

Cork Institute of Technology  
Bachelor of Science (Honours) in Applied BioSciences(ACCS) - Award  
(NFQ Level 8)  
Spring 2007

**Environmental Science & Industrial Hygiene**  
(Time: 3 Hours)

**Instructions**

Answer FOUR questions.  
TWO questions from **Section A** and  
TWO questions from **Section B**.

Examiners: Mr P Kennedy  
Mr J Hogan  
Ms. E. O'Leary  
Dr. C. Gibson  
Mr. N. Duffy  
Prof R Fitzgerald

**Section A**  
**Industrial Hygiene**

Q1. Briefly define or describe **five** of the following

- |   |           |
|---|-----------|
| a) Nominal Protection Factor.               | (5 Marks) |
| b) LD <sub>50</sub>                         | (5 Marks) |
| c) The functions of the nose.               | (5 Marks) |
| d) Emphysema.                               | (5 Marks) |
| e) How the skin regulates body temperature. | (5 Marks) |
| f) Sensorineural hearing loss.              | (5 Marks) |
| g) Teratogen.                               | (5 Marks) |
| h) The structure of the skin.               | (5 Marks) |

Q2. Describe the six steps that must be followed when drawing up a Safety Statement for a place of employment. (25 Marks)

- Q3. Describe how once a workplace hazard has been identified, the hazard can be evaluated, using the following headings:
- |                  |            |
|------------------|------------|
| Desktop studies. | (5 Marks)  |
| Monitoring.      | (10 Marks) |
| Sampling.        | (5 Marks)  |
| Instrumentation. | (5 Marks)  |
- Q4. The respiratory system is exposed to a number of hazards in the workplace. Describe both the natural defence mechanisms and the protective equipment that will prevent or reduce work related damage.
- (25 Marks)

## Section B

### Environmental Science

- Q5. (a) Describe the pressures on the environment in Ireland coming from transport sources.  
(10 marks)
- (b) Outline 3 instruments that could alleviate these pressures, and how they could be implemented  
(15 marks)
- Q6. (a) Concisely explain what is meant by “Environmental Impact Assessment (EIA)” of a project.  
(5 marks)
- (b) What are the environmental “topics” that must be considered when preparing an environmental impact statement?  
(4 marks)
- (c) What are the phases in the life-cycle of a project?  
(4 marks)
- (d) What form could mitigation measures take, which are preferred and why?  
(5 marks)
- (e) Discuss potential weaknesses in the process of Environmental Impact Assessment and recommend measures to avoid or minimise these.  
(7 marks)

- Q7. (a) Give a brief description of Life Cycle Analysis and explain its importance in the application of sustainable development. (4 marks)
- (b) Explain 2 methods by which life cycles can be quantified. (3 marks)
- (c) Explain the concept of ecodesign and outline the main rules associated with its application. Give examples where applicable. (7 marks)
- (d) Identify two different pieces of environmental legislation (precise name not required) which could impact on an Irish manufacturing company and describe the main aspects of each piece of legislation. Give an example in each case of what such companies may have to do in order to fulfil their requirements under this legislation. (7 marks)
- (e) Briefly describe some of the aspects which are taken into account in determining whether a waste is classified as a hazardous waste or not. (2 marks)
- (f) Outline one piece of environmental legislation which impacts directly on you as an individual. Describe what you should do in order to fulfil your obligations under this legislation. (2 marks)
- Q8. (a) What measures can an industrial facility take to minimise CO<sub>2</sub> emissions at the facility itself, upstream of the facility and downstream of the facility? Explain briefly why these measures minimise CO<sub>2</sub> emissions. (6 marks)
- (b) With regard to energy management, detail three 'No cost' measures, three examples of 'Low cost' measures and three examples of 'High cost' measures which a facility could take to improve energy efficiency. (9 marks)
- (c) Illustrate the waste management hierarchy pyramid and provide examples of waste prevention, waste reduction and waste reuse for organic, cardboard and plastic waste streams. (10 marks)