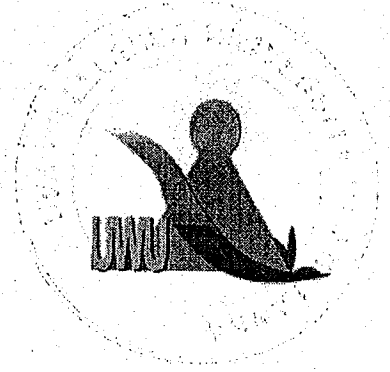


Uva Wellassa University, Sri Lanka
End Semester Examination – June 2009
BIO 202-1 Fundamentals of Physiology
(Repeat)



Time: One (01) hour

Total 06 Questions

Answer four (04) questions including question No 2.

1. (a). State the benefit of casparian strip

(3marks)

- (b). What are co- transporters?

(5marks)

- (c). Explain H⁺/K⁺ pump hypothesis in order to regulate the stomatal opening
(make suitable drawings)

(17 marks)

2. Second year students of a certain university had to design an experiment for their 1st semester practical assessment. They had a freedom to select any kind of experiment related to plant physiology. Therefore they selected an experiment related to osmosis. The experiment and the data are as follows

First they isolated an Roheo lower epidermal peel cell (solute potential is known $\psi_s = -0.732\text{Mpa}$) and put it in to 0.1mol dm^{-3} manitol solution ($i=1$). At the equilibrium the cell was transferred in to a certain solution (con. X, $i= 1$) and kept the cell 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.

$$\Psi_s = -miRT$$

$$(R=8.314 \text{ cm}^3 \cdot \text{MPa} \cdot \text{K}^{-1} \cdot \text{mol}^{-1}, \text{ temperature} = 28^\circ\text{C})$$

- (a). What is the water potential (ψ_w) of the cell after applying in to 0.1 M manitol solution?
- (b). Calculate ψ_p of the cell at the equilibrium with 0.1 mol dm⁻³ manitol solution.
- (c). Calculate the concentration of the second solution (con. X)
- (d). What is the water potential (ψ_w) of the cell after putting in to pure water container?

(25 marks)

3. (a). Name the major types of leucocytes and state the shape of their nuclei.

(10marks)

- (b). Sketch a neuron cell and label completely

(5marks)

- (c). Briefly explain about the structure of bone

(10 marks)

4. (a). What is photorespiration?

(5marks)

- (b). State the first electron acceptor of photosystem II

(2 marks)

- (c). Briefly explain the photosynthesis mechanism of CAM plants by giving suitable diagrams

(18marks)

5. Write short notes on followings

(a). Cyclic photophosphorylation

(8 marks)

(b). Photolysis

(8marks)

(c). Reversible enzymatic inhibition

(9marks)

6. (a). State the differences between obligate anaerobes and facultative anaerobes

(6marks)

(b). What is the function of cytochrome C ?

(2marks)

(c). Briefly explain the major steps of glycolysis

(17 marks)