Cork Institute of Technology

Bachelor of Science Applied Biosciences & Biotechnology - Award

(NFQ Level 7)

Autumn 2007

Biotechnology

(Time : 3 Hours)

Answer 5 Questions in total.
Answer 2 questions from section A
and 3 Questions from section B.
Use separate answer books for each section

Examiners: Dr Roy Slater
Ms M. Lane
Dr. T. Beresford

Section A

Q1. *"Individual yeast strains possess different physiological traits. Some of these traits are particularly desirable in wine strains of Saccharomyces".*
Discuss this statement. (20 marks)

Q2. Write an essay on the freeze drying process for the preservation of starter cultures under the following headings: **Freezing**, **Primary drying** and **secondary drying.** (20 marks)

Q3. Describe what is meant by **CIP,** describe the different types of CIP systems that exist and outline the advantages and disadvantages of implementing such systems. (20 marks)

Section B

Q4. Answer all parts

(a) Describe using examples what you understand by the term Biotechnology.

(b) List the general requirements for a fermentation process.

(c) Explain what is meant by "Scale up".

(d) Explain what is meant by primary and secondary metabolites.

(e) Briefly explain the terms Fed batch, Continuous fermentation and Batch fermentation.

(20 marks)

Q5. Write an account of the industrial production of Enzymes.

In your answer mention:

- Commercial uses of enzymes
- Organisms used in production
- Sources of Enzymes
- Biochemistry of enzyme production
- Recovery of enzymes from a fermentation process (20 marks)

Q6. Write an account of a typical Biotechnological fermentation by describing what is involved in (a) Upstream operations and (b) the Downstream processing.

(20 marks)

Q7. Write a detailed account of the production of Alcohol and Alcoholic beverages.

OR

Write descriptive notes on each of the following**:**

(a) Industrial uses of citric acid and other organic acids

(b) The biosynthesis of Citric acid

(c) The production processes used for citric acid (20 marks)