

Cork Institute of Technology

Bachelor of Science in Applied Biosciences & Biotechnology - Award

(SBIBI_7_Y3)

Spring 2008

Cell Biology

(Time: 1 ½ Hours)

Answer **THREE** questions.

Question **1** is compulsory, answer **two** others.

Examiners: Dr. Helen O'Shea

Dr. Tom Beresford

Use separate answer books for each Section

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

- (i) You have counted cells using a haemocytometer and have a total of 50 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 40 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 1.5×10^7 cells.
 - (d) How many cells remain in the total suspension after this manipulation?
- (ii) Write notes on the nucleus. Illustrate an experiment to demonstrate that the nucleus is the control centre of the cell.
- (iii) Discuss, with the aid of a diagram, animal cell growth 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) Describe, using a diagram, the routes taken by different viruses to synthesize mRNA in the host cell.

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

- Q2.** Discuss, using examples, how different viruses replicate and release new viral progeny.
- Q3.** Discuss the Innate Immune Response. In your answer, comment on the role of complement.
- 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. Outline how they cause disease and death.