

## The Cell

1) What is called 'Cell'?

Ans: A cell is the base structural and functional unit of a living organism.

2) Why the cell is called the building blocks of life?

Ans: A cell can live independently on its own and perform all the life processes. This is why cells are called the building block of life.

3) Why the cell is called 'Basic Unit of Life'?

Ans: The cell is called 'Basic Unit of Life' because

- a) A cell is capable of independent existence.
- b) A cell can perform all essential functions for its survival.
- c) Most cells are microscopic, that is they are so small that they can be seen only under the powerful microscope.
- d) All organisms start their life as a single cell. Every cell has a life span.
- e) Old and wornout cells are continuously replaced by new ones.

4) What are the different shapes of cells?

Ans: The different shapes of cells are-

a) Irregular :- These cells do not have any a fixed shape and are irregular.

Ex- Amoeba and White Blood cells.

b) Oval :- The shape of these cells are like oval.

Ex- Chlamydomonas.

c) Oblong :- Paramecium is made up of a single slipper-shaped or Oblong cells.

d) Elongated: Muscle cells are elongated and contractile that is, they can become longer or shorter. This helps in the movement of bones.

e) Thread-like: Nerve Cells are long and thread like

f) Latent in the body

Q. What is the measuring unit of cell to find the size of a cell? (Ans: mm, m, cm, micrometer etc.)

Ans:- Size of a cell is measured by micrometres or micron(μ). One micron is equal to one thousand millimetre.

g) What is the average cell size range?

Ans:- The average cell size range from 3 to 30 μ.

7) Give examples of smallest cells and what is the range of their size.

Ans:- Smallest Cells are bacteria which range from 0.2 to 0.5 μ in diameter.

8) What is Unicellular Organisms?

Ans: Organisms that are made of a single cell are called Unicellular Organisms.

Example - Amoeba, Paramecium and Chlamydomonas.

9) What is Multicellular Organisms?

Ans: Organisms that are made up of many cells are called Multicellular Organisms.

Example - Plants such as Rose, Lotus, Rice, Mango

Animals such as Insects, Fishes, Birds, human being etc.

10) What is Cell Membrane or Plasma Membrane?

Ans:- A cell is like a tiny container, bounded by a membrane called Cell Membrane or Plasma Membrane.

11) What is Protoplasm?

Ans:- Cell Membrane is filled with a jelly like substance called Protoplasm.

Protoplasm has two parts - a darker denser part called 'Nucleus' and a semi solid jelly like part called 'Cytoplasm'.

12) What are the main Components of a cell?

Ans:- The main components of a cell are-

- a) Cell membrane
- b) Cytoplasm
- c) Nucleus
- d) Cell Organelles.

13) What is Cell Membrane or Plasma Membrane?

Ans:- Each cell is bound by a thin delicate skin-like membrane called the Cell Membrane or Plasma Membrane.

14) Why Cell Membrane is called a Selectively Permeable Membrane?

Ans:- Cell Membrane allows only selective substances to pass through it, hence it is called a Selectively Permeable Membrane.

15) What are the main functions of Cell Membrane?

Ans:- Main functions of Cell Membrane are-

- a) It gives a definite shape to the cell.
- b) It Controls the movement of material in and out of the cell.
- c) It provides protection to the internal components of the cell from injury.

16) What is Cell Wall?

Ans: A plant cell has an additional protective wall around the cell membrane called the Cell Wall.

The cell wall is non-living. It is permeable, i.e. it allows free passage of substances through it. It is made up of a complex carbohydrate called Cellulose.

17) What are the main functions of Cell wall?

Ans: The main functions are—

a) It gives a definite shape to a plant cell.

b) It provides strength and rigidity to the cell.

18) What are the main difference between Cell wall and Cell membrane.

Ans: Characteristics	Cell Wall	Cell membrane
Location	It is the outermost, thick protective layer of a cell protoplasm in a cell.	It is the outer covering of the protoplasm in a cell.
Occurrence	It is found only in bacterial and plant cells.	It is found in plant and animal cells.
Living or Non-Living	It is non-living	It is living
Permeability	It is permeable allows free passage of substances through it.	It is selectively permeable and allows only selective substances to pass through it.

19) What is Nucleus?

Ans: The Nucleus is the control centre of cell.

20) What is Nuclear Membrane?

Ans: Nucleus is ~~correctly~~ surrounded by double membrane is called Nuclear Membrane.

21) What is Nucleoplasm?

Ans: The ~~After~~ Nuclear Membrane encloses a colourless dense fluid is known as Nucleoplasm.

22) What is Chromatin Network?

Ans: The nucleoplasm contains a network of thread-like structures called the Chromatin Network.

When the cell divided the chromatin network forms small thread-like structure called Chromosomes. The chromosomes carry genes, which are responsible for hereditary characters that are passed on from the parent cell to the new cell.

23) What is called Nucleolus?

Ans: Nucleoplasm containing one or more spherical bodies called Nucleolus. (plural:- Nucleoli).

24) What are main functions of nucleus?

Ans: The main functions of nucleus are-

- The nucleus controls all vital activities of a cell. It is thus called the Control centre of a cell.
- It is the carrier of heredity from parents to their offsprings
- It plays an important role in cell division (which is the division of a single cell to form two cells).

25) What is Cytoplasm?

Ans:- It is the semi solid, colourless, jelly-like part enclosed within the cell membrane. Most cellular activities occur within the cytoplasm with the help of cell organelles.

26) What are main functions of Cytoplasm?

Ans:- Main functions are -

a) It helps in the distribution of molecules and nutrients within a cell.

b) It helps in exchange of materials between different cell organelles.

27) What is Cell Organelles?

Ans:- In order to perform various activities, a cell has many small structures in the cytoplasm called Cell organelles. Mitochondria, Endoplasmic reticulum, ribosomes, Golgi bodies, lysosomes, centrosome, plastids and vacuoles are some of the cell organelles.

28) What is Mitochondria?

Ans:- Mitochondria (singular- mitochondrion) are small, rod-shaped or spherical organelles found in large numbers.

29) What is Called Cristae?

Ans:- Each mitochondrion is bound by two membranes - an outer membrane and an inner membrane that is folded to form finger-like structures called Cristae.

30) What are the main functions of mitochondria?

Ans:- Mitochondria are the sites of respiration in the cell. During respiration, food is oxidized, in the presence of oxygen and

energy is released in the form of Adenosine Triphosphate (ATP). Hence, mitochondria are also known as the powerhouses of the cell.

### 31) What is Endoplasmic Reticulum (ER)

Ans:- This is a network of tube-like structures found throughout the cytoplasm. Its outer surface is either smooth or rough, depending on the presence of other organelles called ribosomes on it.

### 32) What are the main functions of Endoplasmic Reticulum?

Ans:- Main functions are-

- a) It gives internal support to a cell.
- b) It provides a pathway for the transport of material within a cell and between cells.

### 33) What is Ribosomes?

Ans:- These are small, round structures present either in a free state in the cytoplasm or attached to the Endoplasmic Reticulum. These are not bound by any membrane.

### 34) Why Ribosomes are called protein factory of cell?

Ans:- Ribosome makes proteins in the cell. So that it is known as the Protein factory of cells.

### 35) Why Golgi bodies are known as ~~dis~~ dictyosomes?

Ans:- Golgi Bodies are made up of a stack of parallel flattened discs. In plant cells these are smaller, unconnected and more in number. So that they are known as Dictyosomes.

42) Plastids are how many types.

Ans: Plastids are three types -

a) Chloroplasts

b) Chromoplasts

c) Leucoplasts

13) What is Chloroplasts.

These plastids are ~~poss~~ contain a green pigment called chlorophyll, which is important green colour to leaves and other plant parts where they are present.

44) What are the two regions of Chloroplasts?

A chloroplast shows two regions - a) Grana, b) Stroma.

45) Why Chloroplast is called the kitchen of the cell.

Chloroplast trap solar energy to perform photosynthesis so that they are known as the kitchen of the cell.

46) Which plastid is present in red, yellow and orange Coloured fruits and flowers.

Ans: Chromoplasts.

47) What is called Leucoplasts

They are colourless plastids present in roots of plants and underground stems such as potato and ginger to store food prepared in the plant, in the form of starch, proteins and fats.

48) What are the difference between Chloroplast, Chromoplast and Leucoplasts.

Characteristics	Chloroplast	Chromoplast	Leucoplasts.
Colour	Green	Other than Green (Red, Yellow, Orange etc.)	Colourless
Presence	Plant leaves	Fruits and flowers.	Roots of plant and in underground stems.
Responsibility	Responsible for production of food in plant.	Responsible to provide colour of fruits and flowers.	Responsible for store food in the form of starch, proteins and fats.

49) What is called Tonoplast and what is Cell sap.

Ans: A vacuole is bound by a single membrane called Tonoplast.

The membrane encloses a fluid called cell sap.

50) Vacuole contains which materials

Ans: Vacuole Contains sugars, proteins, amino acid and minerals

51) What are the main functions of Vacuoles.

Ans: a) They help the cell to remain turgid and keeps it in shape  
b) They store food materials and water in the cell.

52) What are the difference between Plant Cell and Animal Cell.

Ans: Characteristics	Plant Cell	Animal Cell
Cell wall	Cell wall is present around the cell membrane.	Cell wall is absent.
Plastids	Plastids are present	Plastids are absent.
Centrosome	Centrosome is absent.	Centrosome is present
Vacuole	Large vacuole is present.	Vacuoles are absent. If present they are very small.
Lysosome	Absent	Present

### Important Points:

- i) The Dutch Scientist Anton van Leeuwenhoek (1632-1723) developed the first simple microscope.
- ii) Robert Hooke (1635-1703) an English Scientist used two lenses to devise a compound Microscope.
- iii) The word 'cell' is derived from the Latin word 'cellula' means 'small compartment'.
- iv) The cell was discovered and named for first time by Robert Hooke in 1665.
- v) Many cells together form a tissue and many tissues together form an organ.
- vi) The smallest cell in human body is Red blood Cells.
- vii) Length of hen's egg - about 6 cm.
- viii) Length of Ostrich's egg - about 23 cm.
- ix) Length of the nerve cell of an elephant - 3 m.