

CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

Autumn Examinations 2010/2011

Module Title: Fundamentals of Microbiology 1
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Module Code: BIOM6007

School: Biological Science

Programme Title: Higher Certificate in Applied Bioscience
Bachelor of Science in Applied Biosciences with Biotechnology – Year 3
Bachelor of Science in Food Science & Technology –Year 3

Programme Code: SBIOS_7_Y2
 SBIBI_7_Y3
 SFSTE_7_Y3

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

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

Duration: 2 Hours

Sitting: Autumn 2011

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 – Complete 3 of the following 4 questions

- Q1. Describe three different chemical and physical methods that are used to control the growth of micro-organisms within the lab. Briefly distinguish between the following terms: sepsis and asepsis; disinfectant and antiseptic; sterilisation and disinfection; and bacteriocidal and bacteriostatic.
- Q2. Describe the environmental requirements for prokaryotic growth, use graphs where necessary to aid you in your explanation. What is a 'growth factor'? Name the three main growth factors required by prokaryotes.
- Q3. Compare and contrast silent mutations, missense mutations, and nonsense mutations and their effect on protein function. What are the principle causes of mutations? Is there any possible benefit to a high mutation rate?
- Q4. What are plasmids and how do they differ from the main chromosome of the prokaryotic cell? Outline the process of conjugation and the role that plasmids play in the transfer of 'F' and 'R' factors. Use appropriate diagrams where necessary to aid your explanation.

Section B – Answer 1 of the following questions

- Q5. Write a short note on two of the following:
- (a) Bacterial growth curve
 - (b) The Operon and gene expression
 - (c) Bacterial cell wall
- Q6. Briefly describe the structure of the ribosome and its location within the prokaryotic cell. Using diagrams to support your answer outline the process of translation. What are the main differences between translation in eukaryotic and prokaryotic cells?