

Cork Institute of Technology  
Bachelor of Science in Applied Biosciences &  
Biotechnology – Award  
(SBIBI\_7\_Y3)  
Autumn 2008  
**CELL BIOLOGY**  
(Time: 2 hours)

Answer THREE Questions.  
Question 1 is compulsory.  
Answer TWO others.

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

**Q1. Answer all Questions (each question = 4 marks)**

- (i) You have counted cells using a haemocytometer and have a total of 40 cells in 16 squares. In order to obtain this count, you diluted the cells by a factor of 20. The conversion factor for your counting chamber is  $10^4$ . The total volume of cell suspension is 50 mls. Calculate:
  - (a) The number of cells per ml.
  - (b) The total number of cells in the cell suspension.
  - (c) The volume of cell suspension required to set up 2 flasks, each containing  $1.5 \times 10^7$  cells.
  - (d) How many cells remain in the total suspension after this manipulation?
- (ii) Write notes on the structure and function of mitochondria.
- (iii) Discuss the characteristics of animal cells in culture.
- (iv) Outline, with the aid of a diagram, the principles involved in the production and selection of a monoclonal antibody-secreting hybridoma cell line.
- (v) Discuss specific immunity with reference to measles virus infection.

**Section A. Answer 2 questions. Each question carries 15 marks.**

- Q2. Discuss how viruses change cell metabolism and structure.
- Q3. Discuss, with the aid of diagrams, the structure and function of antibodies.  
Compare the different immunoglobulin classes found in humans.
- Q4. Describe using a diagram(s), the stages in the development of invasive carcinoma of the cervix.
- Q5. Comment on the macroscopic and microscopic appearance of malignant neoplasms. Discuss metastasis.