Cork Institute of Technology

Bachelor of Science (Honours) in Herbal Science – Stage 3

(SHERB_7_Y3)

Summer 2008

Biochemistry

(Time: 3 Hours)

Answer Section A (compulsory).
Answer TWO questions from Section B and
TWO questions from Section C.

Examiners: Dr. R. Sleator
Dr. D. Corrigan
Dr. D. Clare

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

Section A

Q1. (Attempt all questions in this section, 3 marks each).

(a) Write a brief note on programmed cell death (apoptosis).

(b) Define the "central dogma" of molecular biology.

(c) Name 4 different types of RNA and their function.

(d) Describe what is meant by redundancy in the genetic code.

(e) Failure of protein regulation through incorrect functioning of proteosomes can lead to disease – provide two examples of such diseases.

(f) Write a brief note on proteolytic processing using insulin as an example.

(g) Describe with the aid of Lineweaver- Burk plots the three different types of enzyme inhibition.

(h) In Michaelis-Menten kinetics define the terms Vmax and Km.

(i) Write a brief note on Quorum Sensing.

(j) Describe how T-cells interact with antigens.

(k) Write a brief note on carnitine deficiency, symptoms and treatment.

(l) Describe the potentially problematic effects of the Atkins diet.

Section B. (Answer 2 questions)

Q2. Outline with the aid of diagrams the process of post-translational modification in

(a) Prokaryotes (8 Marks)

(b) Eukaryotes (8 Marks)

Q3. Write an essay on protein targeting/trafficking in

(a) Prokaryotes (8 Marks)

(b) Eukaryotes (8 Marks)

Q4. Write a detailed essay on cell signalling by two component signal transduction. (16 Marks)

Section C. (Answer 2 questions)

Q5. Write an essay on fatty acid oxidation. (16 Marks)

Q6. Write an essay on the adaptive immune response with reference to

(a) The cellular immune response (8 Marks)

(b) The humoral response (8 Marks)

Q7. Write an essay on the complement system. (16 Marks)