Short Answer Type Questions – I

[2 marks]

Q. 1. Describe the microscopic structure of the cell.

Ans. 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.

Q. 2. How can you calculate the magnification of a microscope?

Ans. Magnification of a microscope is calculated by multiplying the powers of eyepiece and objective lenses.
Mathematically, $M = P_1 \times P_2$, where P_1 is the power of eyepiece and P_2 is the power of objective.

Q. 3. What is a cell wall and how is it formed?

Ans. 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.

Q. 4. Why were the scientists not able to observe most of the cell organelles before 1940?

Ans. 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.

Q. 5. There would be no plant life if chloroplasts did not exist. Justify.

Ans. 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.

Q. 6. Why is the Golgi apparatus called the secretary organelle of the cell?

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

Q. 7. what are the functional regions of a cell?

Ans. There are three major functional regions of cells: (i) cell membrane or plasma membrane, (ii) nucleus and (iii) cytoplasm.

Q. 8. What is cell sap? Give its composition.

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

Q.9. What is cytosol and cytoskeleton?

Ans. Cytosol is 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.

Q. 10. What are secretory proteins? Give an example of secretory protein.

Ans. 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.

Q. 11. Why are peroxisomes mostly found in kidney and liver cells?

Ans. 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.

Q. 12. What do you mean by plasmodesmata?

Ans. Due to the presence of cell wall the exchange of materials between the plant 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.

Q. 13. Why do the animal cells not have cell wall?

Ans. 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.

Q.14. Why are the Golgi bodies found in large numbers in the cells which secrete digestive enzymes?

Ans. 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.

Q. 15. What is the significance of pores present on the nuclear membrane?

Ans. 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.

Q. 16. What are asters and spindle fibres

Ans. 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.

Q. 17. Do you agree "A cell is a building unit of an organism". If yes, explain why.

Ans. 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

Q.18. If you are provided with some vegetables to cook, you generally add salt into the vegetables. After adding salt, vegetables release water. Why?

Ans. When salt is added, a hypotonic medium is created, *i.e.,* the concentration of salt molecules is more outside the vegetables than inside. Hence, due to osmosis water from the vegetables come out.

Q.19. How are chromatin, chromatid and chromosomes related to each other?

Ans. Chromatin is a thin thread-like structure which is composed of DNA (deoxy ribonucleic acid) and proteins to form a rod-like chromatid. Two similar chromatids attach to a centromere to form a chromosome.

Q.20. How is bacterial cell different from onion peel?

Ans.

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.