

Cork Institute of Technology
Bachelor of Science in Food Science & Technology – Award
Bachelor of Science in Cell & Molecular Biology - Award
December 2004
Microbiology
(Time: 2 Hours)

Instructions

Answer FOUR questions, selecting TWO from each Section. Use separate answer books for each Section.

All questions carry equal marks.

Examiners: Ms. M. Lane

Dr. D. Gilroy

Mr. M. Hickey

Section A

- Q1. Write descriptive notes on the following:
- (a) CO₂ assimilation by autotrophs and heterotrophs.
 - (b) Assimilation of Phosphorous and Sulphur.
 - (c) Ammonia incorporation into organic material. (25 Marks)
- Q2. Write an account of Protein Synthesis in procaryotes. Explain how transcription and translation are initiated and terminated. (25 Marks)
- Q3. Industrial Microbiology involves the use of micro-organisms to produce commercially viable products. Discuss the important elements of an Industrial fermentation using the following:
- (a) Properties of an organism used in an Industrial process.
 - (b) Primary and Secondary metabolites
 - (c) Design of fermenters
 - (d) Scale up process (25 Marks)

Section B

- Q4. (a) Draw and label the structure of IgG. (6 marks)
- (b) Summarise the role of complement in the immune response. (12 marks)
- (c) Describe a 2 class-sampling plan. (7 marks)
- Q5. Write short notes on each of the following techniques used for microbiological analysis:
- Enzyme Linked Immunosorbent Assay
 - ATP Bioluminescence
 - Polymerase Chain Reaction
 - Most Probable Number (25 marks)
- Q6. Discuss sterility testing in the pharmaceutical industry and outline the use of biological indicators to assess the effectiveness of various sterilisation methods. (25 marks)