

Cork Institute of Technology  
Higher Certificate in Science in Applied Biology - Award

(NFQ – Level 6)

Summer 2006

**Bioprocessing**

(Time: 2 Hours)

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

Examiners: Ms. A. Murphy  
Dr. T. Beresford

- Q1. (a) What would be the expected residual levels of salt (%) nitrate and nitrite (ppm) when bacon is manufactured by injecting pork at 16.4% with a brine containing 14.5% salt, 0.21% nitrate and 0.12% nitrite?
- (b) What level of salt should a brine contain if it is being injected at 15.8% into pork to manufacture bacon with a residual salt content of 1.9%?
- Q2. Describe briefly five of the following preservation methods. Give examples of products preserved by each method:
- (i) Spray Drying
  - (ii) Modified Atmosphere Packaging
  - (iii) Fluidised Bed Freezing
  - (iv) Irradiation
  - (v) Cryogenic Freezing
  - (vi) Accelerated Freeze Drying
- Q3. (a) What weight of cream containing 41% fat and skim milk containing 0.01% fat should be expected from the separation of 3950kg of milk containing 3.55% fat?
- (b) How much cream containing 38% fat should be removed from 5470kg of milk in order to reduce the fat content from 3.58% to 3.32%?

- Q4. (a) Discuss the grading systems used for the commercial sale of eggs in Ireland.
- (b) Describe the Bord Bia Egg Quality Assurance Scheme and its function in the egg and poultry industries.
- Q5. (a) Describe briefly the Pasteurisation and Homogenisation stages involved in the production of commercially sold milk.
- (b) Outline the steps involved in the production of a blue veined Cheese e.g. Cashel Blue or Stilton.
- Q6. Write a note on four of the following areas in relation to meat quality and meat production.
- (i) E Coli 0157 contamination and control measures in abattoirs.
  - (ii) Specified Risk Materials and B.S.E. control.
  - (iii) Humane Stunning Methods.
  - (iv) Effect of Preslaughter stress on meat quality
  - (v) Pickle Curing
- Q7. (a) Outline briefly the steps involved in the production of beer.
- (b) Discuss briefly white flour production under the following headings:
- (i) Conditioning of wheat
  - (ii) Fortifying Agents (nutrients) added
  - (iii) Cleaning process of wheat
  - (iv) Breaking Stage of wheat
- Q8. Outline a laboratory method for the determination of ascorbic acid in a vegetable or fruit juice.