

CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

Autumn Examinations 2008/09

Module Title: Introduction to Bioprocessing

Module Code: BIOL6022

School: Science

Programme Title: Bachelor of Science in Applied Biosciences - 2

Programme Code: SBIOS_7_Y2

External Examiner(s): Dr. D. Faller

Internal Examiner(s): Ms. Anna Murphy

Instructions: Answer FOUR questions.
All questions carry equal marks.

Duration: 2hrs

Sitting: Autumn 2009

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) What would be the expected residual levels of salt (%) and nitrate (p.p.m.) when bacon is manufactured by injecting pork at 17.5% with a brine containing 13.2% salt and 0.20% nitrate? (10 marks)
- (b) Describe briefly the main types of curing methods used in the meat industry. (10 marks)
- (c) What are the functions of nitrates in a cured product? (5 marks)
- Q2. (a) Outline in detail the steps involved in the processing of liquid milk for commercial sale. (13 marks)
- (b) 5750 kg of milk containing 3.65% fat is separated into cream containing 42% fat and skim milk containing 0.02% fat. What weights of cream and skim milk would be expected from the separation process? (12 marks)
- Q3. (a) Describe the main methods of stunning animals during the slaughtering stage. (10 marks)
- (b) Outline the main precautions to be taken at abattoirs to minimise the risk of meat contamination. (10 marks)
- (c) List the main components of Specified Risk Material in relation to BSE control.(5 marks)
- Q4. Write a brief note on **five** of the following preservation methods used in Irish food and pharmaceutical industries. Give examples of products preserved by each method.
- (i) Spray Drying
 - (ii) Accelerated Freeze Drying
 - (iii) Canning/Bottling
 - (iv) Tunnel Drying
 - (v) Modified Atmosphere Packaging
 - (vi) Fluidised Bed Freezing (25 marks)

- Q5. (a) Describe in detail **three** colloids that are commercially produced in the food and pharmaceutical industries. Give examples of each colloid. (15 marks)
- (b) Write a brief note on the functions of **four** of the following additives used in the food industry. Give examples of products that these additives may be found in.
- (i) Antioxidant
 - (ii) Humectant
 - (iii) Modified Starches
 - (iv) Emulsifiers
 - (v) Flavour Enhancers (10 marks)
- Q6. (a) Describe briefly **four** functions of packaging for food and pharmaceutical products. (10 marks)
- (b) State **two** advantages and **two** disadvantages of using metal cans as a packaging material. (10 marks)
- (c) Distinguish between primary packaging and secondary packaging. (5 marks)
- Q7. Outline in detail a laboratory procedure for the determination of ascorbic acid in a fruit juice or vegetable. (25 marks)