

Cork Institute of Technology

Higher Certificate in Science in Applied Biology – Award

(National Certificate in Science in Applied Biology – Award)

(NFQ – Level 6)

Summer 2005

Environmental Science

(Time: 3 Hours)

Instructions

Answer any FIVE questions

All questions carry equal marks.

Examiners: Dr. A. Petersen

Ms. B. Murphy

Dr. I. Casey

Prof. R. Fitzgerald

- Q1. Write notes on, illustrate or define eight only of the following:-
- (i) Blue Flag Scheme of quality for European beaches.
 - (ii) Environmental effects of rubbish dumping
 - (iii) Sewage fungus as a water pollutant
 - (iv) Natural and man-made sources of radioactivity
 - (v) Population equivalent of an organic waste
 - (vi) Detection of microbial pathogens in water
 - (vii) Methods of oil removal from the environment
 - (viii) Thermal pollution
 - (ix) Aeration capacity of a waterbody.
 - (x) Effects of *salinity* and *temperature* on the solubility of oxygen in water (20 Marks)
- Q2. Explain what is meant by the term “Phosphorous bioavailability” in relation to waste discharges to water. (4 Marks)
- “Productive capacity may influence oxygen content and this provides a useful distinction between eutrophic and oligotrophic lakes”. Critically discuss this statement. (10 Marks)
- Briefly describe recent findings for water quality in Irish lakes. (6 Marks)
- Q3. Explain the terms “acute toxicity” and “chronic toxicity”. (4 Marks)
- Write an account of Chemical Carcinogens with reference to their identification and control. (10 Marks)
- Describe any two neurotoxins and their biological action. (6 Marks)

- Q4. Outline the possible problems of building on Landfill Sites. (5 Marks)
Write an informative account of the
- (a) assessment of wasteland
 - (b) cleaning-up and use of wasteland. (10 Marks)
- Briefly explain the differences between ‘derelict’ and ‘neglected’ wasteland. (5 Marks)
- Q5. Distinguish between “combined” and “separate” sewage collection systems. (4 Marks)
Write an informative account of the use and limitations of the percolating filter and activated sludge in the biochemical treatment of sewage. (10 Marks)
Write descriptive accounts of:
- (a) Sewage sludge disposal
 - (b) Features of a poor quality effluent. (6 Marks)
- Q6. List the main features of a lotic environment. (4 Marks)
Write an account of the changes you might expect to find in a river subjected to organic pollution. Use graphs and diagrams to illustrate your answer. (10 Marks)
Clearly explain the terms
- (a) Zonation
 - (b) Eroding River Bed
 - (c) Depositing River Bed (6 Marks)
- Q7. List the objectives of environmental surveillance programmes. (4 Marks)
Tabulate the advantages and disadvantages of physico-chemical versus biological procedures for the assessment of water quality. (6 Marks)
Write an informative account of water quality in Ireland with reference to:
- (a) Drinking water
 - (b) the NITRATES DIRECTIVE (10 Marks)