

# Cork Institute of Technology

## Bachelor of Science in Cell and Molecular Biology – Award

## Bachelor of Science in Food Science and Technology – Award

(National Diploma in Science in Cell and Molecular Biology – Award)

(National Diploma in Science in Cell and Molecular Biology – Award)

(NFQ – Level 7)

Autumn 2005

### **Cell Biology**

(Time: 3 Hours)

Answer FOUR questions.

Question 1 is compulsory.

Answer THREE others, availing of the internal choices provided.

Examiners: Dr. H. O'Shea

Dr. T. Beresford

- Q1. (i) Write notes on the nucleus. Illustrate an experiment to demonstrate that the nucleus is the control centre of the cell.
- (ii) Write notes on the structure and function of mitochondria.
- (iii) Write notes on the use and formulation of chemically defined cell culture media.
- (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) Describe how SV40 transforms cells.
- (vi) Discuss specific immunity with reference to measles virus infection.
- (vii) Give a brief account of the structure and role of the thymus.
- (viii) Discuss the Major Histocompatibility Complex (MHC).
- (ix) Outline how benign neoplasms cause disease.
- (x) Discuss anti-viral chemotherapy.

- Q2. (a) Discuss, with the aid of diagrams, the structure and function of antibodies.  
Comment on clonal selection.

**OR**

- (b) Discuss, using examples, how different viruses replicate and release new viral progeny.

- Q3. (a) Describe [using a diagram(s)] the stages in the development of invasive carcinoma of the cervix.

**OR**

- (b) Comment on the macroscopic and microscopic appearance of malignant neoplasms.  
Discuss metastasis.

- Q4. (a) Discuss how cells respond to external stimuli.

**OR**

- (b) Write an essay on the pathological consequences of virus infection for the cell and multicellular host.