

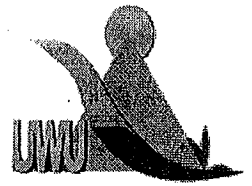


Uva Wellassa University, Sri Lanka

End Semester Examination – February/March 2012

SCT 211-2 Cell & Physiology (Re-repeat)

Time: Two (02) hours



Total five (05) Questions.

Answer four (04) questions only.

1.

i. Briefly explain the guttation in plants. (10 marks)

ii. Experimental procedure that was followed by a group of students to find out Ψ_s of a plant cell is as follows. *Rhoeo* lower epidermal peel cell was isolated (Ψ_s is unknown) and put in to X mol dm^{-3} NaCl solution ($i=2$). At the equilibrium the cell was transferred into a certain solution (con. 0.1 mol dm^{-3} , $i=1$) and kept until it reached to incipient plasmolysis stage. At the incipient plasmolysis stage (assume that at the incipient plasmolysis stage, cell was in equilibrium with the solution) the cell was taken out from the solution and put again in to pure water container. (Note : At the X mol dm^{-3} solution Ψ_p of the cell = $+0.125 \text{ MPa}$)

$$\Psi_s = -miRT \quad (R=8.314 \text{ cm}^3 \cdot \text{MPa} \cdot \text{K}^{-1} \cdot \text{mol}^{-1}, \text{ temperature} = 25^\circ\text{C})$$

a. Calculate the concentration of the solution (con. X) and Ψ_s of the cell. (10 marks)

b. What is the water potential (ψ_w) of the cell after putting into pure water container?

(05 marks)

2.

- i. State three characteristic features of enzymes. (03 marks)
- ii. Write the differences between competitive and un-competitive inhibition. (07 marks)
- iii. Explain the factors that affect the enzymatic activity. (15 marks)

3.

- i. What is meant by transpiration? (05 marks)
- iii. State five adaptations of plants to reduce transpiration. (05 marks)
- iv. Explain starch sugar hypothesis to close the stomata. (15 marks)

4.

- i. Write down three functions of cell wall. (03 marks)
- ii. Draw the fluid mosaic model of plasma membrane. (10 marks)
- iii. Briefly explain three germ layers of plants with their functions. (12 marks)

5.

- i. What are the major cells of phloem and xylem tissues? (08 marks)
- ii. List out the difference between xylem transportation and phloem translocation. (10 marks)
- iii. Briefly explain the photorespiration process. (07 marks)