

Eastern University, Sri Lanka
Faculty of Science

First Year Second Semester Examination in Science – 2016/2017 (April / May 2019)

BT 1051, Basic Plant Physiology Practical

Answer **all** questions

Time: **2 hours**

- (1) You have been provided with three different sucrose solutions **A, B** and **C**, *Rhoeo* Leaf and necessary materials.
- (a) Using appropriate methodology, identify the solution, which has the same osmotic potential of the *Rhoeo* leaf.
- (b) Explain your results. **(25 minutes)**

- (2) An experiment was carried out to find out the water potential of potato. Three pieces of potato, each of 2 cm length, were soaked in each of the different concentration of sucrose solutions. The length of each potato piece was measured after 2 hours, as indicated below

Sucrose Solution (M)	0.10	0.20	0.30	0.40	0.50	0.60
Mean final length (cm)	2.3	2.2	2.1	1.9	1.9	1.8

- (a) Plot a graph of the mean percentage change in length against the sucrose solutions
- (b) From the graph, determine the isotonic sucrose solution
- (c) Determine the water potential of the potato tissue
- (d) List out the limitations of the above experiment **(35 minutes)**
- (3) Rate of transpiration of a plant was measured by using Ganong's Potometer under different environmental conditions X, Y and Z for 6 minutes. Below table shows the reading (distance) taken in this experiment.

Different Environmental Condition	X	Y	Z
Initial reading	1 cm	2.5 cm	1.5 cm
Final reading	10.5 cm	17.0 cm	5.0 cm

- (a) Determine the rate of transpiration of plant in all conditions **X, Y & Z**
- (b) Which of the above condition enhances the transpiration rate? Explain possible environmental conditions for your finding. **(30 Minutes)**
- (4) Identify and comment on **E, F, G, H, and J**. **(30 Minutes)**