

**Cork Institute of Technology**  
**Bachelor of Science (Honours) in Applied BioSciences**  
**- Award**  
**(NFQ - Level 8)**  
**February 2006**  
**ADVANCED MICROBIAL TOPICS**  
**(Time: 3 hours)**

Answer FOUR Questions.  
One from each section (A, B and C)  
and one other of your choice.  
Please use separate answer books for each section.

Examiners :  
Dr. A. Coffey  
Dr. D. Gilroy  
Dr. H. O' Shea  
Prof. R. Fitzgerald

**Section A-Microbial Biotechnology**

- Q1. Explain the interaction of Agrobacterium tumefaciens with plants and describe how this could be exploited to make a transgenic herbicide resistant plant. (25 marks)
- Q2. Write an essay on Probiotics. (25 marks)

### **Section B – Analytical Microbiology**

Q3. Describe the principle and microbiological applications of three of the following techniques:

- ATP Bioluminescence
- Flow Cytometry
- Fourier-Transform Infra Red Spectroscopy
- Indirect Conductimetry

Or

Discuss three molecular typing methods used for analyzing microbial genomes.

(25 Marks)

Q4. Discuss the history and future prospects of rapid and instrumental microbiological methods.

(25 Marks)

### **Section C – Virology**

Q5. Discuss the family Picornaviridae. (25 marks)

Q6. Discuss, using examples, how viruses survive in the community.

(25 marks)