

CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

Autumn Examinations 2009

Bioprocessing – Legacy

School: Science

Programme Title: Higher Certificate in Applied Biosciences

Programme Code: SBIOS_7_Y2

External Examiner(s): Dr. Don Faller

Internal Examiner(s): Ms. Anna Murphy

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

Duration: 2 Hours

Sitting: Autumn 2009

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 16.5% with a brine containing 13.5% salt and 0.20% nitrate? (10 marks)
- (b) What injection level of a brine containing 15.5% salt should be used to give bacon with a residual salt level of 2.45%? (10 marks)
- (c) What are the functions of nitrates in a cured product? (5 marks)
- Q2.(a) Outline the steps involved in the processing of liquid milk for commercial sale. (15 marks)
- (b) Write a brief note on **either** the Bord Bia Egg Quality Assurance Scheme or Beef Quality Assurance Scheme and its importance in Irish food industries. (10 marks)
- Q3.(a) Describe the roller milling process for commercial flour production. (10 marks)
- (b) Describe briefly the process involved in beer production to include the functions of the ingredients involved. (15 marks)
- Q4.(a) 6500 kg of milk containing 3.55% fat is separated into cream containing 38% fat and skim milk containing 0.01% fat. What weights of cream and skim milk would be expected from the separation process? (15 marks)
- (b) The fat content of 4300kg of milk needs to be increased from 3.48% to 3.55%. How much cream containing 41% fat should be added from the milk to increase the fat content? (10 marks)

Q5. 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
- (iv) Chemical Preservatives
- (v) Modified Atmosphere Packaging
- (vi) Fluidised Bed Freezing (25 marks)

Q6.(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) Fortifying Agents (10 marks)

Q7.(a) Describe the effect of pre slaughter stress on the quality of the end meat produced.

(7 marks)

(b) Describe in detail **two** of the following diseases that can affect food industry in Ireland:

- (i) B.S.E.
- (ii) Avian Influenza
- (iii) Foot and Mouth Disease
- (iv) Bovine TB (18 marks)