



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2015/2016

**FIRST YEAR SECOND SEMESTER EXAMINATIONS FOR THE
DEGREE OF MASTERS OF SCIENCE IN BOTANY (PLANT
ECOLOGY, PLANT PHYSIOLOGY AND BIOCHEMISTRY)**

MAIN CAMPUS

SBT 807: PLANT WATER RELATIONS

Date: 21st April, 2016

Time: 11.00 - 2.00pm

INSTRUCTIONS:

- Answer ALL Questions in Section A and any other THREE from Section B.

SECTION A: 30 Marks

Q1a). Given an idealized cell possessing an elastic wall of negligible volume and a single semi-permeable membrane of negligible thickness, binding a vacuole containing an aqueous solution. Answer the following questions.

(i) Write an equation for the water potential of the cell explaining all the terms. (2 marks)

(ii) Explain what happens when such a cell is placed in pure water using equations. (2 marks)

(iii) Explain what happens when such a cell is placed in a solution of low osmotic potential? Write equations to describe this condition. (3 marks)

Q 1b). Describe the Chardokov's method of determining water potential in plants. (4 marks)

Q 1c). Describe how halophytes cope with their extreme environments. (4 marks)

Q2. (a) Describe the occurrence of water in the cell wall, cytoplasm and vacuole. (5 marks)

(b) Explain possible reasons of flood injury in plants.
(5 Marks)

(c) Discuss the physicochemical properties of water. (5 marks)

SECTION B: (30 marks)

Q3. Discuss mechanisms of overcoming water stress in plants. (10 marks)

Q4. Give an account of transpiration and factors affecting it. (10 marks)

Q5. Explain the mechanisms of ascent of sap in land plants. (10 marks)

Q6. Explain the physiological and biochemical effects of water stress in plants. (10 marks)

Q7. Discuss the pathways of water movements in plants. (10 marks)