

Subject- Science

Class-IX

Topic-Cell

Question 2:How is prokaryotic cell different from a eukaryotic cell?

Solution:See the Ans. of Question 1 (Intext Questions Page 63).

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

Solution:In case of plasma membrane ruptures or breaks down:

All the useful substances will move out of the cell

There will be no difference between cell content and its external environment.

The cell will lose its normal shape.

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

Solution:Effect of absence of Golgi apparatus on life of a cell

- (i) The packaging and dispatching of different types of proteins to various targets inside and outside the cell will be influenced.
- (ii) The products of cell cannot be stored and modified later.
- (iii) There will be effect on lysosomes formation. This will cause accumulation of worn out and dead cell organelles within the cell which may cause cell death.

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

Solution:The organelle mitochondria known as the power house of the cell. Process of cellular respiration takes place in mitochondria to generate energy required for various chemical activities in the form of ATP. This is the reason that mitochondria is known as power house of the cell.

Question 8:What is osmosis?

Solution:The movement of solvent from a region of its high concentration to a region of its low concentration through a semipermeable membrane is called osmosis. During osmosis, the water molecules (solvent) are free to cross the plasma membrane in both the directions.

Question 9:Carry out the following osmosis experiments 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 tea spoon sugar in cup B.
- (c) Put one tea spoon salt in cup C.
- (d) Put one tea spoon sugar in the boiled potato cup D.

Keep these 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 experiment?
- (iii) Explain why water does not gather in the hollowed out portion of A and D?

Solution:(i) Osmosis is the process responsible for the gathering of water in the hollowed portion of B and C. Since, the concentration of solute (sugar in cup B and salt in cup C) is higher inside the cup as compared to the water, which is outside the cup. Hence, water from its higher concentration (outside the cup) will move towards the lower concentration (inside the cup). This process of osmosis (moving in of solvent) is called endosmosis.

(ii) Potato A acts as a control for the experiment. This is required for comparing the results of the experiment.

(iii) Water does not gather in the hollowed out portions of A and D because of the following reasons:

- The hollowed portion of potato A is empty. So, because of no concentration difference, no osmosis can occur.

- The hollowed portion of potato D contains sugar in it but it is boiled. So, osmosis cannot occur as its semipermeable membrane is destroyed by boiling.