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Sub. Biology

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1. What is osmosis?

The process of movement of a water molecule from a region of higher concentration to a region of lower concentration through a semipermeable membrane is known as osmosis.

2. 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:

(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.

(i) Water accumulates in the hollowed portions of B and C as a difference in the water concentration is observed. Thereby, endosmosis occurs as the cells act as a semipermeable membrane.

(ii) Potato A is essential in this experiment as it is significant to compare different scenarios seen in potato cups B, C and D. The potato A in this experiment clearly shows that the potato cavity on its own cannot bring about water movement.

(iii) Cup in A does not show any change in the water flow concentration for osmosis to occur, which requires the concentration to be higher than the other. Cells in cup D are dead, thus there is no existence of a semipermeable membrane for water flow.

Consequently, osmosis does not occur.

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

There are two ways in which a cell divides:

- Mitosis
- Meiosis

Mitosis is the type of cell division that is involved in the growth and repair of body whereas meiosis is a type of cell division which results in the formation of gametes.