- 1- Enzymes
- 2-Metabolism
- 3- Cell theory

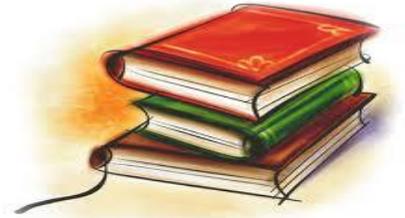
## G)Give an example on:

- 1- Monosaccharides
- 2- Disaccharides
- 3- Polysaccharides
- 4- Simple lipids
- 5- Complex lipids
- 6- Derivative lipids
- 7- Simple protein.
- 8- Conjugated protein.

## H)1- This is the diagram of a typical plant cell, answer the following question:

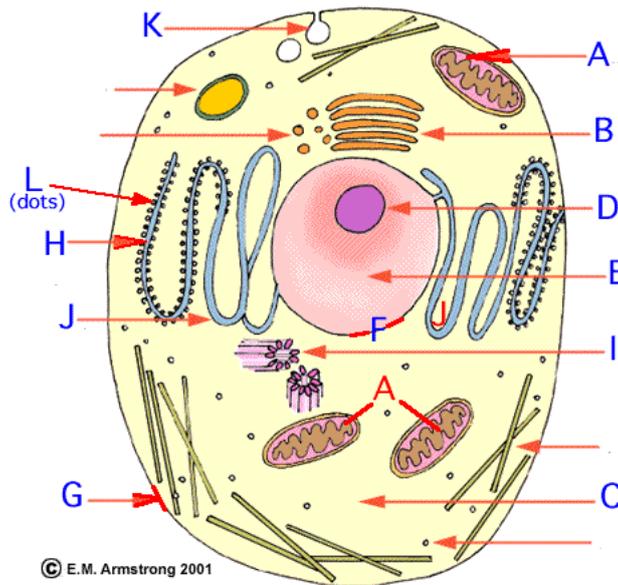


# Biology



1- Label the previous cell

2- This is the diagram of a typical animal cell, answer the following questions



1- Label the previous cell

# Biology

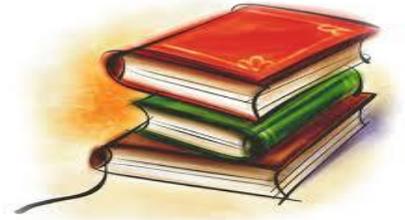


## Model answer

### Complete:

- 1-organic- in organic
- 2-  $(CH_2O)_n$
- 3- polymerization
- 4- glucose- fructose
- 5- glyceride- triglyceride
- 6- cholesterol- steroids
- 7- steroids
- 8- 3 fatty acids- glycerol
- 9- carboxyl- amine
- 10- peptide
- 11- iron- iodine
- 12- Pentose sugar- phosphate group – nitrogenous base.
- 13- ribose- deoxyribose
- 14- anabolism- catabolism
- 15- pepsin- trypsin
- 16- 7.4
- 17- Virchow
- 18- Light
- 19- Light
- 20- phosph- bilayer and protein
- 21- metaphase

# Biology



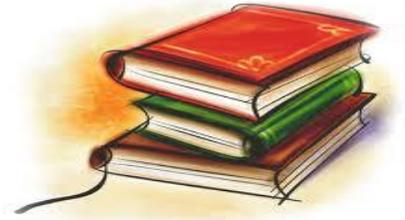
## B) Give reason for:

- 1-To protect them from water which disable their movement.
- 2- To decrease the amount of water they lose by transpiration process.
- 3- They are the lipids which occur in the membranes of plants and animal cells.
- 4- Due to the change of the natural structure of enzyme
- 5- Because albumin is made up of amino acids only while casein is made up of amino acid associated with phosphorus.
- 6-Because they are surrounded by cell walls made of cellulose which give plant cells their definite shapes
- 7- Because it organize the substances entering cells and allow their passage from and to them.

## C) Mention the importance of:

- 1- The importance of carbohydrates:-
  - a- The main and quickest source of energy in living organisms
  - b- They are used in storing energy in living organisms till they need it, as plants store carbohydrates in the form of **starch**, whereas animals and humans store them in the form of **Glycogen** in liver and muscles
  - c- The basic component of some parts of cell such as cellulose in the cell walls of plant cells, protoplasm and cellular membranes.
- 2- Plants store carbohydrates in the form of starch.
- 3- Animals store carbohydrates in the form of glycogen in liver and muscles.

# Biology



## 4- The importance of lipids

a- **A source of energy:** The energy released from lipids is more than that released from carbohydrates. Human body begins releasing energy from lipids when it runs out of carbohydrates.

b- The main component of cell membranes.

c- They make up 5% of the organic compounds forming living cells.

d- Some animals (polar bears, penguins, seals) store lipids under their skins to protect them from low temperatures.

e- They work as protective layers in some plants and animals.

f- Some of them (steroids) work as hormones .

5-Cellulose is the main component of cell walls of the plant cells.

6-Phospholipids are the lipids found in the membranes of animal and plant cells.

7-Steroids are derivative lipids act as hormones.

## 8- The importance of proteins

a - The basic component of cell membranes , ligaments and tendons  
b - They form muscles, fingernails, hair, organs, glands

c- They form liquids in human body such as lymph and blood

d- They are necessary for human growth

e- The main component of chromosomes

f- They form enzymes and hormones

# Biology



## 9-The importance of DNA

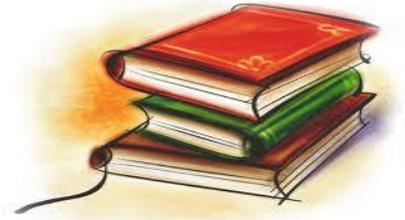
- 1- It is from the basic components of chromosomes.
- 2- It is responsible for transferring hereditary traits through generations.
- 3- It carries the hereditary information responsible for the unique characteristics of living organisms and organization of the biological processes within cells.

## 10-The importance of RNA

It copies the information of DNA , then it transports to cytoplasm to be used in making proteins which are responsible for the hereditary traits and organization of biological processes

- 11-Light microscope: It can magnify things up to 1500 times
- 12-Electronic microscope:It helped scientist discover unknown cellular organelles and more accurate
- 13 - **Scanning electronic microscope:** Used to study the cell surface
- 14- **Transmission electronic microscope:** Used to study the internal structure of cell details about unknown structures

# Biology



## D) Choose the correct answer:

1- d

2- b

3- a

4- d

5- c

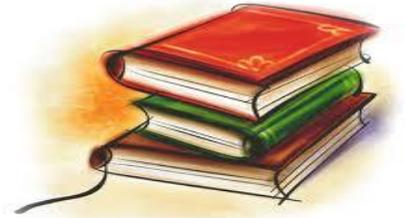
6- a

7- b

## E) Compare between:

1)	Simple sugar	Complex sugar
<b>Structure</b>	It could be: -Monosaccharide: Its polymer is made of 1 molecules(3-6 carbon atoms) -Disaccharide: Its polymer is made of 2 molecules of monosaccharide.	Polysaccharide: Its polymer is made of a group of monosaccharide
<b>Common properties</b>	a-soluble in water b-have small molecular weight. c-have sweet taste.	a-insoluble in water b-have heavy molecular weight. c-don't have taste
<b>Example</b>	Monosaccharide:glucose Fructose and ribose. Disaccharide: Sucrose, lactose and maltose.	Cellulose, starch and glycogen
2)	Oils	Fats
<b>Structure</b>	They are liquid lipids formed from the reaction of unsaturated fatty acids with glycerol. (Triglycerides)	They are solid lipids formed from the reaction of saturated fatty acids with glycerol. (Glycerides)
<b>Importance</b>	Cover the feathers of water birds	Work as thermal insulator under some animals skins

# Biology



3)	DNA	RNA
<b>Pentose sugar</b>	Deoxyribose sugar	Ribose sugar
<b>Nitrogenous base</b>	Adenine(A), Guanine(G), Thymine(T) and Cytosine(C)	Adenine(A), Guanine(G), Uracil(U) and Cytosine(C)
	<b>Double strand</b>	<b>Single strand</b>

4)	Simple proteins	conjugated proteins
<b>Structure</b>	They consist of only amino acids	They consist of amino acids associated with other elements.
<b>Example</b>	Albumin	- Phosphoproteins - Thyroxin - Heamoglobin

5)	Anabolism	Catabolism
<b>Def</b>	A process by which simple molecules are used to build complex macromolecules through a group of chemical reactions which consume energy.	A process by which energy is being released from the chemical bonds in some molecules such as glucose.
<b>Example</b>	Building proteins from amino acids is an example on anabolism	Cells break up glucose to release energy from it.

# Biology



## F) What is meant by?

**1-Enzymes:** Biological catalysts formed from proteins molecules which speed up chemical reactions occurring within living organisms

**2-Metabolism:** A group of biochemical reactions which occur within living organisms in order to build complex macromolecules from simple molecules, or break up molecules to get energy.

**3-** Answer by yourself.

## G) Give an example on:

1- Glucose , ribose and fructose

2- Sucrose, lactose and maltose

3- Starch , cellulose and glycogen

4- Fats , oils and waxes.

5- Phospholipids.

6- Cholesterol and steroids.

7- Albumin

8- Thyroxin and casein

## H) 1- Plant cell

1- Label

A- Golgi body B- Vacuole C- Mitochondria D- lysosomes E- Cell wall

F- Cell membrane G- Chloroplast H- Rough endoplasmic reticulum

I- Nucleolus J- Nucleus K- Cytoplasm

# Biology

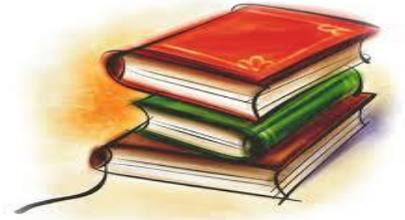


## 2- Animal cell

### 1- Label

A- Mitochondria   B- Golgi body   C- Cytoplasm   D- Nucleolus   E- Nucleus  
F- Nucleus   G- Plasma membrane   H- Rough endoplasmic reticulum  
I- Centriole   J- Smooth endoplasmic reticulum  
K- Vacuole   L- Ribosome

# Biology



## Part (2)

### Questions

#### A) Choose the correct answer:

1-Scientist ..... stated that cells are produced from pre-existing ones.

- A- Schleiden                      B- Virchow  
C- Robert Brown                D- Charles Darwin

2- ..... microscope has magnification power of 1500x

- A- Electronic      B- Light              C- Stereo              D- Digital

3- ..... microscope works by sunlight and artificial light.

- A- Electronic      B- Light              C- Stereo              D- Digital

4- Cell membrane is composed of .....

- A- Phospholipids bi-layer  
B- Cellulose layer  
C- Chitin bi-layer  
D- Glycoprotein bi-layer

5- ..... are responsible for protein synthesis process in living cells.

- A- Mitochondria    B- Lysosomes    C- Cytoskeleton    D- Ribosomes

6- Centrosome exists in all animal cell except for.....

- A- Nerve cells      B- Sperm cells    C- Liver cells      D- Muscle cells

7- Chromosomes are formed in ..... Stage of cell division

- A- Anaphase        B- Metaphase    C- Telophase      D- Prophase

8- ..... form cilia and flagella in animal cells

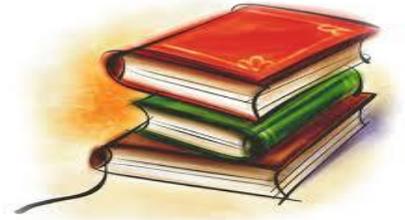
- A- Centrosome    B- Mitochondria    C- Lysosome      D- Ribosome

# Biology



- 9- ..... is responsible for generating energy in cell  
A- Centrosome B- Mitochondria C- Lysosome D- Ribosome
- 10- .....is responsible for digesting nutrients in cell.  
A- Centrosome B- Mitochondria C- Lysosomes D- Ribosomes
- 11-..... are plastids which are devoid of pigments  
A- Leucoplasts B- Chromoplasts C- Chloroplasts D- Chromatin
- 12- All the following organelles exist in animal cells except .....  
A- Cell wall B- Cell membrane  
C- Mitochondria D- Lysosomes
- 13- The tissue which is responsible for storing nutrients in plants  
A- Parenchyma B- Sclerenchyma C- Collenchyma D- Phloem
- 14- Cell walls of Collenchyma tissues cells are thickened with .....  
A- Lignin B- Cellulose C- Chitin D- Glucose
- 15- The solid tissue is known as .....  
A- Sclerenchyma B- Collenchyma C- Epithelium D- Parenchyma
- 16- The cell walls of Sclerenchyma tissues cells are thickened with.....  
A- Lignin B- Cellulose C- Chitin D- Glucose
- 17- The tissue which is responsible for transporting water and salts from roots to leaves.  
A- Xylem B- Phloem  
C- Sclerenchyma D- Parenchyma

# Biology



18- The plant tissue which transport nutrients from leaves to all plant parts.

A- Collenchyma

B- Sclerenchyma

C- Xylem

D- Phloem

19- An epithelial tissue which forms the lining of capillaries

A- Simple columnar epithelial tissue

B- Simple vascular epithelial tissue

C- Simple squamous epithelial tissue

D- Stratified squamous epithelial tissue

20- A tissue formed from one layer of flat cells.

A- Simple columnar epithelial tissue

B- Simple vascular epithelial tissue

C- Simple squamous epithelial tissue

D- Stratified squamous epithelial tissue

21- A tissue forming kidney tubules.

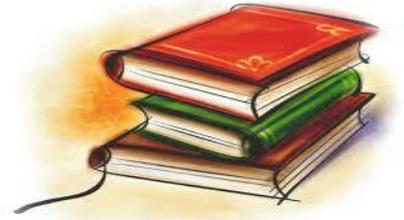
A- Simple columnar epithelial tissue

B- Simple cuboidal epithelial tissue

C- Simple squamous epithelial tissue

D- Stratified squamous epithelial tissue

# Biology



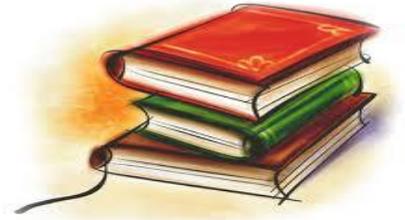
22- Tissues which support body.

- A- Skeletal connective tissues
- B- Vascular connective tissues
- C- Simple squamous epithelial tissue
- D- Stratified squamous epithelial tissue

## **B) Write the scientific term:**

- 1- A microscope which depends on light and has a magnification power of 1500x
- 2- A microscope which gives clear magnified photos of samples with high differentiation
- 3- A pigment which exist in chloroplasts
- 4- Thin filaments coiled around each other which turn into chromosomes during cell division process.
- 5- Muscles which are composed of involuntary non-striated muscles fibers.
- 6- They are composed of striated voluntary muscles, they are usually found attached to the skeleton.
- 7- They are composed of striated involuntary muscles, they are found in the walls of heart only
- 8- A living tissue composed of rectangular cells, its wall are not thickened with Lignin but with cellulose.
- 9- Coloured pigments which exist in chromoplasts
- 10- Non membranous organelle which synthesize proteins in the cell.

# Biology



11- An animal tissue responsible for transporting digested food and excretory substances

## **C- Show the importance Of**

- 1- Light microscope
- 2- Electronic microscope
- 3- Scanning electronic microscope
- 4- Transmission electronic microscope

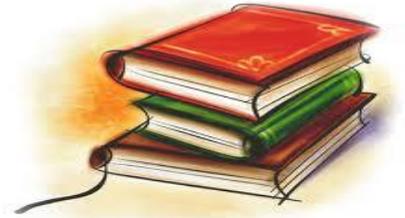
## **D- Compare between**

- 1- Animal and plant cell
- 2- Cell wall and plasma membrane.
- 3- Lysosomes and ribosomes.
- 4- chloroplast and chromoplast.
- 5- Xylem tissue and phloem tissue.

## **E) Give reasons for:**

- 1- Plant cells have definite shapes
- 2- Plasma membrane plays an important role in cell
- 3- Ribosome plays an important role in cell
- 4- Plant cells can perform photosynthesis process, while animal cells cannot
- 5- There are many Golgi bodies in glandular cells
- 6- Mitochondria are frequently found in muscular cells.
- 7- Mitochondria are considered center energy production in the cell.
- 8- Xylem is from the most important tissues in plants and trees
- 9- Phloem is from the most important tissues in plant and trees

# Biology

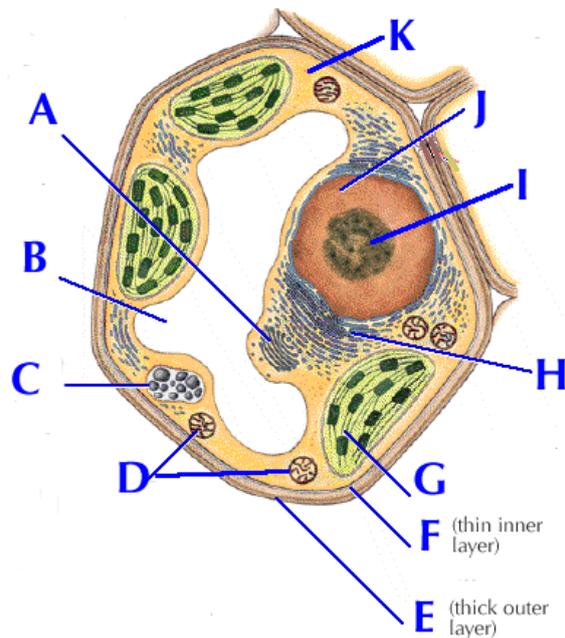


10 - In phloem tissues, there are living companion cells attached to these tissues sieve tubes

11- Epithelial tissues line the small intestines of living organisms

12-The presence of a columnar epithelial tissue lines the intestine.

**F)1- This is the diagram of a typical plant cell, answer the following question**

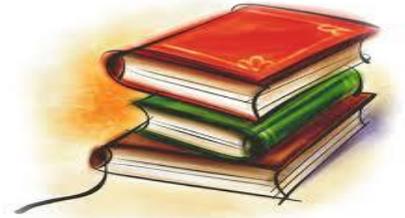


1- Label the previous cell

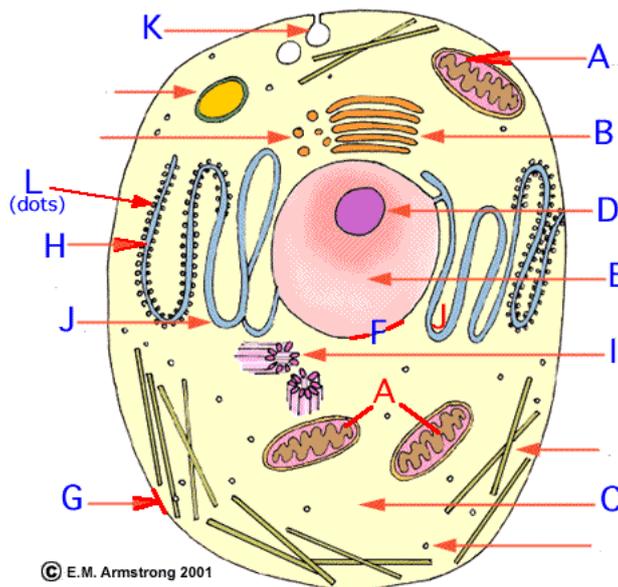
2- Mention the function of (A), (D) and (G)

3- Which organelle is responsible for synthesizing proteins?

# Biology



**2- This is the diagram of a typical animal cell, answer the following questions**



1- Label the previous cell

2- Mention the function of (A), (I), (J)

3- Which organelle is responsible for synthesizing lipids in cell

**G- Illustrate with drawing the structure of:**

1- Mitochondria.

2- Chloroplast.

3- Xylem tissue.

4- Phloem tissue.

5- Nerve cell.

# Biology



## Unit (2):

### Chapter (1)

A- Discus. Cell theory:

B- Mention the role of each scientists in cell discovery:

- 1) Robert Hook
- 2) Van Leeuwenhoek
- 3) Schleiden
- 4) Schwann
- 5) Virchow

C- Compare between light and electron microscope.

# Biology



## Answers

### Choose :

1-B

2-B

3-B

4-A

5-D

6-A

7-B

8- A

9-B

10-C

11-A

12-A

13-A

14-B

15-A

16-A

17-A

18-D

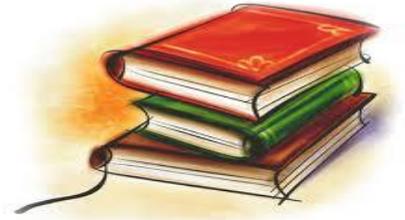
19-C

20-C

21-B

22- A

# Biology



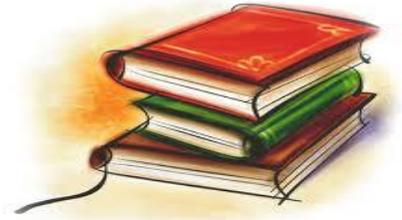
## B- Write the scientific term:

- 1-Light microscope.
- 2-Electronic microscope.
- 3-Chlorophyll
- 4-Chromatin reticulum
- 5-Smooth muscles
- 6-Skeletal muscles
- 7-Cardiac muscle
- 8-Collenchyma
- 9-Carotenoids
- 10- Ribosomes
- 11- Vascular connective tissue (blood and lymph)

## C) Show the importance:

- 1-Light microscope: It can magnify things up to 1500 times
- 2-Electronic microscope:It helped scientist discover unknown cellular organelles and more accurate
- 3 - **Scanning electronic microscope:** Used to study the cell surface
- 4- **Transmission electronic microscope:** Used to study the internal structure of cell details about unknown structures

# Biology



## D) Compare:

1)

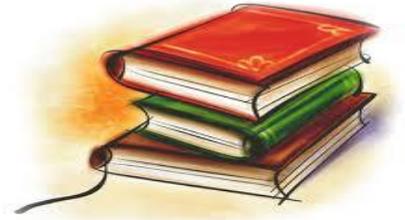
<b>Animal cell</b>	<b>Plant cell</b>
<ul style="list-style-type: none"> <li>- It has a centrosome whose two centrioles form spindle fibers in cell division process</li> <li>- It is surrounded by plasma membrane</li> <li>- It doesn't have plastids</li> <li>- It contains lysosomes</li> <li>- Contains numerous small vacuoles</li> </ul>	<ul style="list-style-type: none"> <li>- It doesn't have centrosome, but has a part of cytoplasm which form spindle fibres in cell division process</li> <li>- Cell wall made of cellulose surrounds the plasma membrane</li> <li>- It has plastids</li> <li>- It doesn't contain plastids</li> <li>- Contains large sap vacuole</li> </ul>

## 2 , 3,4 Answer by yourself

5)

	<b>Xylem</b>	<b>Phleom</b>
Type	Compound plant tissue	Compound plant tissue
Function	Transfer water and minerals from roots to leaves (upward)	Transfer ready made food from leaves to roots , stem (downward) , flowers, fruits and buds (upward)
Structure	<ul style="list-style-type: none"> <li>1-Xylem vessels.</li> <li>2-Xylem tracheids.</li> <li>3-Xylem parenchyma.</li> </ul>	<ul style="list-style-type: none"> <li>1- Sieve tubes</li> <li>2- Companion cells</li> </ul>

# Biology



## E)Give reasons for:

- 1-Because they are surrounded by cell walls made of cellulose which give plant cells their definite shapes
- 2- Because it organize the substances entering cells and allow their passage from and to them.
- 3- Because it synthesizes proteins in cell
- 4-Because plant cells have chloroplasts containing chlorophyll, which change light energy of sun into chemical energy and store it in glucose chemical bonds, while animal cells do not have these chloroplasts.
- 5- Because Golgi bodies in these cells are responsible for secreting hormones.
- 6-To increase energy production needed by the cell.
- 7-Because they act as a storehouse for substances needed to store energy ATP and respiratory enzymes.
- 8-Because it transports water and salts from their roots to their leaves
- 9-Because it transports nutrients produced by photosynthesis process from plants' leaves to all their parts
- 10-In order to provide them with energy
- 11-In order to protect the cells under these surfaces from microbes, damage and dryness
- 12- In order to allow the small intestine absorb digested food and water

# Biology



**F-**

## **1- Plant cell**

1- Label

A- Golgi body B- Vacuole C- Mitochondria D- Ribosomes E- Cell wall  
F- Cell membrane G- Chloroplast H- Rough endoplasmic reticulum  
I- Nucleolus J- Nucleus K- Cytoplasm

2- Function

(A) Golgi bodies: It modifies and transports the substances sent to them from the ER across the cell or outside it.

(D) Ribosomes: They synthesize proteins.

(G) Chloroplast: Perform photosynthesis process.

3- ribosomes

## **2- Animal cell**

1- Label

A- Mitochondria B- Golgi body C- Cytoplasm D- Nucleolus E- Nucleus  
F- Nucleus G- Plasma membrane H- Rough endoplasmic reticulum  
I- Centriole J- Smooth endoplasmic reticulum K- Vacuole L- Ribosome

2- Function

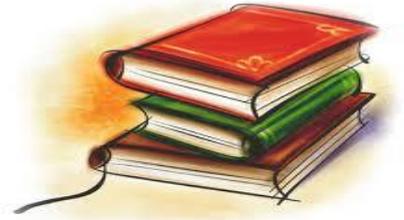
(A) Mitochondria: Stores and generates energy.

(I) Centriole: forms spindle fibres across the cell during cell division process.

(J) Smooth ER: Changes carbohydrates to glycogen – synthesize lipids

3- Smooth endoplasmic reticulum

# Biology



G-

1-

Mitochondria Structural Features

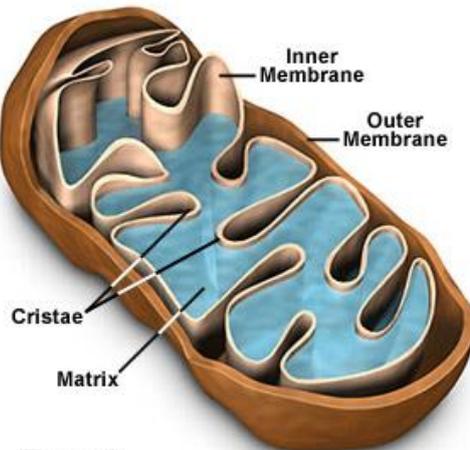
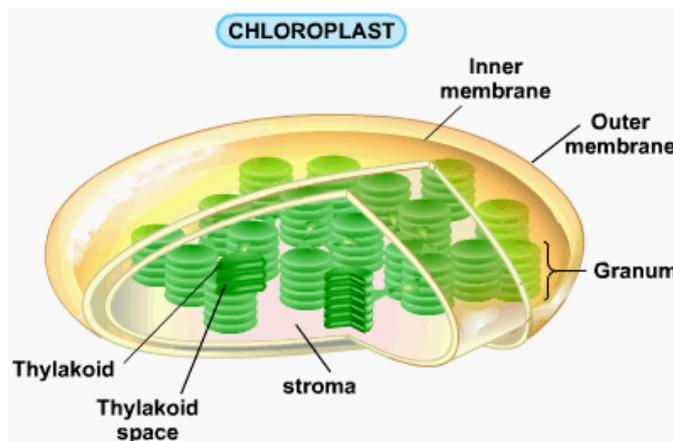


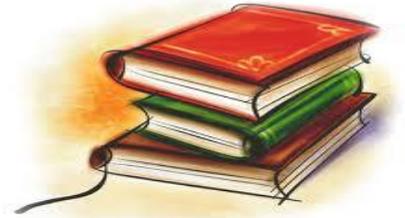
Figure 1

2-

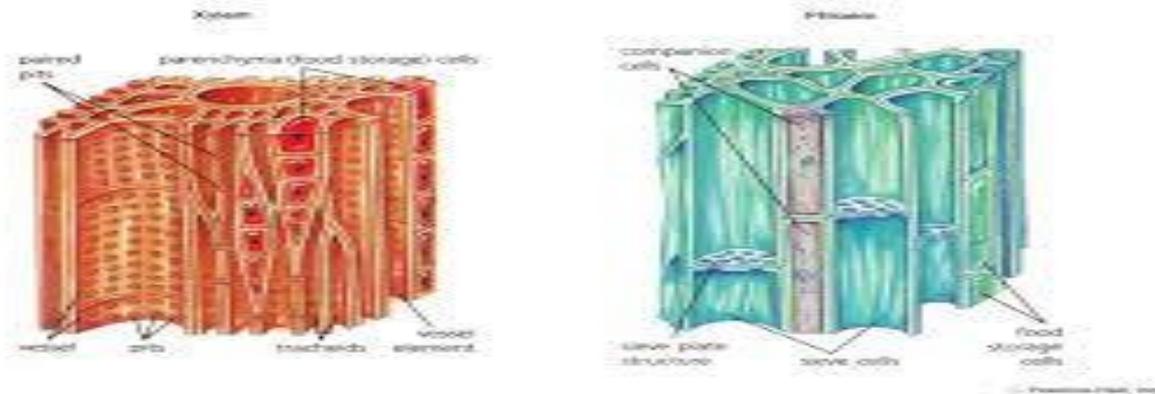


3, 4-

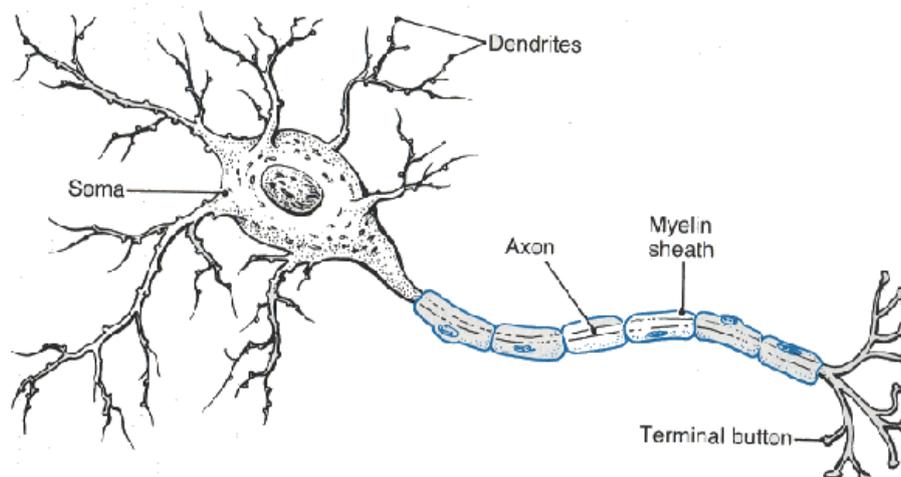
# Biology



## 25. Vascular Tissue



5-



# Biology



## Model Answer

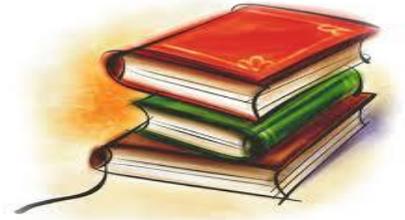
A-

<b>Cell theory:</b>	<p><u>Cell theory includes 3 principles, which are:</u></p> <ul style="list-style-type: none"><li>• All living organisms are made up of cells, which may be individually or grouped.</li><li>• Cells are the basic functional units of all living organisms.</li><li>• All cells come only from other pre- existing living cells</li></ul>
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B-

<b>Robert Hook (1665):</b>	He invented a simple microscope and used it to screen a piece of cork. He found that it is composed of small boxes arranged in rows. He named each box by the name "cell"
<b>Van Leeuwenhoek (1674):</b>	He made a simple microscope using lenses with a magnifying power up to 200 times. He used it for screening different substance such as water of ponds and the blood. So, he was the first to observe the world of microscopic organisms and living cells

# Biology



<b>Schleiden (1838):</b>	He deduced that all plants are composed of cells.
<b>Theodor Schwann (1839):</b>	He deduced that the bodies of all organisms are composed of cells.
<b>Virchow (1855):</b>	<ul style="list-style-type: none"><li>• He stated that the cell is the functional and building unit of all living organisms.</li><li>• He emphasized that the new cells are produced only by produced only by previously existing other living cells.</li></ul>

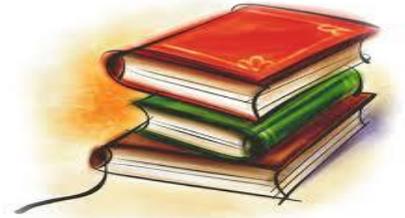
# Biology



C-

	<b>Light microscope</b>	<b>Electron microscope</b>
<b>Idea of work:</b>	Depends on sunlight or the artificial light.	Depends on a beam of high speed electrons.
<b>Type of lenses used:</b>	Glass lenses (ocular and objective).	Electromagnetic lenses.
<b>Function :</b>	<ul style="list-style-type: none"><li>- Magnifying microorganisms and non – living objects.</li><li>- Screening the structure of big – sized objects after cutting them into more thin slices that allow the passing of light through them.</li></ul>	<ul style="list-style-type: none"><li>- Clarifying cellular components that had not been known before.</li><li>- Knowing more accurate</li></ul>

# Biology



<b>Magnification power:</b>	<b>Low (maximum magnification does not exceed 1500 times of the object real size).</b>	<b>Very high ( magnification may reach one million times of the object real size).</b>
<b>Power of contrast:</b>	<b>Low.</b>	<b>Very high.</b>
<b>Types:</b>	<hr/>	<ul style="list-style-type: none"><li>- <b>Scanning electron microscope that is used to study cell surface.</b></li><li>- <b>Transmission electron microscope that is used to study the cell internal structures.</b></li></ul>