

**CORK INSTITUTE OF TECHNOLOGY**  
**INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

**Autumn Examinations 2007/08**

**Module Title : Enzymes , Energy and Disease (CA)**

**Module Code: BIOM 6001**

**School: Science**

**Programme Title: Bachelor of Science in Applied Biosciences – Year 1**

**Programme Code: SBIOS\_7\_Y1**

**External Examiner(s): Prof. Gary Walsh**  
**Internal Examiner(s): Dr Roy Slator**  
**Ms Margaret Lane**

**Instructions:** **Answer four questions .**  
**Section A: Answer 3 questions in this section.**  
**Section B: compulsory question**

**Use a separate Answer book for Section B.**

**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.

## Section A

- Q1.** Write a detailed essay on cellular organisation in prokaryotes. (25 Marks)
- Q2.** What is an enzyme? (5 Marks)  
List 3 different classes of enzyme. (5 Marks)  
Outline the Michaelis-Menten equation. (5 Marks)  
Define the terms  $V_{max}$  and  $K_m$ . (5 Marks)  
Define the terms competitive and non-competitive inhibition. (5 Marks)
- Q3.** What is ATP? (5 Marks)  
What is the function of the electron transport chain and where is located? (5 Marks)  
Outline with the aid of a diagram **ATP synthetase** and describe its function. (5 Marks)  
Define the terms **anabolism** and **catabolism**. (5 Marks)  
Define the term **kilocalorie**. (5 Marks)
- Q4.** Define the term virulence factor and describe how pathogens (a) colonise and (b) damage the host. (25 Marks)
- Q5.** Write a detailed essay on the innate immune response. (25 Marks)

## Section B

### Question 6 is compulsory

- Q6.** (a) A length of dialysis tubing containing 5mls of 8% glucose and 20 mls of starch solution is suspended in a large beaker containing water and iodine.  
What visible results would you see after an hour? Why? (5 marks)
- (b) Describe how you would carry out a simple stain on bacterial cells and visualise them using a compound light microscope. (10 marks)
- (c) What reactions do the following enzymes catalyse?
- Urease
  - Amylase
  - Catalase
  - Rennin
- (4 marks)
- (d) Draw a rough graph to illustrate the effect of temperature on the enzyme amylase.(label the axes) (3 marks)
- (e) Explain how heat sensitive liquids are sterilized. (3 marks)