NCERT Most Important Question For Class-9 Science Chapter-5 The Fundamental Unit of Life

1.What is plasmolysis? What happens to a plasmolysed cell when it is placed in water?
Answer

Shrinkage of protoplast from the cell wall in presence of hypertonic solution due to exosmosis is know as plasmolysis. When a plasmolysed cell is placed in water, the concentration of water in the outside medium is more than the concentration in the cell. Hence, water moves inside the cell leading to its swelling.

2.What is plasma membrane ? What are its functions?

Answers

Plasma membrane also called as cell membrane, is the outer covering of a cell that separates its contents from the surrounding medium. It is made up of lipids and proteins, and provides a mechanical barrier to protect the inner contents of the cell. It encloses the nucleus and cytoplasm of the cell.

3.What do you mean by a nucleoid?

Answer

In prokaryotes and lower organisms like bacteria, the nuclear region of the cell may be poorly defined because of the absence of a nuclear membrane. Such an undefined and incipient nucleic region containing only naked nucleic acids without any membrane covering them is called a nucleoid.

4.(a) Why is the cell called the structural and functional unit of life?
(b) Why is the plasma membrane called a selectively permeable membrane ?
(c) Name the factor which decides the movement of water across the plasma membrane.

Answer

(a) Because shape and size of cells are related to specific functions they perform. Cells constitute various components of plants and animals.

(b) Because it permits exit and entry of some selected materials in and out of the cells.

(c) Amount of substance dissolved in water or solute concentration.

5. (i) Where are chromosomes present in the cell? What is their chemical composition?
(ii) How many pairs of chromosomes are present in humans?

Answer

(i) Chromosomes are present in the nucleus of a cell. Their chemical composition is of DNA, RNA and proteins.

(ii) Human have 23 pairs of chromosomes.
6.

(a) What are the consequences of the following conditions ?
(i) A cell having higher water concentration than the surrounding medium.
(ii) A cell having lower water concentration than the surrounding medium.
(iii) A cell having equal water concentration to its surrounding medium.
(b) Name the materials of which the cell membrane and cell wall are composed of.

Answer

(a) (i) When a cell possess higher water concentration than the surrounding medium then exosmosis occurs in the cell due to difference in concentration and cell shrinks.

(ii) When a cell has low water concentration than surrounding medium then endosmosis occurs that results in the swelling of the cell.

(iii) A cell having equal water concentration to its surrounding medium will not show any changes.

(b) Cell wall is composed of cellulose and cell membrane is composed of lipids and proteins.
7. Explain the terms: (a) Endocytosis, (b) Plasmolysis.

(a) Endocytosis: The flexibility of the cell membrane enables the cell to engulf food and other materials from its external environment. Such process is known as endocytosis.

(b) Plasmolysis: When a living plant cell loses water through osmosis, there is shrinkage or contraction of the contents of the cell away from the cell wall. This phenomenon is known as plasmolysis.
8.How do substances like CO_2 and water move in and out of the cell?
Answers
Gases like CO_2 and O_2 move in and out of the cell by diffusion from their higher concentration to lower concentration. Water enters the cell by endosmosis through semi-permeable plasma membrane from its higher concentration to lower concentration.

Similarly, water moves out of the cell by exosmosis when a cell is placed in a hypertonic solution.

9.Who discovered cells and how?

Answer

An English Botanist, Robert Hooke discovered cells. In 1665, he used self-designed microscope to observe cells in a cork slice.

10. Differciate Prokaryotic cell & Eukaryotic cell ?

Answer

Prokaryotic cell	Eukaryotic cell
Most prokaryotes are unicellular.	Most eukaryotes are multicellular.
Size of the cell is generally small (0.5-5 µm).	Size of the cell is generally large (50- 100 µm).
Nuclear region is poorly defined due to the absence of a nuclear membrane or the cell lacks true nucleus.	Nuclear region is well-defined and is surrounded by a nuclear membrane, or true nucleus bound by a nuclear membrane is present in the cell.
It contains a single chromosome.	It contains more than one chromosome.
Nucleolus is absent.	Nucleolus is present.
Membrane-bound cell organelles such as plastids, mitochondria, endoplasmic reticulum, Golgi apparatus, etc. are absent.	Cell organelles such as mitochondria, plastids, endoplasmic reticulum, Golgi apparatus, lysosomes, etc. are present.
Cell division occurs through binary fission	Cell division occurs by mitosis.
Prokaryotic cells are found in bacteria and blue-green algae.	Eukaryotic cells are found in fungi, plants, and animal cells.

11. Why are lysosomes known as suicide bags?

Answer

Lysosomes are called suicide bags because in case of disturbance of their cellular metabolism they digest their own cell by releasing own enzymes.

12.Where are proteins synthesized inside the cell?

Answer

The proteins are synthesized in the Ribosome inside the cell.

13.Make a comparison and write down ways in which plant cells are different from animal cells.

Animal cell	Plant cell
They do not have a cell wall.	They have a cell wall made up of cellulose.
They do not have chloroplast.	They contain chloroplast.
They have centrosome.	They do not have centrosome.
Vacuoles are smaller in size.	Vacuoles are larger in size.
Lysosomes are larger in number.	Lysosomes are absent or very few in number
Prominent Golgi bodies are present.	Subunits of Golgi bodies known as dictyosomes are present.

14.Which organelle is known as the powerhouse of the cell? Why?

Answer

Mitochondria are known as the powerhouse of cells because energy required for various chemical activities needed for life is released by mitochondria in the form of ATP (Adenosine triphosphate) molecules.

15.Where do the lipids and proteins constituting the cell membrane get synthesized?

Answer

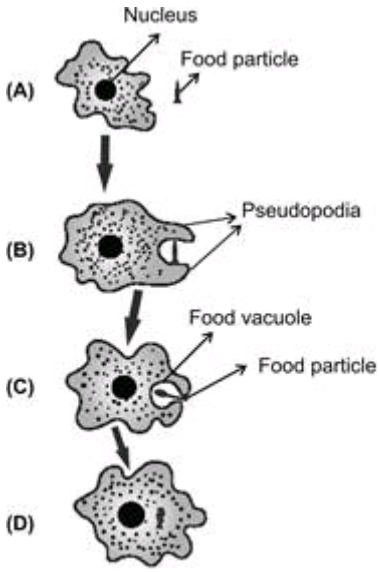
Lipids are synthesized in Smooth endoplasmic reticulum (SER) and the proteins are synthesized in rough endoplasmic reticulum (RER).

16.How does an Amoeba obtain its food?

Answer

Amoeba takes in food using temporary finger-like extensions of the cell surface which fuse over the food particle forming a food-vacuole as shown in figure. Inside the food vacuole, complex substances are broken down into simpler ones which then diffuse into the cytoplasm. The remaining undigested material is moved to the surface of the cell and thrown out.

17. Draw and labeled Plant Cell and Animal Cell?



(Nutrition in Amoeba)

Animal Cell