

Cork Institute of Technology

Bachelor of Science in Food Science and Technology - Award

(NFQ - Level 7)

December 2005

Bioprocessing (Time: 3 Hours)

Answer six questions
Answer two questions from Section A.
Answer two questions from Section B.
Answer two questions from Section C.
Please use separate answer books for each section.
All questions carry equal marks.

Examiners: Mr. E. Fitzgerald
Dr. D. Gilroy
Mr. B. Walsh
Dr. T. Beresford

Section A

Q1. Write an essay on *one* of the following topics of your choice:

Modified Atmosphere Packaging
Food Irradiation
Industrial Fermentations

(20 marks)

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

- (a) Cooked ham
- (b) Soft drinks
- (c) Bread

(20 marks)

Q3. (a) With the aid of diagrams, describe the principle of *two* membrane filtration techniques used to concentrate/separate various materials in the food/pharmaceutical industry. (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)

Section B

Q4. Write short notes on *three* of the following:

- (a) production of sugar beet
- (b) production of mushrooms
- (c) production of barley
- (d) salmon farming
- (e) production of eggs

(20 marks)

Q5. Describe the factors you would take into account when setting up a food or bio-pharmaceutical processing plant. Using a specific product example and appropriate diagrams, describe the design under the following headings:

- (a) geographical location
- (b) site plan
- (c) internal layout

(20 marks)

Q6. Describe, with the aid of appropriate diagrams, the operation of a mechanical refrigeration circuit and comment on the functions of each component part.

(20 marks)

Section C

Q7. Outline the principles of cheesemaking in general paying particular attention to acid production, temperature and times involved.

(20 marks)

Q8. Describe the manufacture of beer paying particular attention to the role of the materials and other additives.

(20 marks)

Q9. The manufacturing methods of fermented meat products have changed and diversified over time. Discuss this statement using the manufacture of fermented sausages to support your answer.

(20 marks)