

Cork Institute of Technology

Bachelor of Science in Food Science & Technology - Award

(NFQ Level 7)

Spring 2007

Food Microbiology

(Time: 3 Hours)

Instructions to candidates:

Answer Five questions. Three from Section A, one from Section B and one from Section C.
Use separate answer books for each Section.

Examiners: Dr. T. Beresford
Mr. B. Walsh
Dr. D. Gilroy
Dr. A. Coffey

Section A

- Q1. (a) Write concise notes on the influence of oxidation/reduction potential of foods on the growth of microorganisms. Use examples with which you are familiar to support your answer. (20 marks)
- (b) Briefly describe the significance of *Pseudomonas* as a food spoilage microorganism. (10 marks)
- (c) Describe the types of spoilage that are brought about by microorganisms on or in foods. (10 marks)
- Q2. (a) Write an account of the microbial spoilage of meat, poultry and fish. (20 marks)
- (b) Discuss gas formation in hard cheese by microorganisms. (10 marks)
- (c) How do the constituents of hens' eggs affect microbial growth? (10 marks)
- Q3. (a) List the principles of the HACCP system. (10 marks)
- (b) Outline a model for the implementation of a HACCP plan for a product with which you are familiar. (30 marks)
- Q4. Write concise notes on the methods used for the control of microorganisms in the production of food. (40 marks)

Section B

- Q5. Describe the principle and microbiological applications of two of the following techniques:
- (i) Enzyme linked immunosorbent assay
 - (ii) Polymerase chain reaction
 - (iii) ATP bioluminescence
 - (iv) Indirect conductimetry (40 marks)
- Q6. (i) Highlight the differences that exist between 2 and 3 class sampling plans and provide an example of each. (30 marks)
- (ii) Name two biological indicators used to validate sterilisation regimes in the biopharmaceutical sector. (10 marks)

Section C

- Q7. Discuss the different pathogenic *E. coli* strains involved in food poisoning from the point of view of:
- (a) properties
 - (b) sources
 - (c) pathogenesis
 - (d) food analysis
 - (e) detection (40 marks)
- Q8. Discuss *Campylobacter jejuni* from the point of view of:
- (a) properties
 - (b) sources
 - (c) pathogenesis
 - (d) food analysis
 - (e) detection (40 marks)