

Cork Institute of Technology  
Higher Certificate in Science in Applied BioSciences – Award

(NFQ Level 6)

Summer 2007

**Environmental Science**

(Time: 2 Hours)

Instructions  
Answer **THREE** questions.  
All questions carry equal marks.

Examiners: Mr. B. Walsh  
Mr. E. Callery  
Prof. R. Fitzgerald

- Q1. (a) Review the content and outcomes of the environmental conferences/summits held in Rio (1999) and Johannesburg (2002). (5 marks)
- (b) State five principles upon which the success of sustainable development ultimately rests. (5 marks)
- (c) Indicate three consequences of the reduction/extinction of the Earth's plants and animals. (3 marks)
- (d) Explain concisely the inter-relationship between global warming, CO<sub>2</sub>, and the Kyoto protocol. (3 marks)
- (e) Name four global ecosystems and two chemical cycles upon which the ecosystems depend. (2 marks)
- (f) Explain the term 'ecological footprint' (F.P.), referring to any examples with which you are familiar. What is the connection between a country's economic development and its F.P.? (5 marks)
- (g) List four unsustainable trends/practices that threaten the global environment. (2 marks)

- Q2. (a) Outline and give reasons for the pattern of human population growth between 1800 and 1960. (6 marks)
- (b) Indicate why the world's population growth rate has declined since 1960 and indicate the implication of the decline for future numbers and the natural environment. (5 marks)
- (c) Write notes on, illustrate or define, the following population-biology terms:
- Annual rate of natural increase
  - Sex ratio
  - Mortality
  - Birthrate
- (6 marks)
- (d) Explain the significance of the age distribution of members to the:
- (i) stability
- (ii) future growth
- of a population. (8 marks)
- Q3. (a) Describe three solid waste disposal options giving the advantages and disadvantages of each option. (12.5 marks)
- (b) Outline the components of domestic sewage and write a brief description of treatment options. (12.5 marks)
- Q4. (a) Describe two primary and two secondary air pollutants giving details of their sources and effects on the environment. (15 marks)
- (b) Define the term 'greenhouse gas' and explain the role of greenhouse gases in global warming. (10 marks)
- Q5. (a) What are the two main sources of water pollution in Ireland and describe their effects on the receiving water. (10 marks)
- (b) Outline the mechanisms of eutrophication and explain why it is a problem in Irish lakes. (15 marks)