Cork Institute of Technology

Bachelor of Science in Food Science and Technology – Award

(NFQ – Level 7)

December 2006

Bioprocessing

(Time: 3 Hours)

Answer **five** questions.
Answer **two** questions from Section A
two questions from Section B and **one** other of your choice.
Please use separate answer books for each section.
All questions carry equal marks.

Examiners: Ms. E. McDonnell
Dr. D. Gilroy
Dr. T. Beresford

Section A

Q1. Write an essay on Modified Atmosphere Packaging. (20 marks)

Q2. Briefly describe the processing steps and ingredients used for production of the following food products:-

(a) Black Tea
(b) Soft drinks
(c) Bread

(20 marks)

Q3. (a) With the aid of diagrams, describe the principle of ion exchange chromatography. (10 marks)

(b) Describe a method for the generation and distribution of WFI. (6 marks)

(c) Outline the characteristics of a useful industrial microorganism. (4 marks)

Q4. Write an essay on Food Irradiation **or** Industrial Fermentations. (20 marks)

Section B

Q5. Describe, with the aid of diagrams, the principle and applications of the *three* following unit operations:

(a) Ultrafiltration
(b) Reverse osmosis
(c) Centrifugation

(20 marks)

Q6. (i) Summarize the steps involved in the production of *three* of the following food products:

(a) Soy Sauce
(b) Sauerkraut
(c) Fermented Sausage
(d) Smoked meat products
(e) Swiss Cheese

(20 marks)

OR

(ii) (a) Explain the terms; D-value, Z-value and Lethal Rate used in thermal food processing.

(10 marks)

(b) Outline the key steps in the production of a safe canned food product.

(10 marks)

Q7. Explain the term 'defined strain starter culture'. Outline how such a system was developed for the Irish Cheddar cheese industry and used to counter phage infection of starter cultures.

(20 marks)

Q8. Describe the different methods available to dry foods, commenting on the characteristics of foods dried using different methods.

(20 marks)