THE FUNDAMENTAL UNIT OF LIFE

1. DISCOVERY OF CELL

(i) The fundamental organisational unit of life is the cell. So, the cell is also known as the structural and functional unit of life.

(ii) Robert Hooke first discovered the cell during his observation of a thin slice of cork that appeared like the structure of a honeycomb made of many little compartments.

(iii) Leeuwenhoek discovered the free living cells in pond water for the first time.

(iv) Robert Brown discovered the nucleus in the cell.

2. CELL THEORY

(i) The cell theory was proposed by Schleiden and Schwann that states "All the plants and animals are composed of cells and cell is the basic unit of life."

(ii) Rudolf Virchow further expanded the cell theory by suggesting that all cells arise from pre-existing cells.

3. PLANT AND ANIMAL CELL

(i) In plant cells, a cell wall mainly composed of cellulose is located outside the cell membrane

(ii) While animal cells are enclosed by a plasma membrane composed of lipids and proteins.

(iii) Cell membrane is also called a selectively permeable membrane because it allows the entry and exit of some particular materials in and out of the cell.

(iv) The swelling of a cell due to endosmosis is called turgidity, while the shrinkage of a cell due to exosmosis is called plasmolysis.

4. PROKARYOTES AND EUKARYOTES

(i) Cells are classified into prokaryotes and eukaryotes on the basis of nuclear structure and organisation.

(ii) A defined nuclear region and membrane bound cell organelles are absent in prokaryotes like bacteria.

(iii) The eukaryotic cells have nuclear membrane and membrane bound cell organelles.

5. CELL ORGANELLES

(i) Endoplasmic reticulum, Golgi apparatus, lysosomes, mitochondria, plastids and vacuoles are important cell organelles present in the cytoplasm.

(ii) Mitochondria are called the powerhouse of the cell. Energy is released in the form of ATP.

(iii) Lysosomes contain powerful digestive enzymes to break down all organic material. Lysosomes may burst and release the enzyme that digest their own cell. So, lysosomes are also known as the 'suicidal bags' of a cell.

(iv) Most plant cells have large organelles called plastids, which are of two types chromoplasts and leucoplasts.

(v) Chromoplasts that contain chlorophyll are called chloroplast, and they perform photosynthesis. The primary function of leucoplast is storage.