

Cork Institute of Technology
Bachelor of Science (Honours) in Applied Biosciences (ACCS) - Award
(NFQ - Level 8)
Spring 2007
Cell Biology & Molecular Genetics
(Time: 3 Hours)

Answer FOUR Questions.
Question ONE is Compulsory.
Answer ONE question from Section A & B and One
other question from either Section.

Examiners: Mr. R. Sleator
Mr. M. Tagney
Dr. T. Beresford

Use separate answer books for each section.

Q1. Compulsory.

- (a) Describe the experiment which led to the cracking of the genetic code.
- (b) Define the terms **Karyotype**, **Karyogram** and **Idiogram**.
- (c) Define **Kosnmbis' function** and use it to determine the genetic map distance between two loci with a recombination frequency of 0.2.
- (d) Describe the genotype for the following **45XY,-14,-21 +t (14q21q)**.
- (e) What is the **Hayflick limit**?
- (f) Discuss the stages of apoptosis.
- (g) Comment on the differences between oncogenes and tumour suppresser genes.
- (h) Outline mechanisms for generation of antibody diversity.
- (i) Discuss membrane transport.
- (j) Describe microtubule involvement in cell movement. (40 marks)

Section A

- Q2. Proteins play an important role in DNA structure and function, discuss. (20 marks)
- Q3. What is the Human genetic linkage map? (20 marks)
- Q4. Write an essay on large scale DNA sequencing with reference to the Human Genome Project. (20 marks)

Section B

- Q5. Discuss positional information and the formation of pattern in the context of differentiation and development. (20 marks)
- Q6. Describe the regulation of the cell cycle. (20 marks)
- Q7. Describe antigen processing and presentation, and T-cell activation. (20 marks)

