

# Cork Institute of Technology

## Bachelor of Science in Food Science and Technology – Award

(NFQ – Level 7)

December 2006

### Food Toxicology

(Time: 2.5 Hours)

Answer **six** questions

Examiners:

Mr. B. Walsh

Answer **two** questions from Section A.

Dr. D. Gilroy

Answer **two** questions from Section B.

Dr. A. Furey

Answer **two** questions from Section C.

Prof. R. J. Fitzgerald

Please use separate answer books for each section.

All questions carry equal marks.

### Section A

Q1. Write concise notes on pesticides paying particular attention to definition, classification and use.

(20 Marks)

Q2. Write a short essay on aquatic biotoxins in seafood and fresh water.

(20 Marks)

Q3. Write brief notes on the safety aspects of food additives.

(20 Marks)

### Section B

Q4. (a) Describe the Ames test.

(12 Marks)

(b) Explain the ways in which foreign substances may pass through biological membranes.

(8 Marks)

Q5. (a) Outline the principle and applications of the Delvo test.

(10 Marks)

(b) Describe how the maximum acceptable total residue level of a veterinary drug is calculated.

(10 Marks)

Q6. Write short notes on each of the following in relation to toxicology:

(a) LD<sub>50</sub>

(b) NOAEL

(c) ADI

(d) Therapeutic index

(20 Marks)

## Section C

Q7. (a) “Correct sampling is the cornerstone of reliable analysis”

Briefly discuss this statement. Include in your answer (i) the factors that must be considered when developing a sampling protocol, (ii) the relevant personnel that must be involved, and (iii) the procedures that must be followed when sampling (the sampling process). (10 marks)

(b) “The process of extraction with solvents is generally employed either for the isolation of dissolved substances from solutions or from solid mixtures, or for the removal of undesired soluble impurities from mixtures”.

Discuss the advantages and disadvantages of liquid-liquid extraction?

How should the development and optimisation of a solvent extraction method be approached to obtain maximum analyte recovery and ensure representative sampling? Give an example? (10 marks)

Q8. Describe in detail, with the aid of diagrams, the technique of solid phase extraction (SPE). What stationary phases are available to the biologist for analyte purification and sample clean up and discuss the applications of SPE in food toxicology.

(20 marks)

Q9. Write a short essay on the topic of Food Toxicology.

In your answer discuss a testing protocol you would develop for 2 of the following situations:

(i) to detect the trace hydrocarbon contamination of shellfish caused by a small offshore oil spill,

(ii) to test the condition and edibility of cooking oils or fats,

(iii) to test trace level of pesticides in prepared vegetable baby foods. (20 marks)