

# Cork Institute of Technology

Bachelor of Science in Cell and Molecular Biology – Award

(National Diploma in Science in Cell and Molecular Biology – Award)

Bachelor of Science in Food Science and Technology – Award

(National Diploma in Science in Food Science and Technology – Award)

(NFQ – Level 7)

Spring 2005

## Environmental Studies

(Time: 3 Hours)

### Instructions

Answer any FIVE questions.

All questions carry equal marks.

Examiners: Ms. B. Murphy

Dr. I. Casey

Dr. A. Petersen

Prof. R. Fitzgerald

Q1. Define the terms and give examples of:

- (i) strategic minerals
- (ii) non-metallic economic minerals
- (iii) mineral reserves
- (iv) mineral resources

(8 marks)

Discuss mineral resource exploitation under the following headings:

- (a) extraction
- (b) processing
- (c) environmental effects

(12 marks)

Q2. Outline the characteristics proposed by the U.S. Environmental Protection Agency to qualify waste substances as toxic/hazardous.

(4 marks)

List six toxic chemicals with greatest risk to human health.

(3 marks)

Describe how hazardous wastes may cause environmental contamination and write a summary account of persistent pollutants.

(13 marks)

Q3. Outline the components of the hydrological cycle and comment on the major features of the earth's water.

(6 marks)

Write an informative account of:

- (i) water resources in Ireland
- (ii) Irish river water quality

(12 marks)

Summarise conclusions concerning quality and quantity of water in Ireland.

(2 marks)

- Q4. Describe two widespread human protein deficiency diseases. (4 marks)  
Write a concise account of world food reserves, with reference to:  
(a) major crops and  
(b) principal crop-producers. (6 marks)  
Discuss how *hunger, poverty, population growth* and *environmental deterioration* are interconnected and suggest what might be done to alleviate world hunger. (10 marks)
- Q5. Name three E.U. Directives covering air quality standards and write an informative account of two in relation to:  
(a) monitoring of air quality and  
(b) recent results of evaluations in Ireland. (10 marks)  
Summarise the current status of air quality in the Cork area. (6 marks)  
Briefly describe the importance of Lead and Ozone in air. (4 marks)
- Q6. Outline the features of:  
(a) landfill  
(b) incineration  
(c) composting  
in the disposal of municipal and domestic wastes. (6 marks)  
Explain the term and give three examples of “household hazardous waste”. In each case, briefly suggest an appropriate action to minimise the potential hazard presented by the waste. (4 marks)  
  
Write an account of the advantages and disadvantages of recycling in relation to waste reduction and discuss how recycling might be further encouraged in Ireland. (10 marks)
- Q7. Write an informative account of industrial wastewater under the following headings:  
(i) main characteristics  
(ii) purpose of treatment  
(iii) advanced treatment (10 marks)  
Describe the advantages and disadvantages of two options that are currently available for sludge disposal in Ireland. (10 marks)