CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

Autumn Examinations 2009/10

Module Title: Introduction to Bioprocessing CA

Module Code: BIOL 6022

School: School of Science

Programme Title: B.Sc. in Applied Biosciences
B.Sc. (Hons) in Nutrition and Health Science
B. Sc. (Hons) in Pharmaceutical Biotechnology

Programme Code: CR_SBIOS_7_Y2
CR_SNHSC_8_Y1
CR_SPHBI_8_Y1

External Examiner(s): Dr. Don Faller

Internal Examiner(s): Ms. Anna Murphy

Instructions: **Answer Question 1 and three other questions.**

Duration: **2 hours**

Sitting: Autumn 2010

Requirements for this examination:

Note to Candidates: Please check the Programme Title and the Module Title to ensure that you have received the correct examination paper.
If in doubt please contact an Invigilator.

Q1(a) Describe in detail a titration method for the determination of ascorbic acid in a fruit juice or vegetable. (15 marks)

(b) Outline the calculation involved in determining the mg of ascorbic acid in a product using this titration method. (10 marks)

Q2(a) Describe briefly the pasteurisation and homogenisation stages involved in the processing of liquid milk for commercial sale. (8 marks)

(b) Distinguish between Primary, Secondary and Tertiary Packaging to include one example of each. (9 marks)

(c) Describe briefly the main factors that affect the rate and firmness of the curd formed during cheese manufacture. (8 marks)

Q3(a) Write a brief note on the applications of genetic engineering in the food industry to include the legal requirements in relation to labelling of genetically engineered foods. (9 marks)

(b) List the main factors that need to be considered when selecting a packaging material for a product. (8 marks)

(c) Write a brief note on the production of **two** of the following colloids:

(i) Emulsion

(ii) Gel

(iii) Foam (8 marks)

Q4(a) Write a note on **four** of the following preservation methods to include an example of a food preserved by each method:

(i) Spray Drying

(ii) Modified Atmosphere Packaging

(iii) Freeze Drying

(iv) Irradiation

(v) Cryogenic Freezing (16 marks)

(b) Describe briefly how deterioration in the quality of fruit and vegetables can be minimised after harvesting. (9 marks)

Q5(a) Write a brief note on the following areas in relation to meat quality and meat production.

(i) E Coli 0157 contamination and control measures in abattoirs.

(ii) Specified Risk Materials and B.S.E. control.

(iii) Humane Stunning Methods.

(iv) Effect of Pre-slaughter stress on meat quality (15 marks)

(b) State the main advantages and disadvantages of using glass as a packaging material. (10 marks)

Q6(a) The fat content of 6500kg of milk needs to be reduced from 3.65% to 3.5%. How much cream containing 36% fat should be removed from the milk to lower the fat content? (10 marks)

(b) Write a brief note on a medical device company in Ireland that you are familiar with to include examples of medical devices produced by the company. (10 marks)

(c) State how the rate of freezing affects the quality of frozen foods. (5 marks)