

CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

Semester 1 Examinations 2010/2011

Module Title: Fundamentals of Microbiology
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Module Code: BIOM6007

School: Science

Programme Title: Higher Certificate in Applied Bioscience
BSc in Applied Biosciences with Biotechnology
BSc in Food and Health Science

Programme Code: SBIOS_6_Y2
SBIBI_7_Y3
SFSTE_7_Y3
SNHSC_8_Y2
SPHBI_8_Y2

External Examiner(s): Dr Anne Nelson
Internal Examiner(s): Catherine Dawson

Instructions: Answer 3 QUESTIONS from Section A and 1 QUESTION from Section B

Duration: 2 hours

Sitting: Winter 2010

Requirements for this examination:

<p>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.</p>
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Section A – Answer 3 of the following 4 questions

- Q1. Outline the history of microbiology citing the names of individual microbiologists and their contribution to the field of microbiology.
- Q2. What is the nucleoid region of a prokaryotic cell? Describe the process of DNA replication in the prokaryotic cell using suitable diagrams. Discuss role of each of the enzymes involved in the process.
- Q3. What is an antimicrobial and what are their principal modes of action? What requirements would the ideal antimicrobial fulfil? What factors affect the death rate of microbes? Briefly describe three different physical methods which could be employed to control the growth in the laboratory.
- Q4. What is meant by the term 'genetic recombination'? In order for the process of transformation to occur bacterial cells must be competent. What is meant by the term competence and how can it be induced in the laboratory? Outline the process of transformation to include information on DNA uptake and integration. Use diagrams where necessary to support your answer.

Section B – Answer 1 of the following 2 questions

- Q5. Describe the process of binary fission and the cell cycle in prokaryotic cells. Outline briefly prokaryotic growth and the factors which affect the growth rate (generation time). What are the four phases of the bacterial growth curve and the main events of each phase?
- Q6. Write a short note on two of the following:
- a. Prokaryotic cell membrane
 - b. Anaerobic respiration and fermentation
 - c. Effect of temperature on prokaryotic growth