

Cork Institute of Technology

Bachelor of Science in Food Science and Technology – Award

(National Diploma in Science in Food Science and Technology – Award)

(NFQ – Level 7)

Spring 2005

Food Microbiology

(Time: 3 Hours)

Answer any FIVE questions.

Four (4) questions from section A and
one(1) from section B.

Use a separate answer book for each section.

Examiners: Mr. B. Walsh

Dr. A. Coffee

Prof. R. Fitzgerald

Section A

Q1. Show how the intrinsic and extrinsic parameters of foods that affect microbial growth impact on the shelf-life of these products. Quote examples freely to support your answers.
(40 marks)

- Q2. (a) Outline the spoilage mechanism of vegetables by Erwinia. (10 marks)
- (b) What defects of butter are caused by Pseudomonas Species? (10 marks)
- (c) Differentiate between the various spore formers in the spoilage of canned foods.
(10 marks)
- (d) Write a brief description on the defects of meat brought about by microorganisms.
(10 marks)

- Q3. (a) Write an account of the significant factors that contribute to the contamination of foods by food-illness causing microorganisms. (8 marks)
- (b) How do sorption isotherms impact on the A_w of foods? (8 marks)
- (c) Briefly describe the chemical changes brought about by microbial activity in foods. (8 marks)
- (d) The diarrhoeagenic *E. coli* that have been associated with foodborne illness are grouped into 4 categories. What is the basis for this categorization? (8 marks)
- (e) Write concise notes on the occurrence and significance of microbial toxins. (8 marks)
- Q4. Outline the contribution of 3 genera of bacteria, 2 genera of moulds and 1 genus of yeast to food microbiology. (40 marks)
- Q5. Describe a detailed approach to developing a HACCP plan that assures food safety using a generic model for chilled foods as an example. (40 marks)

Section B

- Q6. Discuss bacteriocins and the different methods used to apply these preservatives to foods. (40marks)
- Q7. (a) Explain the basis for the PCR reaction. (20marks)
- (b) Explain how PCR can be used to characterise microorganisms isolated from foods. (20marks)