Summer Examinations 2016

ENV201416N

Module Title: Air & Water – Processes
Level: Five
Time Allowed: Two hours

Instructions to students:

- Enter your student number not your name on all answer books.
- Answer all questions in Section A, one question from Section B and one question from Section C.
- Section A carries 40% of the overall marks.
  Section B carries 30% of the overall marks.
  Section C carries 30% of the overall marks.
- You do not need to use separate answer books for the questions in Section A, but use a separate answer book for each of the answers to questions from Section B and Section C. Label each answer book clearly with number of the question you are answering.
- Neither books nor notes may be taken into the examination.
- Erasmus/overseas students are permitted to take a bilingual dictionary into the examination room but will not be permitted any extra time.

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Section A

Answer all questions.

Question 1

List the four classes or scales based on horizontal coverage and duration that meteorologists classify weather phenomena into.

(4 marks)

Question 2

List the three conditions of atmospheric stability. Provide a very short explanation of each condition.

(6 marks)

Question 3

What is the main route of entry into the body for radon and its decay products?

(1 mark)

Question 4

Differentiate between (i) episodic acidification and (ii) chronic acidification.

(2 marks)

Question 5

Identify four impacts of acid deposition.

(4 marks)

Question 6

Identify four pollutants commonly recorded by the Automatic Urban and Rural Monitoring Network (AURN).

(4 marks)

Question 7

Organisms have evolved a number of regulatory systems which comprise of specific mechanisms for the uptake, transport and sequestration of heavy metals, including the synthesis of metallothioneins. What are metallothioneins?

(2 marks)
Question 8

Henrikssen (1989) described lake acidification as occurring in three distinct stages. What are these three stages and briefly comment on each stage? 

(9 marks)

Question 9

Differentiate between the terms biomagnification and bioaccumulation.

(2 marks)

Question 10

Give four reasons why benthic macroinvertebrates are the preferred organisms for water quality assessment.

(4 marks)

Question 11

How are the acidification of freshwater and the increased clarity of such waters linked?

(2 marks)

Total: 40 marks

End of Section A
Section B follows overleaf
Section B

Answer one question.

Question 12

Explain how atmospheric stability affects the vertical dispersion of pollutants into the atmosphere.

(30 marks)

Question 13

Discuss the risk of radon to human health and the methods that can be employed in buildings to reduce this risk.

(30 marks)

Total: 30 marks
Section C

Answer one question.

Question 14

A recent UNEP newsletter asked the question “Why is Eutrophication such a serious problem?”. Outlining the nature of eutrophication attempt to answer this question using diagrams where appropriate.

(30 marks)

Question 15

Using mercury as an example, discuss the effects of heavy metal pollution on aquatic ecosystems and associated biota.

(30 marks)

Total: 30 marks