

Cork Institute of Technology
Bachelor of Science (Honours) in Applied Biosciences - Award
December 2004

Biochemistry
(Time: 3 Hours)

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

Examiners: Dr. H. Tarrant
Dr. J. O'Mahony
Prof. R. O'Kennedy

Use separate answer books for each Section and mark the questions attempted.

Section A

- Q1. Describe the biological origins of reactive oxygen species and the body's mechanisms of antioxidant protection. (25 marks)
- Q2. Prions are considered established as a group of pathogens along with other well-known infectious agents, including bacteria, viruses, fungi and parasites. Discuss in detail the mechanism by which prions are proposed to cause neurodegenerative diseases. (25 marks)

Section B

- Q3. "All living organisms depend upon a large and intricate array of chemical signalling systems to guide biological development and regulate cell and organ activity. The science of endocrine disruption investigates the ability of common environmental contaminants to interfere with these sensitive systems." Discuss. (25 marks)
- Q4. Write an essay on biotransformation reactions using relevant example(s) to support your discussion. (25 marks)

Section C

- Q5. Outline the biochemical significance of the kidney, and discuss the role of electrolytes in maintaining ionic balances in the body. (25 marks)
- Q6. Describe in detail the mechanistic role played by insulin in regulating the cellular uptake of glucose during carbohydrate absorption. (25 marks)

Section D

- Q7. Using suitable examples, evaluate the importance of clinical enzymes in assisting biomedical diagnoses. (25 marks)
- Q8. Discuss the importance of recombinant protein engineering over the last 20 years and highlight some of the main resultant therapeutic applications. (25 marks)