

CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

Autumn Examinations 2007/08

Module Title: Biomolecules and Cells (CA)

Module Code: BIOL 6007

School: School of Science

**Programme Title: Bachelor of Science in Applied Biosciences – Stage 1
Bachelor of Engineering (Honours) in Chemical & Process
Engineering – Stage 1**

**Programme Code: SBIOS_7_Y1
ECPEN_8_Y1**

**External Examiner(s): Prof. Gary Walsh, Prof. L.S. Kershenbaum, Mr. M. Law
Internal Examiner(s): Ms. M. Lane**

**Instructions: Answer 4 questions.
Question 1 is compulsory.
Answer 3 other questions**

Duration: 2 hours

Sitting: Autumn 2008

Requirements for this examination:

Note to Candidates: Please check the Programme Title and the Module Title to ensure that you have received the correct examination paper.
If in doubt please contact an Invigilator.

Question 1 is compulsory.

- Q1. (a) Describe in detail how you would prepare and visualise
- (i) Plant cells
 - (ii) Animal cells
- using a compound light microscope in a biological laboratory.
(In your answer mention any stains used and the magnification used)
- (10 marks)
- (b) Describe simple tests that can be carried out in a laboratory to detect the presence of
- (i) Protein
 - (ii) Reducing Sugar
- (10 marks)
- (c) Briefly explain the purpose of controls in biological experiments. (5 marks)

Answer any three of the following questions

- Q2. (a) Draw the structure of a typical amino acid. (5 marks)
- (b) A protein can have up to four levels of structure.
Briefly describe these four levels of structure. (20 marks)
- Q3. (a) With the aid of a diagram describe the differences between a Prokaryotic and a Eucaryotic cell. (10 marks)
- (b) Briefly describe the structure of the plasma membrane. (10 marks)
- (c) List the functions of the plasma membrane. (5 marks)

Q4. Write short descriptive notes on **four** of the following:

- Endoplasmic Reticulum
- Golgi Apparatus
- The Cytoskeleton
- Mitochondria
- Chloroplasts
- Ribosomes

(25 marks)

Q5. Describe what is meant by the cell cycle.

Explain the events that occur at each stage of the cycle and mention how the cell cycle is controlled.

(25 marks)

Q6. Draw the structure of each of the following:

- (a) The ring form of glucose.(number the carbons in the structure)
- (b) A nucleotide
- (c) An unsaturated fat
- (d) A typical steroid
- (e) A peptide bond.(briefly explain how the bond was formed)

(5 marks each)