

Cork Institute of Technology

Bachelor of Science (Honours) in Applied BioSciences – Award

(Bachelor of Science in Applied BioSciences – Award)

(NFQ – Level 8)

Autumn 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. Tom Beresford

Section A

- Q1.** Write an account of the emergence of non-isotopic immuno-labels as alternatives to radiolabels in immunoassay design. Illustrate your answer with examples of important non-isotopic formats in current use. (25 marks)
- Q2.** Write an essay on the essential components of a method validation study for an immunoassay system. In your answer, comment on the significance of assessing measurement uncertainty as an important validation parameter. (25 marks)

Section B

- Q3.** Discuss the advantages and limitations of the different types of *in vitro* assay systems currently being used to identify and assess chemicals alleged to possess estrogenic activity. (25 marks)

- Q4. Give an account of the design and application of biosensors in the measurement of biologically important molecules. Comment on how this technology may develop in the future.
(25 marks)

Section C

- Q5. Immuno-magnetic separation is a useful alternative to conventional isolation procedures for micro-organisms. Write an essay on the principle and applications of the immuno-magnetic separation technique.
(25 marks)
- Q6. Give an account of the important issues of automation as they apply to any immunoassay system. In your answer, give an overview of any automated immunoassay system under the following headings:
- (i) Method and principle of the system
 - (ii) Technical performance
 - (iii) Clinical applications
- (25 marks)

Section D

- Q7. Give an account of the principles of enzyme assay design, illustrating your answer with practical examples.
(25 marks)
- Q8. Write an essay on gel electrophoresis as an important diagnostic tool in the bio-analytical laboratory.
(25 marks)