

**CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

Semester 3 Examinations 2009/10

Enzymes ,Energy & Disease C/A

Module Code: BIOM 6001

School: Science

Programme Title: Bachelor of Science (Chemistry and Biology)

Programme Code: CR_SCHQA_8_Y1
CR_SCHEM_7_Y1
CR_SBIOS_7_Y1
CR_SPHB_8_Y1
CR_SHNSC_8_Y1

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Internal Examiner(s): Ms Margaret Lane
Ms Richenda Kiernan

Instructions: Answer 4 Questions.
Question 1 is compulsory.

Duration: 2 hours

Sitting: Autumn 2010

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 is Compulsory

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. Explain the following terms:

- (a) Active site (2 marks)
- (b) Induced fit model (2 marks)
- (c) Activation energy (2 marks)
- (d) Degradation/ Synthesis reactions (2 marks)
- (e) Write an explanatory account of Enzyme regulation.

In your answer mention enzyme inhibitors and feed back inhibition. Use diagrams to illustrate your answer. (17 marks)

- Q3.**
- (a) Outline the biochemical pathways by which energy is released from glucose in anaerobic conditions. (10 marks)
 - (b) State what happens to the products of anaerobic respiration when oxygen becomes available. (15 marks)

- Q4.** Using 2 of the following specific examples describe how inadequate diet can impact on health causing
- (a) Deficiency diseases
 - (b) Threatening conditions
 - (c) Chronic systemic disease
 - (d) Lactose intolerance
 - (e) Ulcers
 - (f) Obesity/anorexia
- (25 marks)

- Q5.** Write descriptive notes **on four** of the following.

- (a) Viruses
- (b) Isolation of pure cultures
- (c) Methods of sterilisation
- (d) Identification of microorganisms
- (e) Fungi
- (f) Prokaryotic nutrition

(25 marks)

- Q6.** List the important nutrients required in a balanced diet. Discuss their functions for human health.

OR

Write an account of the source and function of fibre, water, minerals and vitamins in a healthy diet.

(25 marks)