The Cell

1. **What is Cell?**
   Ans. Cell is the basic structural and fundamental units of all living forms.

2. **Why it is called that Cell is the Structural and Functional units of living being?**
   Ans. Cell is called the structural unit because it makes the body of an organism. It is called functional unit of living body because it performs all the life processes such as reproduction, excretion and growth which are necessary for the several of an organism.

3. **Why cell is called basic unit of life?**
   Ans. A cell is the smallest living structure that performs all life processes such as ingestion, digestion, exchange of gases, excretion and so on. This is why the cell is called the basic unit of life.

4. **What is Microscope?**
   Ans. Microscopes are the most important instruments that have helped us to discover and study cells.

5. Microscopes are how many types?
   Ans. Microscopes are three types
   a. Simple Microscope: The simple microscope uses only one lens and works like a magnifying glass.
   b. Compound Microscope: The compound microscope uses two lenses and gives a more magnified image than the simple microscope does. Compound microscopes are used in school laboratories.
   c. Electron Microscope: It does not use any lens. It is large and complex. It is used in large laboratories and can be used to study objects.

6. **What are Unicellular Organisms?**
   Ans. These organisms are made of only one cell. Unicellular organisms can live and function by themselves. Amoeba, bacteria and so on are examples of unicellular organisms.

7. **What are Multicellular Organisms?**
   Ans. These organisms are made of more than one cell. They were originality billions of years ago when unicellular organisms began to live in groups. Plants and animals are examples of multicellular organisms.

8. **The size of cell is measured by which unit?**
   Ans. Microns µ
   One µ = 0.001 millimetre

9. **What are the main units of a cell?**
   Ans. A cell contains three main units
   a. Cell Membrane
   b. Cytoplasm
   c. Nucleus

10. **What is Cell Membrane or Plasma Membrane?**
    Ans. Cell Membrane or Plasma Membrane is a thin delicate and living membrane, which is present in both animal and plant cells and which separates the cell from the surroundings and from other cells.
    It has fine pores through which only certain substances may flow from the cells.

11. **What are the functions of Cell Membrane?**
    Ans. The functions of cell membrane are
    a. It protects the cell and keeps the contents of the cell contained within the cell.
    b. It allows only some substances to either enter the cell or leave the cell. For this reason, the cell membrane is called semi-permeable or selectively permeable.
    c. It gives the particular shape of the cell.

12. **What is Cytoplasm?**
    Ans. The cytoplasm is a viscous liquid found within the cell membrane. It is the place where all major life functions such as respiration and digestion take place.

13. **What are Organelles?**
    Ans. The cytoplasm has many small structures dispersed through it. These structures are called organelles.
    The largest of these is the nucleus.

14. **What is Nucleus?**
    Ans. Each cell has a small spherical body which is the functional unit of cell is called Nucleus.
    In animal cells nucleus is located in the centre of the cell and in plant cell nucleus is located on the periphery of cell.

15. **What is the function of Nucleus.?**
    Ans. The nucleus is a very important part of a cell. It performs the following functions.
    a. It contains all the information that the cell needs to carry out its activities, such as the production of substances, growth and cell division. Thus, it is also called the control centre of the cell.
    b. It stores the hereditary material, DNA, which is passed on from parents to their offspring (young ones).

16. **Why Nucleus is called Control centre of Cell?**
    Ans. It contains all the information that the cell needs to carry out its activities, such as the production of substances, growth and cell division. Thus, it is also called the control centre of the cell.

17. **What are the main parts of a Nucleus?**
    Ans. The three main parts of Nucleus are:
    a. Nuclear Membrane
    b. Nucleoplasm
    c. Chromosome

18. What is Nuclear Membrane?

Ans. Nuclear Membrane is a thin and double layer which has pores through which various substances move in and out of the nucleus.

19. What is Nucleoplasm?

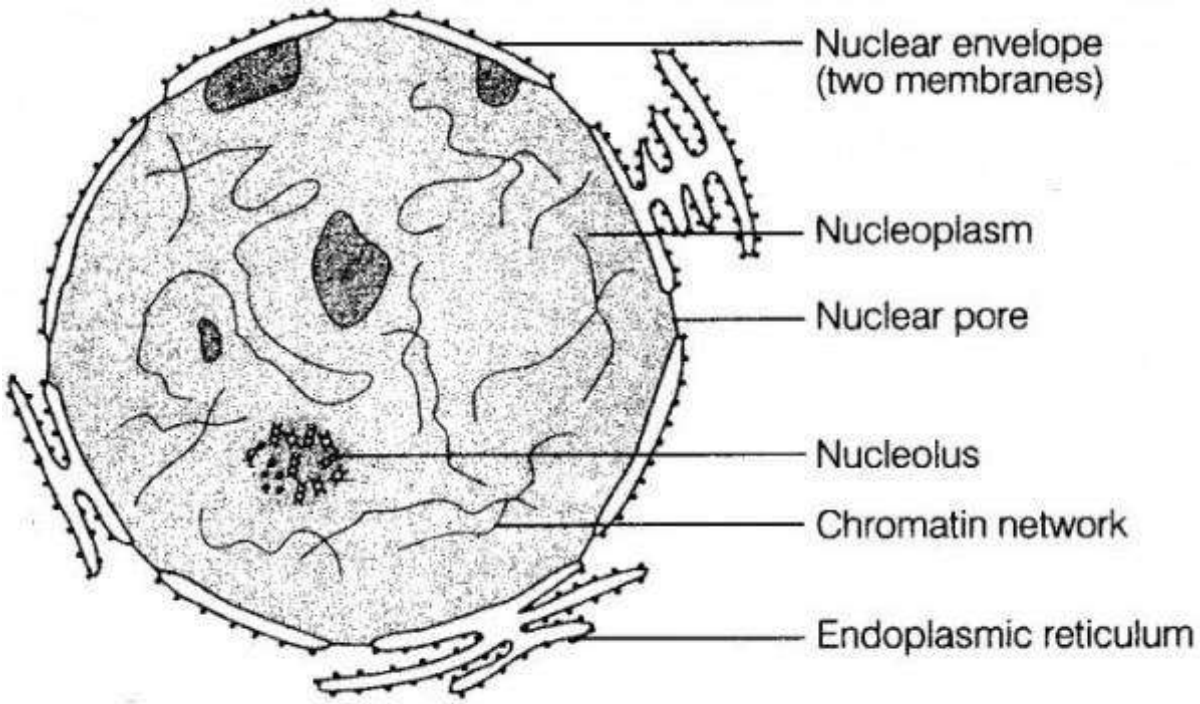
Ans. The liquid nucleoplasm contains thread-like chromosomes, made of DNA, which contain all the information that the cell needs.

20. What is Chromosome?

Ans. When cell divides the chromatin in nucleus condenses in thread like structure, which carry genes and helps in the transmission of characters from the parent to the next generation is called Chromosome.
It contains various compounds such as carbohydrate, protein, fat, nitric acid and mineral salt.

21. Draw a line diagram of Nucleus and level it?

Ans.



A well labelled diagram of eukaryotic nucleus

22. What are called Cell Organelles?

Ans. Some smaller compounds of cell like Golgi Body, lysosome, vacuole, plastids etc. which are present in cytoplasm are called Cell organelles.
They are bounded by a membrane and perform specific functions.

23. What are Vacuoles?

Ans. Vacuoles are sac like structure which are filled with water and semi-solid or liquid substance.

24. **What are the functions of Vacuoles?**
Ans. The functions of Vacuoles are:
    a. A vacuole stores salts, minerals, pigments and proteins within the cell.
    b. The vacuoles are completely filled with water and exert force on the cell wall. It provides shape to the cell and helps it to withstand extreme conditions.

25. What is Cell Wall?
Ans. The cell wall is the outermost covering of plant cells. It is present outside the cell membrane and is tough, flexible and sometimes rigid.

26. What are the functions of Cell Walls?
Ans. The functions of Cell Walls are
    a. It gives a definite shape to the plant cells
    b. The rigidity of cell wall provides support to the plant.
    c. It permits free movement of all the substances through it.

27. What are Plastids?
Ans. Plastids are small organelles in the cytoplasm of plant cells that contain food or pigment.

28. Plastids are how many types?
Ans. Plastids are three types:
a. Chloroplasts: They contain chlorophyll, the green pigment that is necessary to carry out photosynthesis.
b. Chromoplasts: They contain other coloured pigments and give colour to flowers and fruits.
c. Leucoplasts: They are colourless and store food materials such as starch, proteins and fats.

29. What are the differences between Chloroplast, Chromoplast and Leucoplast?
Ans.

Chromoplasts	Chloroplasts	Leucoplasts
They are pigmented plastid other than green in colour, mostly yellow or red	It is a plastid, typically green in colour	They are colourless plastids
They contain carotenoids and xanthophylls. They lack chlorophyll	They contain chlorophyll and other carotenoids	They do not contain pigments
They provide distinct colour to the plant parts and have a role in pollination and seed dispersal	They perform photosynthesis	They are used to store starch, fat and proteins
Do not contain lamellar system and only remnants of thylakoids are present	They contain lamellar system, ribosomes and thylakoids	They have several nucleoids and uniform granular stroma

30. What are the differences between Plant Cell and Animal Cell?
Ans.

Characteristics	Plant Cell	Animal Cell
Cell Shape	Square or rectangular in shape	Irregular or round in shape
Cell Wall	Present	Absent
Plasma/Cell Membrane	Present	Present
Endoplasmic Reticulum	Present	Present
Nucleus	Present and lies on one side of the cell	Present and lies in the centre of the cell
Lysosomes	Present but are very rare	Present
Centrosomes	Absent	Present
Golgi Apparatus	Present	Present
Cytoplasm	Present	Present
Ribosomes	Present	Present
Plastids	Present	Absent
Vacuoles	Few large or a single, centrally positioned vacuole	Usually small and numerous
Cilia	Absent	Present in most of the animal cells
Mitochondria	Present but fewer in number	Present and are numerous
Mode of Nutrition	Primarily autotrophic	Heterotrophic

31. What are the main functions of Leaf Cells?
Ans. The main function of leaves is to make food. Hence, leaves have specialised cells that have chloroplasts. Chloroplasts use the energy in sunlight and carbon dioxide to make glucose. This process is called photosynthesis.

32. What are the functions of Root Cells?
Ans. Roots have specialised cells called root hairs, which are elongated and very thin at one end. They spread out in the soil and help the plant absorb water and minerals. The stem has special long cells that help to transport food and water to all parts of the plant.

33. What are the functions of Heart Muscle Cells?
Ans. These cells contract and relax repeatedly for the entire lifespan of the animal. They do not rest for even a minute.

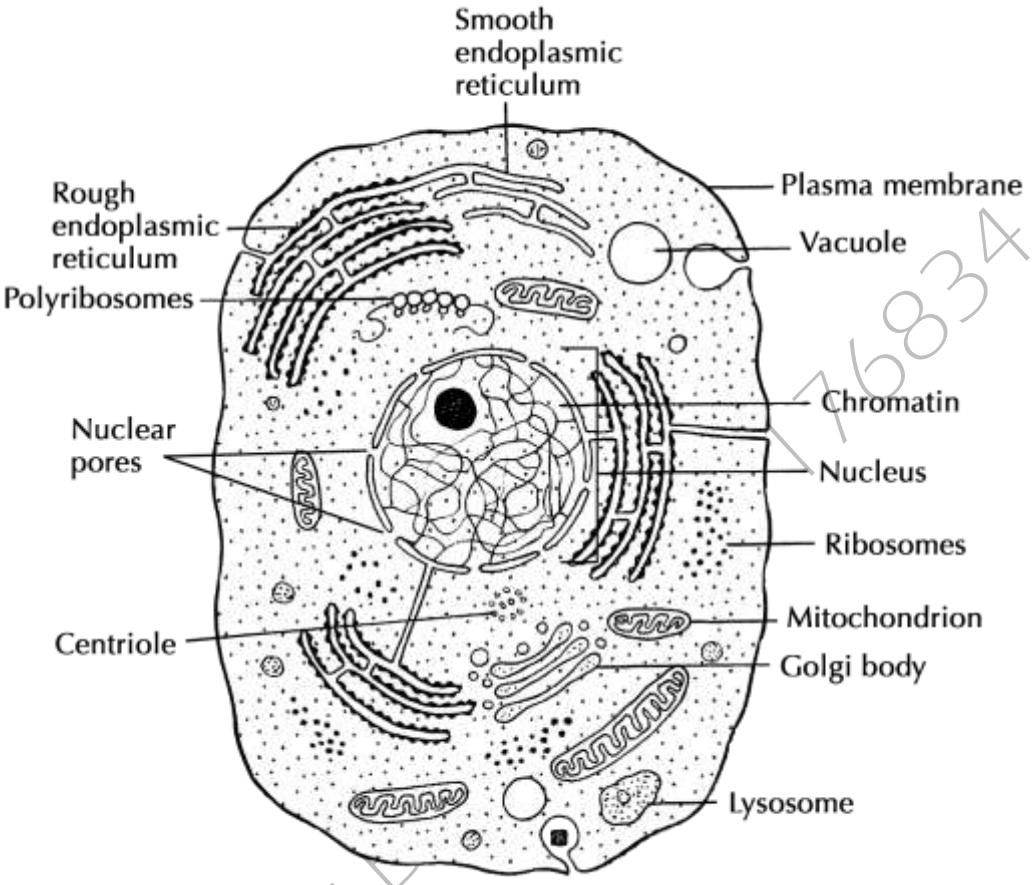
34. What are the functions of Nerve Cells?
Ans. These cells use electric impulses to transmit information from one part of the body to the other.

35. What are the functions of Lung Cell?
Ans. These cells help in the exchange of gases between the body and the atmosphere.

36. What is Cell Division?
Ans. Cell division is the process by which a parent cell divides into two or more daughter cells.

37. Draw a line diagram of a Cell?

Ans.



1.

2. Draw a diagram of Plant Cell?

Ans.

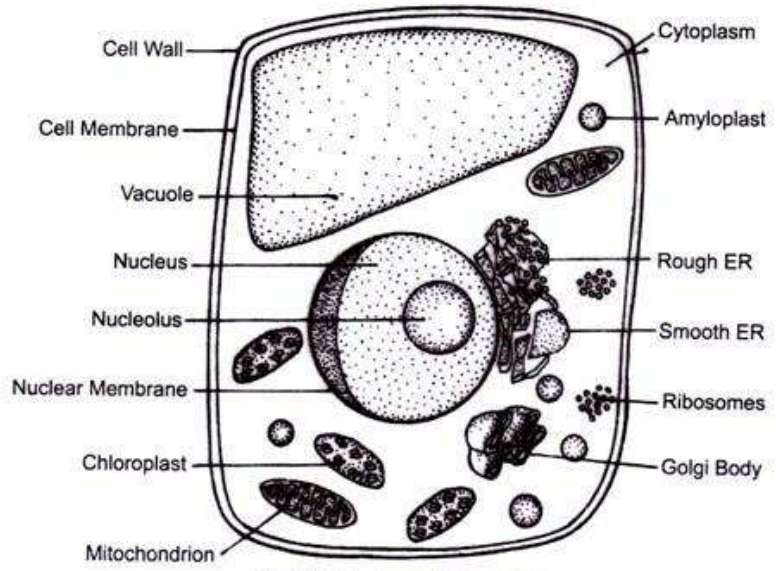


Fig. 2.1 Structure of Plant Cell