

Cork Institute of Technology

Bachelor of Science in Applied Bioscience and Biotechnology – Award

(SBIBI_7_Y3)

Spring 2008

Environmental Science and Industrial Hygiene

(Time: 3 Hours)

Instructions

Answer any **FIVE** questions.
All questions carry equal marks.

Examiners: Mr. E. Callery
Prof. Gary Walsh

Q1. International protocols have been drawn up to offset the impacts of global air pollution.

Discuss TWO of these protocols under the following headings:

(i) How the global air pollution is formed.

(ii) Its impact.

(iii) Actions agreed under the protocol.

(iv) Progress to date.

(20 marks)

Q2. (a) “Intensive agricultural practices can have a serious environmental impact on soil quality and surrounding waters”. Discuss. (10 marks)

(b) Describe the source and impacts of natural radioactivity in soils. (6 marks)

(c) What control measures have been taken in Ireland to minimize impacts of radioactivity?

(4 marks)

Q3. (a) Describe in detail how trickling filters are deployed as a biological treatment to break down organic matter in wastewaters. (10 marks)

(b) Discuss the various steps in potable water treatment used to eliminate pathogens from the water. (10 marks)

Q4. (a) Write an informative account on pesticides commenting on their impacts on the environment and the measures that have been taken to minimize these impacts. (14 marks)

(b) Discuss TWO factors that determine the fate of an ecotoxin in the environment. (6 marks)

Q5. (a) What are the main routes of exposure to a toxic agent? (4 marks)

(b) Describe how toxicity testing is carried out to evaluate the potential toxic effects of a substance commenting on the test design, acute & chronic studies and specific toxicity testing. (16 marks)

Q6. (a) How does the body regulate temperature to control against heat stress and loss?

(6 marks)

(b) Write a detailed account on:

(i) A condition brought about by heat stress and

(ii) A condition brought about by working in a cold environment

Comment on how each condition affects the body and what controls should be used to minimize the risk of these conditions occurring. (14 marks)

Q7. (a) Describe THREE types of dermatitis that can be caused by exposure to chemicals in the workplace. (8 marks)

(b) What precautions should be taken to minimize the risk of exposure of workers to chemicals that cause skin damage? (6 marks)

(c) Discuss the structure of the eye and describe the main workplace hazards that can cause damage to it. (6 marks)

- Q8. (a) Write an informative account on the THREE elements required to start a fire, commenting on their properties and giving examples. (7 marks)
- (b) What control measures should be in place in the workplace to prevent a fire starting? (6 marks)
- (c) List the main combustion products of a fire and describe the health hazards associated with each. (7 marks)
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- Q9. (a) Discuss the various hazards associated with working in a confined space and what precautions should be taken before such work commences. (8 marks)
- (b) In terms of chemical hazard communication what are the main components of and the basic purpose of:
- (i) A Hazard Label and
 - (ii) A Material Safety Data Sheet (8 marks)
- (c) Once a hazard is identified in the workplace briefly outline the steps that should be taken to minimise the risk. (4 marks)