

Cork Institute of Technology  
Higher Certificate in Science in Applied Biology – Award  
(NFQ – Level 6)  
Summer 2006  
**Cell Biology**  
(Time: 2 Hours)

Instructions  
Answer Question 1 (compulsory)  
and two others from Section A.

Examiners: Dr. H O'Shea  
Dr. T. Beresford

Use separate answer books for each Section.

Q1.

- (i) Write a brief note on the use of the haemocytometer.
- (ii) You have counted cells using a haemocytometer and have a total of 30 cells in 16 squares. In order to obtain this count, you diluted the cells by a factor of 10.  
The conversion factor for your counting chamber is  $10^4$ .  
The total volume of cell suspension is 20 mls. Calculate:
  - (a) The number of cells per ml.
  - (b) The total number of cells in the cell suspension.
- (iii) Discuss the components used to make 'BHK medium'.
- (iv) What are Oncogenes?
- (v) Describe, using a diagram, how cAMP acts as a second messenger in a cell.
- (vi) Outline, using a diagram, the five-kingdom system of classification.
- (vii) Describe the origin of the first cells.
- (viii) Outline, using a diagram, how HIV replicates.
- (ix) Why are parasitic diseases important?
- (x) What is Gene Therapy?

(Question 1 = 20 marks)

## Section A (Cell Biology)

**Answer at least two questions from this section. Each question carries 25 marks.**

Q2. Discuss, with the aid of diagrams, Immunoglobulin molecules.

Q3. Discuss, using diagrams, the cell cycle.

Q4. Write an essay on AIDS.