

C.W Ch-2 (Cell the unit of life)

D. Long answer type-

1. What is cell theory? Who propounded it and when?

Ans-

In 1838, Matthias Schleiden, a German Botanist, announced that every plant is made up of a large number of cells. He added that each of these cells performed various life processes. A year later, Theodor Schwann, a German zoologist, made similar discoveries in animals. He declared that all animals and plants are composed of cells, which serve as the units of structure and function. This is called Cell Theory.

2. Mention any three differences between a living cell and a brick in a wall?

Ans-

Living cell-

- It is a non-rigid, living structure
- It is mainly composed of cellulose.
- It is freely permeable

Brick in a wall-

- It is a rigid, non-living structure
- It is composed of size n soil
- It is impermeable.

3 Name the plastid and pigment likely to be found in the cells of -

- a) petals of sunflower b) ripe tomato
- c) skin of green mango d) cells of potato.

Ans- a) In the petals of sunflower, the plastid present in chromoplast and the pigment is xanthophyll.

b) The plastid in a ripe tomato is chromoplast and the pigment carotene.

c) The plastid found in the skin of green mango is chloroplast and the pigment chlorophyll.

d) The plastid in the cells of potato is leucoplast. There is no pigment in it.

4 State the major functions of the following -

- a) Plasma membrane b) Ribosome c) Lysosome
- d) Mitochondria e) Golgi apparatus f) Cytoplasm
- g) Aster of centrosome h) Chromosomes i) Glycogen granules
- j) Vacuoles

Ans- a) Plasma membrane -

- It provides a protection for a cell and a fixed environment inside the cell.
- It also transports nutrients inside the cell and transports toxic substances out of the cell.

b) Ribosome -

- These are the factories of for the synthesis of proteins.

c) lysosome -

- Their enzymes destroy and digest foreign substances around them.
- They digest the stored food during unfavourable conditions when food is unavailable to the cell

d) Mitochondria -

- Energy is released inside mitochondria during cell respiration, which is later stored in the form of ATP.
- Mitochondria are called as power houses of the cells.

e) Golgi apparatus -

- Synthesis and secretion of enzymes, hormones etc.
- Formation of awesome of ~~spur~~ It also packages and transports these substances to different sites within the cell.

f) Cytoplasm -

- Different organelles contained in it perform different functions.
- All metabolic activities occur in it.

g) List of centrosome-

- With the help of asters, centrosomes form spindle fibers

h) Chromosomes-

- Chromosomes play an important role in cell division, variation, heredity, repair and regeneration and mutation

i) Glycogen granule-

- It forms an energy reserve that can be quickly mobilized in case glucose is required suddenly.

j) Vacuoles-

- It stores water and other substances like food and waste products
- Contains pigment like anthocyanins, etc

5) List any six features found both in plants and animal cells-

Ans- Six features common features in plants and animals are-

- All membrane is found in both plant and animal cells
- Cytoplasm is present in both the cells
- Ribosomes for the synthesis of proteins is present in both cells
- Golgi bodies are present in both the cell.
- A prominent nucleus is present in both animal and plant cells
- Mitochondria for the production of energy is common in both

### C Short type questions -

1. It is said to that protoplasm cannot be analysed chemically why?

Ans- The protoplasm is a living composition of cell. It contains the nucleus and cytoplasm. It and. It has a very complex chemical composition, Hence it is impossible to determine the accurate chemical analysis of the protoplasm because when it is removed from the living organism and added with the chemicals it ~~disintegrates~~.

2. What is the difference between an organ and an organelle?

Ans-	Organelles	Organ
i)	Organelles are the components of the cells that perform different functions, all organelles are membrane-bounded.	ii) Organs are the collection of tissues that perform the specific functions of the body.

3. Do you think cells of an elephant would be larger than the cells of a rat? Explain briefly?

Ans- The size of the cells remains constant in all the organism. It is possible that the number of cells can be different in different organisms depending upon their size. The cells of an elephant will not be larger than the cells of the rat as the size of the cell will remain the same but the number of cells present in the elephant will be greater than the rat.

4 Differentiate between the following -

a) Protoplasm and cytoplasm

Ans -

Protoplasm

Cytoplasm

- i) The total composition of cell is called protoplasm.
- ii) It consists of the nucleus and the cytoplasm.
- iii) The elements in the protoplasm are in the form of compounds such as water, salts etc

- ii) It is found in the protoplasm.
- iii) It is part of the protoplasm, excluding the nucleus.
- iii) It contains water and soluble compounds

b) Nucleolus and nucleus.

Nucleolus Nucleus

Nucleolus Nucleus

- i) It is present inside the nucleus.
- ii) It participates in the synthesis of proteins
- iii) It produces RNA

- i) It is the largest cell organelle of the cell
- ii) It regulates the function of cell
- iii) It contains genetic material

c) Centrosome and Chromosome -

Centrosome

Chromosome

- i) It is located near the nucleus.
- ii) It is located responsible for the division and regulation of cell.
- iii) It contains centrioles that are surrounded by microtubules and form aster at the time of cell division.

i) During cell division, the chromatin fibres are converted into ribbon-like shaped substance called chromosomes.

ii) They carry hereditary units called genes.

iii) The genes in the chromosomes carry hereditary information.

d) Cell wall and cell membrane -

Cell wall

Cell membrane

- i) It is the outermost layer of the plant cells.
- ii) It is made up of cellulose.
- iii) It is a non-living part of cell.

i) It is the outermost layer of the cell called plasma membrane.

ii) It is composed of lipoproteins.

iii) It is a living semi-permeable membrane.

e) Plant Cell and animal cell.

Plant cell

Animal cell

- i) The outer layer of plant cell is cell wall.
- ii) They do not contain a centrosome.
- iii) Their cells are large in size having distinct boundaries.

i) They do not have a cell wall.

ii) They contain a centrosome.

iii) Their cells are small in size and their boundaries are less distinct.

## f) Prokaryotes and eukaryotes -

Prokaryotes	Eukaryotes
i) Nucleus is not well defined (nucleoid)	i) Well defined nucleus with a nuclear membrane.
ii) Small ribosomes	ii) Larger ribosomes
iii) No other cell organelles	iii) Several organelles like mitochondria, endoplasmic etc

5. Mention three features found only in plant cells and one found only in animal cells?

Ans- The important features of the plant cells are given as-

- The outermost layer of the plant cell is called the cell wall.
- The plant cell is large in size.
- The outlines of the plant cells are very distinct.

The important features of animal cells are given as-

- Presence of Centrosome.
6. Why are the cells generally of a small size?

Ans- The size of the cell is small because the small size of the cell makes it easier to permeate the plasma membrane. Also, the surface area increases as the size decreases. Therefore the surface area of the cells is larger.

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