

# Cork Institute of Technology

## Bachelor of Science in Applied Biosciences – Stage 2

(SBIOS\_7\_Y2)

Summer 2008

### **Bioprocessing**

(Time: 2 hours)

Instructions:

Answer any **FOUR** questions.

Examiners: Ms. A. Murphy

All questions carry equal marks.

Dr. T. Beresford

- Q1.(a) What would be the expected residual levels of salt (%) and nitrate (p.p.m.) when bacon is manufactured by injecting pork at 18.1% with a brine containing 14.2% salt and 0.22% nitrate? (10 marks)
- (b) What injection level of a brine containing 16.2% salt should be used to give bacon with a residual salt level of 2.38%? (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) 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? (15 marks)

(b) The fat content of 7500kg of milk needs to be reduced from 3.68% to 3.54%. How much cream containing 41% fat should be removed from the milk to lower 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) Stabilisers

(v) Firming Agents (10 marks)

Q7. (a) Describe the effect of pre slaughter stress on the quality of the end meat produced. (5 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

(20 marks)