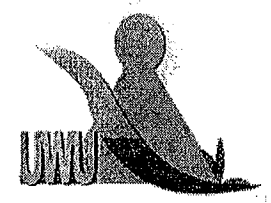




**Uva Wellassa University, Sri Lanka**  
**End Semester Examination – June/July 2010**  
**SCT 211-1 General Physiology (Repeat)**



**Time: One (01) hour**

**Total Five (05) Questions**  
**Answer Four (04) questions only.**

1.
  - (a) What is the structural specialty of endodermis cells to regulate the water movement? (2 marks)
  - (a) Briefly explain the amphipathic nature of phospholipid molecule. (8 marks)
  - (b) Write an account on "Guttation". (15 marks)
  
2. Discuss the following topics.
  - (a)  $K^+ / H^+$  hypothesis for stomatal opening. (10marks)
  - (a) Non cyclic electron transport chain. (15marks)
  
3.
  - (a) State the difference between continuous feeders and discontinuous feeders. (5 marks)
  - (b) By giving suitable examples, briefly explain the development of digestive track of the organisms from invertebrates to vertebrates. (20 marks)
  
4.
  - (a) What are the major cells of phloem tissue? (4 marks)
  - (b) List out the difference between xylem transportation and phloem translocation. (8marks)
  - (c) Briefly explain the pressure flow hypothesis. (13 marks)

5.

A group of biology students wanted to design an experiment to determine the water potential of a plant cell in different situations. First they took a *Rhoeo* cell ( solute potential is known  $\psi_s = -0.648\text{Mpa}$ ) and put it into a hypertonic solution. At the incipient plasmolysis stage, the cell was taken out and put in pure water. After the equilibrium, the cell was removed from that solution and put again in  $0.4\text{mol dm}^{-3}$  sucrose solution.

- (a) What is the water potential ( $\psi_w$ ) of the cell before transferring in to pure water?
- (b) Calculate  $\psi_p$  ( pressure potential =P1) of the cell at the equilibrium with pure water.
- (c) At the equilibrium what is the  $\psi_p$  ( pressure potential=P2 ) of the cell when the cell is in sucrose solution?
- (d) What can you say about P1 and P2?

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

State your assumptions clearly.

(25 marks)