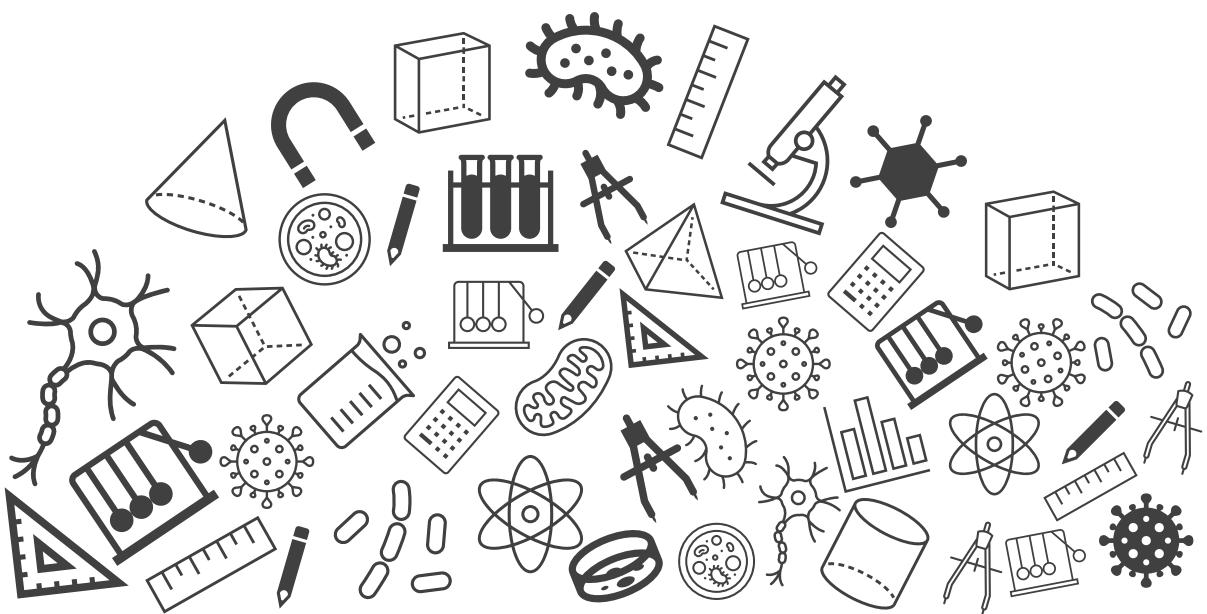




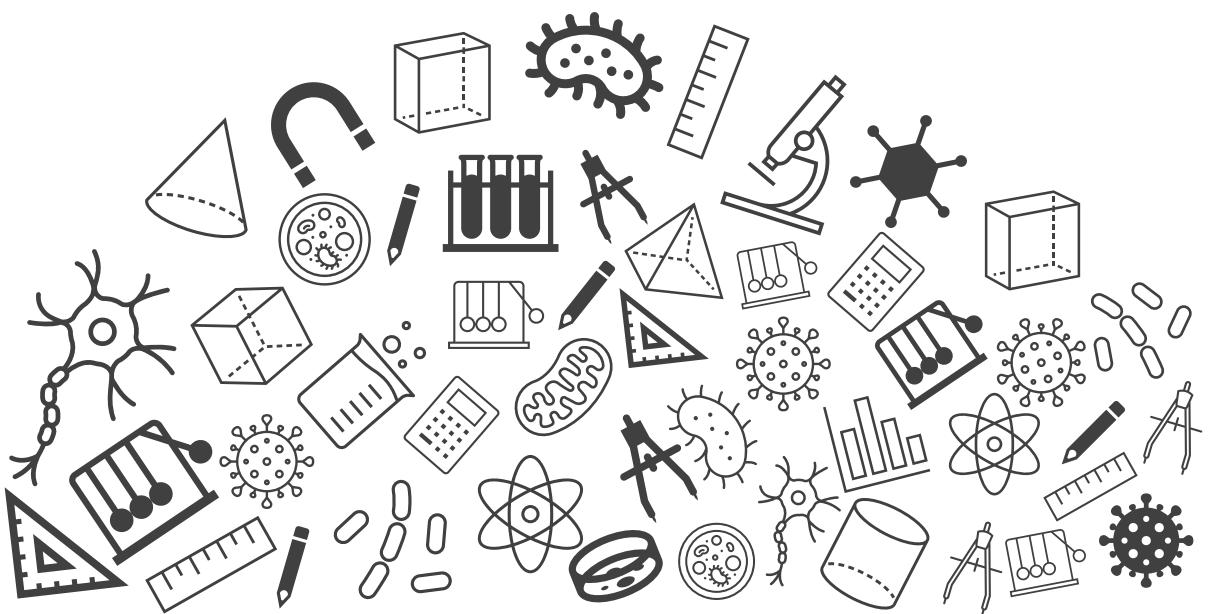
Grade 09

Science Chapter Notes



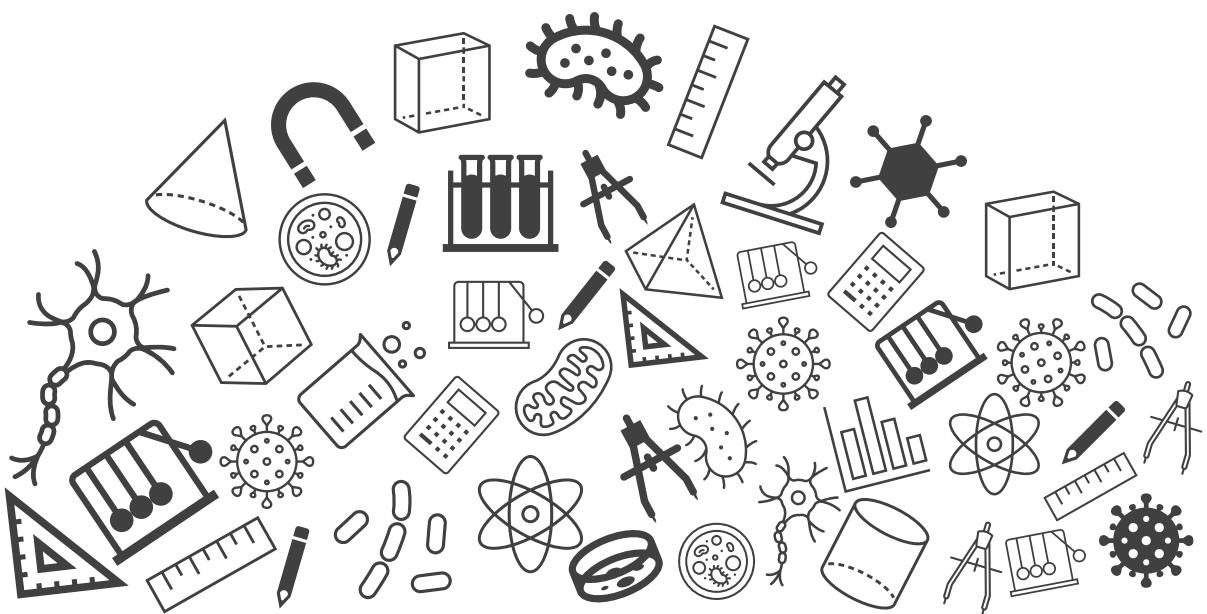


BIOLOGY





The Fundamental Unit of Life



The Fundamental Unit of Life

1. Give a brief account of discovery of the cell.

[2 Marks]

Solution:

Robert Hooke examined a thin slice of cork under a self-designed crude microscope and observed that the cork resembled the structure of a honey comb.

[1 Mark]

The latter consisted of many tiny compartments. Hooke called them cellulae (Singular cellula), now termed cells. Cellula is a Latin name which means a 'little room'. Such rooms were also present in monasteries.

[1 Mark]

2. Name the two postulates of the cell theory.

[2 Marks]

Solution:

Cell is the basic structural and functional unit of life for all living beings. [1 Mark]

All cells arise from pre-existing cells. [1 Mark]

3. Cytoplasm is also known as protoplasm. Is the statement true? Justify. [2 Marks]

Solution:

The statement is false. [1 Mark]

Cytoplasm is a jelly-like fluid substance inside the cell where all the cell organelles are suspended. And protoplasm includes cytoplasm and the nucleus of the cell. [1 Mark]

The Fundamental Unit of Life

4. What happens when
 - (a) Dry apricots are left for sometime in pure water and later transferred to sugar solution?
 - (b) A Red Blood Cell is kept in concentrated saline solution?

[2 Marks]

Solution:

(a) When dry apricots are placed in pure water, they swell as water moves from outside to the inside of the cell due to endosmosis. But, when the same is transferred into a sugar solution, the cell shrinks as the water moves outside of the cell to retain the equilibrium. This is called exosmosis.

[1 Mark]

(b) When a red blood cell is kept in a saline solution, the cell shrinks as the water moves from inside to outside to maintain the equilibrium concentration.

[1 Mark]

5. What is cell visualisation? Give two examples of cells that can be observed under the microscope. [2 Marks]

Solution:

In order to study cell structure and the organelles that it contains, cell visualisation techniques are being used. As most cells are very small, they cannot be seen with naked eyes and therefore need to be magnified.

[1 Mark]

Light microscopy was first used to magnify the image of the cells using stains. Cells from an onion peel, leaves, pond water etc. can be visualised using the stain safranin.

[1 Mark]

The Fundamental Unit of Life

6. Endoplasmic reticulum functions as a cytoplasmic framework of the cell .
Explain. [3 Marks]

Solution:

- **Endoplasmic reticulum (ER)**, in biology, a continuous membrane system that forms a series of flattened sacs within the cytoplasm of eukaryotic cells and serves multiple functions, being important particularly in the synthesis, folding, modification, and transport of proteins .

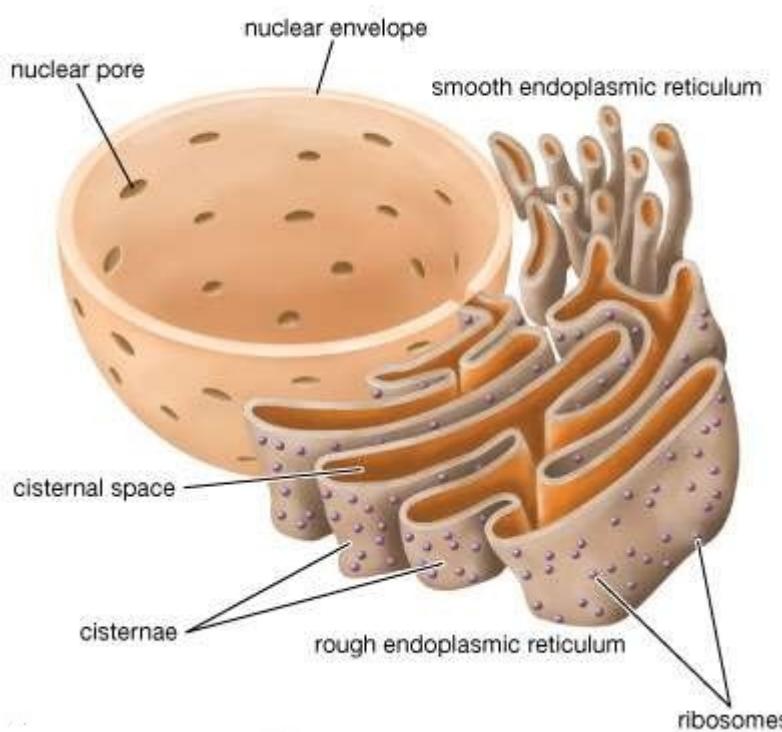
[1 Mark]

- All eukaryotic cells contain an endoplasmic reticulum (ER). In animal cells, the ER usually constitutes more than half of the membranous content of the cell.

- Differences in certain physical and functional characteristics distinguish the two types of ER, known as rough ER and smooth ER.

[1 Mark]

Endoplasmic reticulum



- The endoplasmic reticulum plays an important role in the biosynthesis, processing, and transport of proteins and lipids.
[1 Mark]

The Fundamental Unit of Life

7. Differentiate between Mitosis and Meiosis.

[4 Marks]

Difference	Mitosis	Meiosis
Type of reproduction	Asexual	Sexual
Genetically	Similar	Different
Crossing over	Not occur	Occurs, mixing of chromosome
No of division	One	Two
Mother cells	Haploid or diploid	Always diploid
No of daughter cells produced	2 Diploid cells	4 Haploid cells
Chromosome number	Remains same	Reduced by half
Takes place in	Somatic cells	Germ cells

[4 Marks]

8. Are cell organelles present outside the cell membrane? Substantiate.

A cellular **organelle** is something enclosed in a **membrane** and have specific function and present inside a living cell(that is within the cell membrane)such as Golgi body, endoplasmic reticulum, nucleus, mitochondria etc.

Therefore something outside the cell membrane is not called an organelle.

[1 Mark]