

**CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

Autumn Examinations 2011/12

Module Title: Introduction to Bioprocessing (CA)

Module Code: BIOL6022

School: Science & Informatics

Programme Title: BSc in Applied Biosciences – Year 2
 BSc (Hons) in Nutrition and Health Science – Year 1
 BSc (Hons) in Pharmaceutical Biotechnology – Year 1

Programme Code: SBIOS_7_Y2
 SNHSC_8_Y1
 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 2012

Requirements for this examination:

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

(b) Describe briefly the principles of the Gerber Test for the determination of fat in milk or cream. (10 marks)

Q2 (a) Write a note on the following areas of milk and milk processing:

- (i) Pasteurisation
- (ii) Standardisation
- (iii) UHT Milk
- (iv) Homogenisation (16 marks)

(b) Describe briefly the main factors that affect the rate of drying of foods. (3 marks)

(c) List the main factors that need to be considered when selecting a packaging material for a product. (6 marks)

Q3 (a) Write a brief note on the types of genetically modified food products available in Ireland at present. Also include the European legal requirements in relation to labelling of genetically engineered foods. (8 marks)

(b) Write a brief note on the production of **two** of the following colloids to include examples of commercial products from each group. (10 marks)

- (i) Emulsion
- (ii) Gel
- (iii) Foam

(c) Describe briefly the production of dried milk powders. Include the commercial uses of dried milk powders in your answer. (7 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) Modified Atmosphere Packaging
- (ii) Spray Drying
- (iii) Irradiation
- (iv) Aseptic Processing
- (v) Cryogenic Freezing (12 marks)

- (b) Write a brief note on the ready to eat fruit and vegetable industry to include packaging requirements. (6 marks)
- (c) Describe briefly the production process for beer, to include ingredients and their functions. (7 marks)

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

- (i) Dry Cure
- (ii) Gelatine extraction and commercial uses
- (iii) Humane Stunning Methods
- (iv) Effect of Pre-slaughter stress on meat quality (16 marks)

- (b) State the main advantages and disadvantages of using paperboard as a packaging material. (9 marks)

Q6 (a) Describe the functions of **four** of the following additives used in the production of food and/or pharmaceutical products. Include examples of products that may contain each of these additives in your answer.

- (i) Antioxidants
- (ii) Carriers
- (iii) Humectants
- (iv) Modified Starches
- (v) Anti-caking agents (16 marks)

- (b) Write a detailed note on a medical device company in Ireland that you are familiar with to include examples of medical devices produced by the company. (9 marks)