

Cork Institute of Technology
Bachelor of Science (Honours) in Applied Biosciences – Award
Bachelor of Science in Applied Biosciences - Award

(NFQ – Level 8)

Summer 2005

Bioanalytical Science

(Time: 3 Hours)

Answer one question from each of Section A, B, C and D. Each question carries equal marks.

Use separate answer books for each section and mark the question attempted

Examiners: Ms. A. Ward
Dr. H. Tarrant
Dr. T. Beresford

Section A

- Q1.** Method validation is the process of defining an analytical requirement and confirms that the method has performance capabilities consistent with what the application requires.
Give an account of the essential components of a method validation study.
(25 marks)
- Q2.** Write an essay on the method and principle of a Dissociation Enhanced Lanthanide Fluoroimmunoassay (DELFIA) system. Comment on the important issues of automation as they apply to this system of analysis.
(25 marks)

Section B

- Q3.** Present an overview of the stages of development of a new drug, using the following headings as a guide:
(i) drug discovery and preclinical development
(ii) clinical development
(iii) postmarketing surveillance.
(25 marks)
- Q4.** Write an essay on the nature of radioactivity and the applications of radioisotopes in the biological sciences.
(25 marks)

Section C

- Q5. Discuss the important applications of immunomagnetic separation and rapid detection of micro-organisms in food and clinical analysis. (25 marks)
- Q6. Polyacrylamide Gel Electrophoresis (PAGE) is an important analytical tool for macromolecular separation. Discuss the practical considerations in pre-electrophoretic design and the main post-electrophoretic methods for identification and quantitation of proteins. (25 marks)

Section D

- Q7. Describe the principles of enzymatic analysis under the headings:
- (i) Measurement of enzyme activity, and
 - (ii) Enzymes as analytical reagents.
- Use graphs and practical examples wherever possible to illustrate your answer. (25 marks)
- Q8. Write an essay on enzyme immunoassay (EIA) classification and design. Illustrate your answer with relevant diagrams of the assay principles and formats for both heterogeneous and homogeneous systems. (25 marks)