

Cork Institute of Technology

Higher Certificate in Science in Applied BioSciences – Award

(NFQ Level 6)

Summer 2007

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 (%), nitrate and nitrite (p.p.m.) when bacon is manufactured by injecting pork at 14.8% with a brine containing 17.3% salt, 0.21% nitrate and 0.08% nitrite? (15 marks)
- (b) What level of nitrate should a brine contain if it is injected at 15.2% into pork to manufacture bacon with a residual nitrate level of 290ppm? (10 marks)
- Q2. (a) Outline the steps involved in the processing of liquid milk for commercial sale. (15 marks)
- (b) Describe the steps involved in the manufacture of butter. (10 marks)
- Q3. (a) Outline briefly the steps involved in the production of red wine. (10 marks)
- (b) Describe briefly the main categories of food additives to include examples of each category. (15 marks)

Q4. (a) 6450 kg of milk containing 3.57% fat is separated into cream containing 39% 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 5540kg of milk needs to be reduced from 3.65% to 3.5%.
How much cream containing 37% 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. Give examples of products preserved by each method.

(i) Spray Drying

(ii) Accelerated Freeze Drying

(iii) Canning

(iv) Irradiation

(v) Modified Atmosphere Packaging

(vi) Fluidised Bed Freezing (25 marks)

Q6. Discuss in detail **four** colloids that are commercially produced in the food and pharmaceutical industries. Give examples of each colloid. (25 marks)

Q7. (a) Describe the effect of pre slaughter stress on the quality of meat produced. (10 marks)

(b) Outline the control measures in place on farms and in abattoirs to control BSE. (15 marks)