

7. The structure of Cell and Micro-organisms

Exercises

1 A. Question

Answer the following questions.

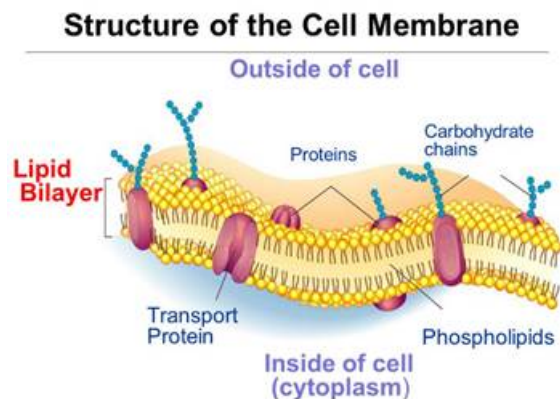
List the characteristics of the cell membrane.

Answer

Characteristics of cell membrane are as follows -

- 1) The cytoplasm and nucleus are enclosed in a membrane called cell membrane
- 2) Cell membrane is outer Very thin, flexible membrane.
- 3) Cell membrane function is to separates cells from each other and also the cell from the surrounding medium.
- 4) Cell Membrane protects the inner parts of the cell and maintains shape of cell.
- 5) Cell membrane regulates the flow of substances into and out of the cell.

The diagram of cell membrane is given below:



1 B. Question

Answer the following questions.

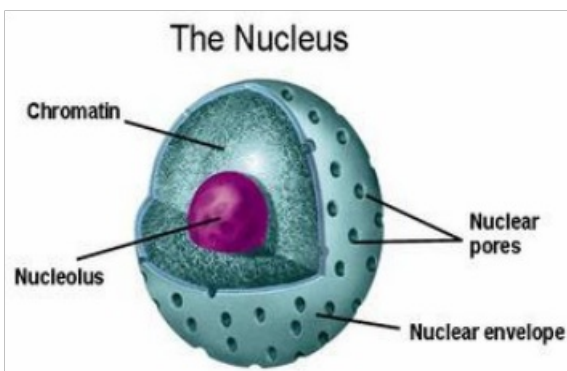
Explain the function of the nucleus.

Answer

Functions of nucleus:

- 1) Nucleus is the central and largest component of cell.
- 2) Nucleus controls all the major functions of cell.
- 3) Inside the nucleus Chromosomes are made from DNA have role during cell division
- 4) In nucleus DNA thread of certain length is called gene, these genes transmits inherited characteristics to next generation.

The diagram of nucleus is given below:



1 C. Question

Answer the following questions.

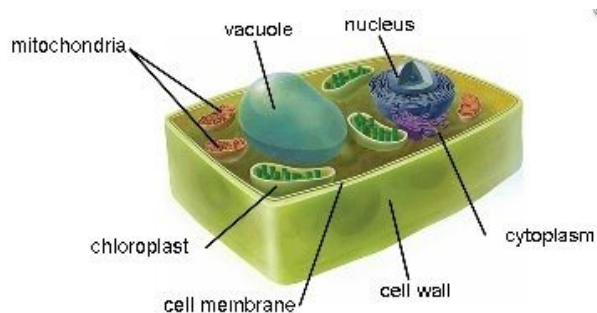
What function do vacuoles perform?

Answer

Vacuoles perform following functions-

- 1) A vacuole is an empty space filled with water.
- 2) A vacuole is an organelle with a covering of single membrane.
- 3) Plants cell have large vacuole and animals have small, many vacuoles.
- 4) Vacuoles stores products for excretion and secretion temporarily.

The diagram of vacuoles is given below:



2 A. Question

Choose the right word to fill in the blanks.

The is an organelle found only in plant cells.

1. Ribosomes 2. Mitochondria 3. Plastids 4. Nucleus

Answer

Plastids.

Explanation: Several small colored bodies in cytoplasm are plastids. They are of different colors some are green called chlorophyll.

2 B. Question

Choose the right word to fill in the blanks.

Chromosomes are found in the organelle called.....

1. Plastids 2. Mitochondria 3. Nucleus 4. Golgi body

Answer

Nucleus.

Explanation: chromosomes are made from DNA .This DNA is found in nucleus. Whereas others are present

outside as plastids, mitochondria, Golgi bodies.

2 C. Question

Choose the right word to fill in the blanks.

The cell carries out photosynthesis.

1. Plant 2. Yeast 3. Muscle 4. Nerve

Answer

Plant

Explanation: The cells of plants have chlorophyll which helps in photosynthesis.

3 A. Question

Write notes on:

Mitochondria:

Answer

1) Mitochondria are Tubular shaped organelles in cytoplasm.

2) Mitochondria structure is doubled walled, inner wall folded.

3) Mitochondria are called power house of cell as they produce energy from food material in cell and supply to cell which help in function of whole cell.

3 B. Question

Write notes on:

Antibiotics:

Answer

The word Antibiotics refers "anti" to against and "bio" to life.

Antibiotics are substances which kill the growth of microorganisms.

Only certain microorganisms produce antibiotics for example -

<u>Antibiotics produced</u>	<u>Micro-organisms producing antibiotics</u>	<u>Germs destroyed</u>
Penicillin	Penicillium chrysogenum	Diphtheria, pneumonia germs
chloromycetin	Streptomyces venezuealae	Typhoid germs
streptomycin	Streptomyces griseus	Tuberculosis germs
tetracycline	Streptomyces aureofaciens	Various germs

3 C. Question

Write notes on:

Harmful bacteria:

Answer

1) Microscopic organisms having free chromosome, cell organelles, cell membrane, cell wall.

2) Harmful bacteria cause diseases in humans and animals.

3) Few well known harmful bacteria are:

Staphylococcus bacteria produce a poisonous substance enterotoxin

As it grows on food stuffs eating such food causes diarrhea and vomiting.

Clostridium bacteria grow in canned food stuffed after date of expiry.

3 D. Question

Write notes on:

Useful bacteria:

Answer

- 1) Bacteria are microorganisms with free chromosomes having cell membrane, cell wall and cytoplasm.
- 2) Some bacteria are useful to humans, plants, animals.
- 3) Few well known useful bacteria are:

Rhizobium bacteria found in nodules on the roots of leguminous plants are useful as nitrogen fixing agents, They function by transforming nitrogen in air to nitrogen compound; this nitrogen enters the soil making it fertile.

Azetobacter bacteria, an independent bacteria fixes nitrogen in air.

Soil contains several bacteria which decompose dead plants and animals and produce humus to increasing the fertility.

4. Question

Fill in the blanks.

- i. The name 'cell' was first used by the scientist
- ii. The cell wall of the plant cell consists of the substance
- iii. The cell wall is found only in the cell.
- iv. is the powerhouse of the cell.
- v. The cell membrane is

Answer

- i. Robert Hooke observed a thin section of cork. The structure of section was like honeycomb means made of small compartments.
- ii. Cellulose. Cell wall on outer side of cell membrane is present only in plant cell. Function of cell wall is plant cell protection.
- iii. Plant cell. Cell wall on outer side of cell membrane is present only in plant cell. Function of cell wall is plant cell protection
- iv. Mitochondria. Mitochondria produce energy from food material in cell and supply to whole cell because of its function it is called powerhouse of cell.
- v. Outer covering. Cell membrane is the outer covering of cell, its structure is like very flexible, thin layer. Function is to maintain the shape of the cell.

5 A. Question

Differentiate between:

Plants cells and animal cells:

Answer

	PLANT CELL	ANIMAL CELL
1.	There is cell wall containing cellulose	There is no covering around the cell membrane
2.	Vacuoles are large and less	Vacuoles are small and more in number
3.	There is chlorophyll	There is no chlorophyll

5 B. Question

Differentiate between:

Cell membrane and cytoplasm:

Answer

	CELL MEMBRANE	CYTOPLASM
1.	Cell membrane is the outer covering of the cell.	Cytoplasm is the substance that fills the cells except nucleus
2.	The layer is very thin and flexible.	Cytoplasm is filled with semi fluid substance with water soluble organic and inorganic substances.
3.	Cell membrane protects the inner parts of the cell and regulates the flow of substances outs. and into the cell.	contains all cell organelles mitochondria, Golgi bodies

Activities

1. Question

Find out what skin donation is useful for.

Answer

The skin is the largest human organ. Its function is sense of touch, covering to protect us from heat and cold, and from environmental factors such as chemicals,

Ultraviolet radiation and bacteria. Donated skin is used as a dressing for severe burns patients who do not have healthy skin on their body that can be used to graft on their wounds.

Also help in relieving the patient's pain and discomfort, prevents risk of infection.

2. Question

In order to observe protozoa like amoeba and paramecium, collect the petals of some flowers. Place them in water for a day or two. Observe a drop of this water under a microscope.

Answer

You will observe Amoeba and Paramecium are single celled. Like most plant and animal cells, it has cytoplasm,

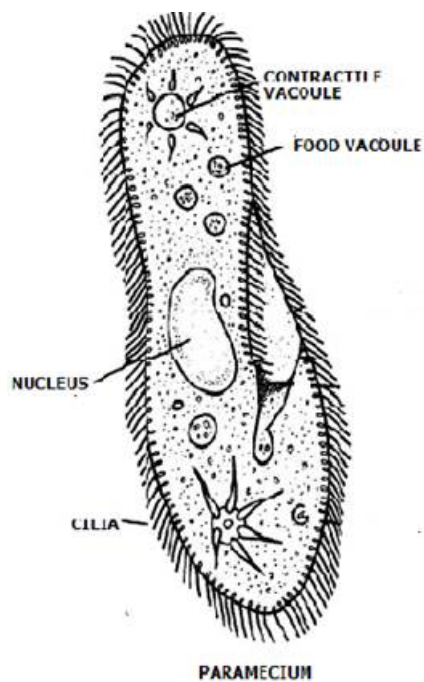
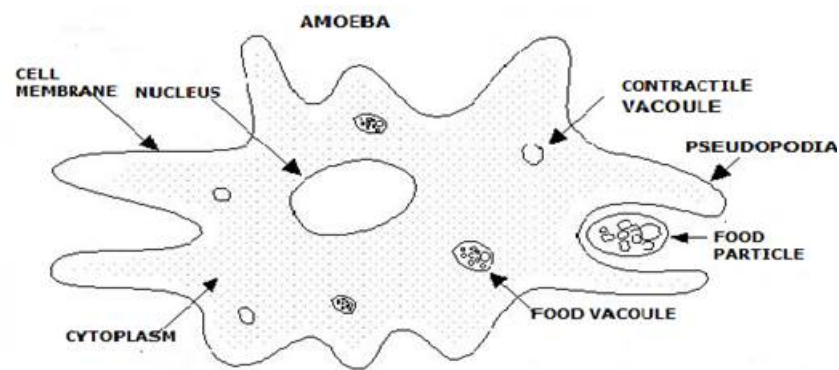
Nucleus, cell membrane and cell organelles in the cytoplasm, contractile vacuoles.

They exhibit all the essential functions of any living organism.

Amoeba has projections of varying lengths protruding out of its body.

These are called pseudopodia (pseudo: false; podia: feet). These projections appear and disappear as Amoeba moves or feeds.

Unlike amoeba, paramecium has a particular permanent slipper shape and certain areas of cytoplasm, (Cell organelles) carry out specific functions. Cilia are present all over the body surface for movement.



3. Question

Peel off the thin membrane inside a layer of onion. Place it on a glass slide and put a drop of iodine on it. Cover it with a cover slip. Now your slide is ready. Observe it under a microscope. You will see cells which have a nucleus and are enclosed in a cell wall. Draw the onion cells as you see them under the microscope.

Answer

Cells in the living organisms are basic structural units. Onion being a plant cell has cell wall which is a difference between animal and plant cell. The cell wall is thick and prevents the cells from temperature, atmospheric moisture.

The cell is filled with semi fluid called cytoplasm. This cytoplasm consists of centrally placed nucleus.

Microscopic view of onion slide -

