**The Fundamental Unit of Life**

Question Plasma membrane is made up of which two components?

Answer Plasma membrane is made up of lipids and proteins.

Question What is hypotonic solution?

Answer A solution having solute concentration lower than that of the cell sap is called hypotonic solution.

Question What is hypertonic solution?

Answer A solution having solute concentration higher than that of the cell sap is called hypertonic solution.

Question What is isotonic solution?

Answer A solution having solute concentration same as that of the cell sap is called isotonic solution.

Question Cell wall is made up of which component?

Answer Cell wall is made up of cellulose.

Question Give an example of unicellular organism.

Answer Amoeba, Bacteria, Paramecium. (Any one)

Question Give an example of multicellular organism.

Answer Fungi, plants, animals. (Any one)

Question What is active transport?

Answer The movement of molecules across a membrane in cells against a concentration gradient with the help of ATP units is called active transport.

Question What is the intracellular source of digestive enzyme?

Answer Lysosome

Question What is endocytosis?

Answer Endocytosis is the ingestion or engulfment of food and other material by folding of the plasma membrane it as seen in Amoeba.

Question Where are genes located?

Answer Genes are located on chromosomes in the nucleus.

Question Name two structures found in plant cells but not in animal cells.

Answer Cell wall and chloroplast

Question Name two structures found in animal cells but not in plant cells.

Answer Lysosomes and centrioles

Question Which organelle is involved in the formation of lysosomes?

Answer Golgi apparatus

Question What is the outermost layer found in animal cells?

Answer Plasma membrane

Question What is the outermost layer found in the plant cell?

Answer Cell wall

Question Which organelle is the storage sac of solid and liquid materials?

Answer Vacuoles

Question Which organelle serves as a channel for transport of materials between cytoplasm and nucleus?

Answer Endoplasmic reticulum

Question What is microscope?

Answer Microscope is an optical instrument consisting of a lens or combination of lenses which renders minute objects distinctly visible.

Question Why is light microscope called a compound microscope?

Answer Light microscope is called a compound microscope because it consists of two or more lens systems.

Question Which organelle is associated with ribosome formation?

Answer Nucleolus

Question What are chromosomes made up of?

Answer Chromosomes are made up of DNA and protein.

Question Define plasmolysis.

Answer It is the shrinkage of cytoplasm due to loss of water when kept in a hypertonic medium.

Question What is a nucleoid?

Answer The undefined nuclear region in the cytoplasm of prokaryotes is known as nucleoid.

Question Which organelles other than nucleus contain DNA?

Answer Mitochondria and plasmids contain DNA.

Question Name the only cell organelle seen in prokaryotic cell.

Answer Ribosomes

Question Which microorganisms can be made into crystal?

Answer Viruses

Question Which organelle detoxify many poisons and drugs in a cell?

Answer Peroxisome

Question Name a cell organelle which is non-membranous. [NCERT Exemplar]

Answer Ribosome.

Question Define diffusion.

Answer Movement of molecules from a region of higher concentration to a region of lower concentration is called diffusion.

Question Why is endocytosis found in animals only? [NCERT Exemplar]

Answer For endocytosis to occur, the outermost membrane should be flexible like the plasma membrane of animals. But in plant cells, cell wall is the outermost membrane which is very rigid. Hence, endocytosis occurs only in animals and not in plants.

Question Which cell organelle controls most of the activities of the cell? [NCERT Exemplar]

Answer Nucleus, also known as the brain of the cell, controls most of the activities of the cell because it contains DNA (Deoxyribonucleic acid) which contains all the information of the cell.

Question Describe the microscopic structure of the cell.

Answer The cork cells were the first cells to be observed. They were composed of box-like compartments, forming a honeycomb structure. Cell organelles are found embedded in the cytoplasm.These are smaller in size and bounded by plasma membrane.

Question How can you calculate the magnification of a microscope?

Answer Magnification of a microscope is calculated by multiplying the powers of eyepiece and objective lenses. Mathematically, M = P1 × P2, where Pi is the power of eyepiece andP2 is the power of objective.

Question What is a cell wall and how is it formed?

Answer Cell wall is non-living and freely permeable rigid structure bounding the plant cell. It is secreted by the cell itself for the protection of its plasma membrane and cytoplasm.

Question Why were the scientists not able to observe most of the cell organelles before 1940?

Answer Before 1940, scientists could view the cell only under a light microscope. The invention of the electron microscope in 1940 enabled the scientists to observe the cell in greater detail.

Question There would be no plant life if chloroplasts did not exist. Justify.

Answer Chloroplasts contain the pigment chlorophyll which is responsible for food preparation in plants by the process of photosynthesis . Hence, if there were no chloroplasts then there would not have been any plant life.

Question Why is the Golgi apparatus called the secretary organelle of the cell?

Answer This is because it packages material synthesised in the ER and dispatches it to intracellular (plasma membrane and lysosomes) and extracellular (cell surface) targets.

Question What are the functional regions of a cell?

Answer There are three major functional regions of cells:

* cell membrane or plasma membrane,
* nucleus and
* cytoplasm.

Question What is cell sap? Give its composition.

Answer Liquid content in the vacuoles of plant cell is called cell sap. The cell sap contains sugars, amino acid, proteins, minerals and metabolic wastes.

Question What is cytosol and cytoskeleton?

Answer Cytosol fs the semifluid part of the cell cytoplasm which is embedded in between cell organelles. Cytoskeleton is a network of protein fibres present in the cell which provides a supporting framework for the organelles.

Question What are secretory proteins? Give an example of secretory protein.

Answer Proteins which are synthesised by the cell and then released into outer medium of the cell are called secretory proteins. Examples of secretory proteins include mucus, digestive enzymes and hormones.

Question Why are peroxisomes mostly found in kidney and liver cells?

Answer Peroxisomes contain various oxidative enzymes which detoxify the toxic material. Since the blood carries various toxic substances to kidney and liver, a large number of peroxisomes are present in them to oxidise the toxic material.

Question What do you mean by plasmodesmata?

Answer Due to the presence of cell wall the exchange of materials between the plap.t cells is not possible. Therefore, protoplasts of plant cells are connected by cytoplasmic channels through their walls which are called as plasmodesmata. These channels are used for the exchange of the material between two cells.

Question Why do the animal cells not have cell wall?

Answer Animals do not have rigid walls because cell walls are incompatible with the way in which an animal moves and grow. The flaccid cell membrane provides the animal cell freedom of mobility and formation of different tissues which is not present in plants.

Question Why are the Golgi bodies found in large numbers in the cells which secrete digestive enzymes?

Answer The main function of Golgi bodies is to release proteins or enzymes by vesicles. No other organelle has this property. Therefore, these are largely present in secreting cells.

Question What is the significance of pores present on the nuclear membrane?

Answer The pores present on the nuclear membrane allow transport of water-soluble molecules across the nuclear envelope. RNA and ribosomes move out of the nucleus, whereas carbohydrates, lipids and proteins move into the nucleus.

Question What are asters and spindle fibres?

Answer Asters are two star-like structures radiating fibres from the centrosome. They help in locating spindle and trigger cleavage of cytoplasm.

Spindle fibres are formed from microtubules during cell division. They pull the chromosomes apart and bring them at the poles. These are broader in the middle and narrower at the poles.

Question Do you agree “A cell is a building unit of an organism”. If yes, explain why.

Answer An organism is made up of various organ systems like digestive system, nervous system, etc. These organ systems in turn are made up of various organs which are made up of tissues. Also tissues are a group of cells performing the same function. Hence, a cell is the building unit of an organism. Cell → tissue → organ → organ system → organism

Question How is bacterial cell different from onion peel? [NCERT Exemplar]

Answer:

**Bacterial cell Onion peel**

1. Size is small (1-10 mm). 1. Size is larger (5-100 mm).

2. Nucleus is absent. 2. Nucleus is present.

3. It is a prokaryotic cell. 3. It is a eukaryotic cell.

4. Cell division takes place by fission or budding. 4. Cell division takes place by mitosis.