NCERT QUESTIONS WITH SOLUTIONS

1. Make a comparison and write down ways in which plant cells are different from animal cells.

Ans.

Comparison between Animal cell and Plant cell		
	Animal cell	Plant cell
Cell wall	Absent	Present
Plasma membrane	Present	Present
Lysosomes	Lysosomes occur in cytoplasm	Lysosomes usually not evident
Nucleus	Present in centre	Present in periphery
Shape of the cell	Round (irregular shape)	Rectangular (fixed shape)
Chloroplast	Animal cells don't have chloroplasts	Plant cells have chloroplasts because they make their own food
Cytoplasm	Present	Present
Endoplasmic Reticulum (Smooth and Rough)	Present	Present
Ribosomes	Present	Present
Mitochondria	Present	Present
Vacuole	One or more small vacuoles (much smaller than plant cells).	One, large central vacuole making 90% of cell volume.
Centrioles	Present in all animal cells	Only present in lower plant forms.
Golgi Apparatus	Present	Present and are called dictyosomes.

2. How is a prokaryotic cell different from a eukaryotic cell?

Ans.

Comparison between Prokaryotes and Eukaryotes		
Characteristic	Prokaryotes	Eukaryotes
Size of cell	Typically, 1-10 µm diameter	Typical 5-100 µm diameter
Nucleus	No nuclear membrane or nucleoli	True nucleus, consisting of nuclear membrane and nucleoli
Membrane enclosed cell organelles	Absent	Present: examples include Lysosomes, Golgi complex, Endoplasmic reticulum, Mitochondria, Chloroplasts
Cell wall	Usually present; made up of peptidoglycan	When present, made up of cellulose or chitin
Plasma membrane	No carbohydrates and generally lacks steroid	Steroid and carbohydrates are present
Ribosomes	70S type of ribosome	80S type of ribosome
DNA	Single circular DNA	Linear DNA organised into multiple chromosomes

3. What would happen if the plasma membrane ruptures or breaks down?

Ans. There will be spilling of cytoplasm and cell organelles, bursting of lysosomes and digestion of cellular contents.

4. What would happen to the life of a cell if there was no Golgi apparatus?

Ans. There would not be any lysosome for intracellular digestion and cleansing, no complexing of molecules and no formation of new plasma membrane.

5. Which organelle is known as power house of the cell? Why?

Ans. Mitochondria is known as power house of the cell because it produces most of the molecules of ATP (adenosine triphosphate) which are required for providing energy for synthesis of new chemicals, as well as mechanical and other cellular functions.

6. Where do the lipids and proteins constituting the cell membrane get synthesised?

Ans. Proteins are synthesised over ribosomes of RER while lipids are synthesised over SER.

7. How does Amoeba obtain food?

Ans. Plasma membrane of Amoeba is flexible. With its help, Amoeba engulfs food particle. The engulfed food particle passes into the body of Amoeba as a phagosome or food vacuole. Phagosome combines with lysosome to form digestive vacuole. Digestion occurs in food vacuole. The digested food passes into surrounding cytoplasm. The undigested matter is thrown out of the cell.

8. What is osmosis?

Ans. Osmosis is diffusion of water from the region of its higher concentration (pure water or dilute solution) to the region of its lower concentration (strong solution) through a selectively permeable membrane.

9. Carry out the following osmosis experiment.

Take four peeled potato halves and hollow each one out to make potato cups. One of these potato cups should be made from the boiled potato. Put each potato cup in the trough containing water. Now

(a) Keep cup 'A' empty.

(b) Put one tea spoon sugar in cup B.

(c) Put one tea spoon of salt in cup C.

(d) Put one tea spoon sugar in boiled cup D. Keep this set up for two hours. Then observe the four potato cups and answer the following:

(i) Explain why water gathers in the hollowed portion of B and C.

(ii) Why is potato A necessary for this experiment?

(iii) Explain why water does not gather in the hollowed-out portion of A and D.

Ans. (i) Sugar and salt increase osmotic concentration which results in passage of water osmotically from the trough through the cells of potato into its cavity.

(ii) Potato A functions as control experiment which indicates that the cavity of potato does not induce movement of water.

(iii) Water does not gather in the hollowed-out portion of A because it does not have a higher osmotic concentration than the cells of potato tuber.

Potato tuber D does not have living cells. Osmosis does not occur in dead cells. Therefore, despite presence of sugar in the cavity of D, no water passes through dead potato cells into cavity of the tuber.

10. Which type of cell division is required for growth and repair of body and which type is involved in formation of gametes?

Ans. Mitosis is the cell division required for growth and repair of body and meiosis is involved in formation of gametes.