

CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

Autumn Examinations 2008/09

Module Title: Enzymes , Energy & Disease 2 (CA)

Module Code: BIOM 6001

School: Science

Programme Title: Bachelor of Science in Applied Biosciences – Stage 1
 Bachelor of Science in Analytical & Pharmaceutical Chemistry – Stage 1

Programme Code: SCHQA_8_Y1
 SCHEM_7_Y1
 SBIOS_7_Y1

External Examiner(s): Dr Don Faller
Internal Examiner(s): Ms Margaret Lane
 Ms Richenda Kiernan

Instructions: **Answer 4 Questions. Question 1 is compulsory.**
 All Questions carry equal marks.

Duration: 2 hours

Sitting: Autumn 2009

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.

Q1. Answer all parts

- (a) Draw a rough graph to illustrate the effect of temperature on the activity of the enzyme amylase. Explain the term critical point and indicate the critical points on your graph. (3 Marks)
- (b) Write the reaction catalysed by the enzyme catalase. Briefly describe the observed effects of this enzyme's activity. (3 Marks)
- (c) Explain why apple tissue turns brown when exposed to oxygen. (3 Marks)
- (d) Describe 2 methods you could use to detect the presence of microorganisms. (3 Marks)
- (e) What is a wet mount and how is it prepared? (3 Marks)
- (f) What is the purpose of fixing in bacterial staining procedures? (3 Marks)
- (g) Explain the importance of aseptic technique in a microbiology laboratory. (3 Marks)
- (h) Write a brief account of the most important piece of equipment used for sterilization in a microbiology laboratory. (4 Marks)

Q2. Discuss the importance of enzymes in the control of metabolism under the following headings:

- (a) The structure of an enzyme. (4 Marks)
- (b) The lock and key/ induced fit model of enzyme activity. (7 Marks)
- (c) Enzyme inhibitors. (7 Marks)
- (d) Factors affecting enzyme activity. (7 Marks)

- Q3. Describe Aerobic Respiration under the following headings:
- (i) Glycolysis
 - (ii) Krebs/Citric acid cycle
 - (iii) The Electron Transport Chain and oxidative phosphorylation (25 Marks)
- Q4. Discuss with the aid of clear labelled diagrams the biochemical pathways by which energy is released from glucose in anaerobic conditions (no oxygen available). (25 Marks)
- Q5. (a) Discuss the characteristics of Bacteria, Viruses and Fungi. (15 Marks)
- (b) Outline two methods used to isolate pure cultures. (10 Marks)
- Q6. List the important nutrients required in a balanced diet. Discuss their functions for human health. (25 Marks)