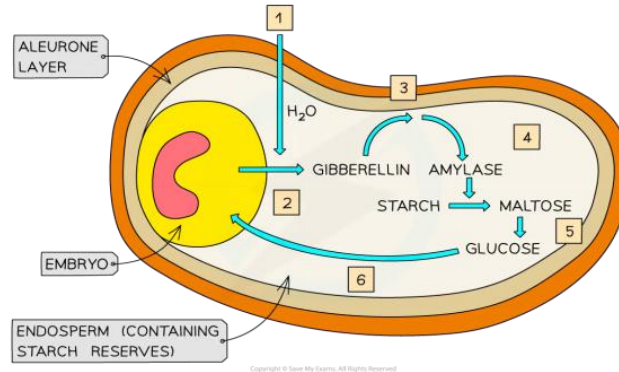


Question 1: (6 pts):

1. Using a diagram, the role of gibberellin in seed germination. (2 pts)



2. The plant growth inhibitors. (2 roles for each) (2 pts)

Abscisic acid: Stimulates closing of stomata in the epidermis. Helps in the maturation and development of seeds.

Ethylene: Induce flowering in the mango tree. Promotes sprouting of potato tubers.

3. Steps in protein synthesis. (2 pts)

1. DNA to mRNA (Transcription). 2. mRNA to Protein (Translation). 3. Encoding. 4. Assembly. 5. Termination & Folding.

Question 2: (6 pts)

Calculate the osmotic pressure exerted at -24.3°C by a 117 g/l sucrose solution, where 1 mol/l of sucrose is equivalent to 342 g/l.

According to Van't Hoff: $PV=nRT$ (0.5 pts)

$P_o = CRT$ ----- $C = ?$ (molar concentration of the sucrose solution)

Sucrose: $C_{12}H_{22}O_{11}$ (0.5 pts)

1 mole/l sacc ----- 342 g/l

C mole/l ----- 117 g/l (0.5 pts) So: $C = 0,34$ mole /l (1)

The molar concentration of sucrose is $C = 0.34$ mol/l (0.5 pts)

$T = -24.3^{\circ}\text{C} = (-24.3^{\circ} + 273)^{\circ}\text{K} = 248.7^{\circ}\text{K}$ (0.5 pts)

$P_o = 0,3 \times 248.7 \times 0,082 = 6,11$ atm

Donc $P_o = 6,11$ (1) (0.5 pts)

A. A root placed in soil considered a hypertonic environment (5g/l).

What is the movement of water? Justify.

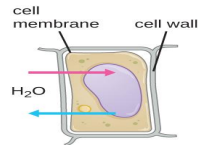
The state of the cell depends on the concentration of the two environments. Since we don't have the concentration of the internal environment, three situations are possible (Figure): (0.5 pts)

A. LAGHROUR Univ-Khanchela- F: NLS D: Agronomics.S MODULE: PP

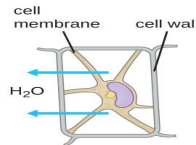
LEVEL : L3

EXAM:(S1)

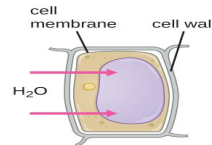
DURATION: 1^H: 30



a) Isotonic solution
No net movement of water particles. Cell membrane is attached to cell wall.



b) Hypertonic solution
Water particles move out of the cell. Cell membrane shrinks and detaches from cell wall (plasmolysis).



c) Hypotonic solution
Water particles move into the cell. Cell wall counteracts osmotic pressure to prevent swelling and lysis.

(1.5 pts)

What is the state of the cells in contact with the soil, knowing that the concentration of cellular salts is 7 g/l? Justify.

According to the law of osmosis, water moves from an area of lower concentration to an area of higher concentration. So, water moves from the soil into the cell (vacuole) **(0.5 pts)**. The state of the cells that are in contact with the soil is called Turgid **(0.5 pts)**.

Question 3: (8 pts): Check the correct answer:

1	2	3	4	5	6	7	8
b d	abc	abc	abd	acd	acd	a	b

GOOD LUCK