Summer Examinations 2015

ENV201415N

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

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Section A

Answer all questions.

Question 1
List three direct effects of thermal pollution on the marine environment. (3 marks)

Question 2
Differentiate between lotic and lentic systems with regard to:

a. Morphology
b. Flow
c. Primary production. (6 marks)

Question 3
The effects of acidic inputs on freshwater ecosystems are dependent on the surrounding geology and soils. State whether you would expect an area with calcareous geology or an area with granite bedrock to be more sensitive to acidity and why? (6 marks)

Question 4
Name three factors which influence the uptake of heavy metals by aquatic organisms. (3 marks)

Question 5
In relation to lentic waters what does the term compensation depth mean? (2 marks)

Question 6
Identify four forces influencing atmospheric motion. (4 marks)
Question 7

Differentiate between the terms:

a. environmental lapse rate (ELR); and
b. adiabatic lapse rate (ALR).

(5 marks)

Question 8

Identify the four terms that are used to commonly characterise air pollutant emission sources. Provide a short explanation of each term.

(8 marks)

Question 9

What is the half-life of radon-222?

(1 mark)

Question 10

Identify two commonly used techniques for measuring radon concentration in the home.

(2 marks)

Section A Total: 40 marks
Section B

Answer one question.

Question 11

Discuss the following statement:

‘Most of the public’s exposure to natural radiation comes from radon.’ (EPA, 2012).

(30 marks)

Question 12

Review the function of chimney stacks in airborne pollution dispersion. Your discussion should evaluate the nature of plumes under varying atmospheric conditions.

(30 marks)

Section B Total: 30 marks

End of Section B
Section C follows overleaf
Section C

Answer one question.

Question 13

Appraise and evaluate the methods used to control artificial eutrophication.

(30 marks)

Question 14

“The excellent DDT powder, which has been fully experimented with and found to yield astonishing results, will henceforth be used on a great scale by the British forces in Burma, and the American and Australian forces in the Pacific and India and in all theatres.”

Winston Churchill

Fully evaluate why DDT was considered such an “excellent powder” and discuss using examples the impact of DDT on the aquatic trophic systems.

(30 marks)

Section C Total: 30 marks