



Family Name	
Given Names	
Student Number	
Teaching Period	Semester 2, 2016

FINAL EXAMINATION	DURATION
ENV206 – Environmental Physiology	Reading Time: 10 minutes
	Writing Time: 180 minutes

INSTRUCTIONS TO CANDIDATES

EXAM CONDITIONS

You may begin writing from the commencement of the examination session. The reading time indicated above is provided as a guide only.

This is a CLOSED BOOK examination

No calculators are permitted

No handwritten notes are permitted

No dictionaries are permitted

ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED
No additional printed material is permitted	1 x 20 Page Book 1 x 4-Multiple Choice Answer Sheet 1 x Scrap Paper

**THIS EXAMINATION IS PRINTED
DOUBLE-SIDED.**

**THIS PAGE HAS BEEN INTENTIONALLY LEFT
BLANK.**

Section A

Short Response Questions

Answer all 6 questions.

Total number of marks for this section: 90

This section should be answered in the Answer Booklet provided.

Marks for each question are the same.

Suggested time allocation for Section A: 90 minutes.

Question 1

- Describe secondary cell wall growth as it applies to cells in an herbaceous plant. Give an example of a cell type and a tissue type in which it would occur. Would secondary cell wall growth occur in an herbaceous plant?
- Describe how secondary growth occurs in a plant, name the meristems and describe how the tissues are created. Would secondary plant growth occur in an herbaceous plant?
- Describe the role of the lateral transport system in the stem and name the cells involved.

(Marks: 15)

Question 2

Briefly describe the structures and tissues involved in the transpiration pathway in which water moves from soils, through the plant body to the atmosphere.

Explain the changes in water potential of soil roots, stems and leaves, as soil dries out from field capacity to beyond wilting point using diagrams.

(Marks: 15)

Question 3

Light harvesting in photosynthesis is accomplished by Photosystems I and II, discrete structural units embedded in the thylakoid membrane of the chloroplast.

Briefly describe how the two photosystems work together to convert light energy to chemical energy. Use a diagram to illustrate your answer if you wish.

(Marks: 15)

Question 4

Describe the light independent reactions of photosynthesis and then describe the biochemical and structural differences between C3 and C4 plants.

Why do C4 plants have an advantage under hot conditions with respect to (a) the functioning of Rubisco and (b) water use efficiency?

(Marks: 15)

Question 5

What are the three processes by which nutrients travel from the soil to the surface of the root or become available to the root?

Describe the structure of the cell membrane in the root cells, including the main structural components.

If phosphorus ions were being concentrated inside the cell, what structure in the membrane is allowing this to occur, and what type of membrane transport process would be occurring?

(Marks: 15)

Question 6

- a) Describe the difference between seed viability, seed dormancy and seed quiescence.
- b) Discuss two dormancy mechanisms that could result in germination only occurring after fire and a mechanism that could cause weeds to germinate after removal of vegetation.
- c) How do temperature and moisture levels affect seed longevity?

(Marks: 15)

Section B

Multiple Choice Questions

Total number of marks for this section: 90

This section should be answered on the Multiple Choice Answer Sheet provided.

Please ensure that your **name** and **student number** have been written on the Multiple Choice Answer Sheet and placed in the answer booklet.

Marks for each question are the same.

Suggested time allocation for Section B: 90 minutes.
