

Cork Institute of Technology
Higher Certificate in Science in Applied Biology – Award
(NFQ – Level 6)
Autumn 2006
Environmental Science
(Time: 2 Hours)

Instructions
Answer FOUR questions. All questions carry
equal marks.

Examiners: Dr. A. Petersen
Prof. R. Fitzgerald

- Q1. (a) State the general purpose of sewage treatment and indicate a traditional sewage treatment standard. (5 marks)
- (b) List the major components of domestic sewage and write an informative account of the main features of Primary treatment of sewage. (15 marks)
- (c) What, in your opinion, are the characteristics of a good quality effluent? (5 marks)
- Q2. (a) Explain the following population terms:- life expectancy; carrying capacity; exponential growth; emigration. (4 x 1.5 marks)
- (b) Write a concise account of some factors involved in the growth of the human population over the past 400 years. (12 marks)
- (c) What do you think are the solutions to the world's population problems? (7 marks)
- Q3. (a) Clearly explain what is meant by the term "greenhouse effect" in relation to global warming and list 4 atmospheric gases associated with the effect. (8 marks)
- (b) Say why the term "greenhouse effect" is a misleading one. (5 marks)
- (c) Write descriptive account of the major consequences for the world's climate and vegetation of the greenhouse effect. (12 marks)

- Q4. (a) Distinguish between “polluted water” and “contaminated water”, and say why water pollution is a worldwide phenomenon. (10 marks)
- (b) Review the effects of water pollution on human health, indicating the current position in the (a) developing and (b) developed world. (15 marks)

OR

- (a) Write an equation to show the relationship between oxygen solubility in water and temperature. (6 marks)
- (b) Name one other factor that influences oxygen solubility in water. (3 marks)
- (c) How do coarse and game fish differ in relation to their oxygen requirements, and explain why it is often beneficial to transport live fish in iced water. (16 marks)
- Q5. (a) List the various methods of disposal of municipal solid wastes and identify which are appropriate for (i) soft wastes (ii) toxic hazardous wastes. (7 marks)
- (b) Discuss the characteristics, advantages and disadvantages of 3 of your listed disposal methods. (18 marks)

- Q6. Write notes on, illustrate or define 8 of the following:
- (i) Ecological footprint
 - (ii) Global ecosystems
 - (iii) Kyoto protocol 1997
 - (iv) Sustainable development
 - (v) Environmental hazards and the risks they pose
 - (vi) Leading causes of mortality in LDCs and MDCs
 - (vii) Annual rate of natural increase in a population.
 - (viii) Biotic potential
 - (ix) Eutrophication and its effects
 - (x) Wastewater treatment using activated sludge. (8 x 3 marks)