

NCERT EXERCISES

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

Ans.



Animal cells	Plant cells
(i) Animal cells are usually smaller in size.	(i) Plant cells are comparatively larger in size.
(ii) Enclosed by plasma membrane only. Cell wall is absent.	(ii) Plasma membrane of plant cells is surrounded by a thick cell wall.
(iii) Plastids are absent.	(iii) Plastids are present.
(iv) Cytoplasm consists largely of smaller vacuoles.	(iv) Central space of the cell is occupied by a large vacuole.
(v) Nucleus lies in the centre of the cell.	(v) Nucleus lies on one side of the cell.
(vi) Prominent and highly complex Golgi bodies present.	(vi) Golgi apparatus consists of several sub-units called dictyosomes.
(vii) Animal cells possess centrosome with two centrioles.	(vii) Plant cells lack centrioles.

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

Ans. Differences:



Prokaryotic cell	Eukaryotic cell
(i) Size of the cell is generally small (1-10 μm).	(i) Size of the cell is generally large (5-100 μm).
(ii) Nuclear region is poorly defined due to the absence of nuclear membrane and known as nucleoid.	(ii) Nuclear region is well-defined and surrounded by a nuclear membrane.
(iii) It contains single chromosome.	(iii) It contains more than one chromosome.
(iv) Nucleolus is absent.	(iv) Nucleolus is present.
(v) Membrane bound cell organelles absent.	(v) Cell organelles such as mitochondria, plastids, endoplasmic reticulum, golgi apparatus, lysosomes, peroxisomes, etc. are present.
(vi) Cell division takes place by fission or budding.	(vi) Cell division occurs by mitotic or meiotic cell division.
(vii) Centrioles absent.	(vii) Centrioles are present in animal cells.
(viii) Prokaryotic cells are found in bacteria, blue-green algae.	(viii) Eukaryotic cells are found in fungi, plant and animal cells.

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

Ans. When the plasma membrane ruptures or breaks down, the contents of the cell come out, lysosomes may burst and digestion of cellular contents take place.

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

Ans. If there was no Golgi apparatus in the cell, lysosomes would not be formed. There would not be any excretion, and foreign materials might accumulate in the cell.

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

Ans. Mitochondria are called the power house of the cell as they are sites for synthesis of energy rich ATP molecules by cellular respiration.

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

Ans. Lipids and proteins are synthesised in the ER, i.e. endoplasmic reticulum. Smooth endoplasmic reticulum (SER) helps in lipid synthesis whereas rough endoplasmic reticulum (RER) has ribosomes attached to it which are the site for protein synthesis.

7. How does an *Amoeba* obtain its food?

Ans. *Amoeba* obtains its food by the process of endocytosis. In this process, the cell engulfs the food and other materials from its external environment due to the flexibility of the cell membrane.

8. What is osmosis?

Ans. It is the passage of solvent from a region of high concentration to a region of low concentration through a semipermeable membrane.

9. Carry out the following osmosis experiment: Take four peeled potato halves and scoop each one out to make potato cups. One of these potato

cups should be made from a boiled potato. Put each potato cup in a trough containing water. Now,

(a) Keep cup A empty.

(b) Put one teaspoon sugar in cup B.

(c) Put one teaspoon salt in cup C.

(d) Put one teaspoon sugar in the boiled potato cup D.

Keep these for two hours. Then observe the four potato cups and answer the following questions:

[HOTS]

(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 portions of A and D.

Ans. (i) Sugar and salt increases 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 alone does not induce movement of water.

(iii) Water does not gather in the hollowed out portion of 'A' because there is no difference in concentration of water. Water does not gather in the hollowed out portion of 'D' because potato 'D' was boiled, and hence its cells are dead.

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 helps in growth and repair of tissues in organisms whereas meiosis involved in the formation of gametes.