

**CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

Semester 1 Examinations 2013/14

Module Title: Analytical Microbiology
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Module Code: **BIOM 7001**

School: Science

Programme Title:

Bachelor of Science in Applied Bioscience & Biotechnology – Year 3

Bachelor of Science (Honours) in Pharmaceutical Biotechnology – Year 3

Bachelor of Science in Analytical & Pharmaceutical Chemistry – Year 3

Bachelor of Science (Honours) in Analytical Chemistry with Quality Assurance – Year 3

Programme Code: **SBIBI_7_Y3**
 SPHBI_8_Y3
 SCHEM_7_Y3
 SCHQA_8_Y3

External Examiner(s): Dr Gillian Gardiner

Internal Examiner(s): Dr Brigid Lucey, Ms Monika Koziel

Instructions: Answer 3 questions, one from section A, one from Section B, and the remaining question from either A or B. Each question carries equal marks.

Duration: 2 Hours

Sitting: Winter 2013

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

Q1. In Industry different materials require different sterilisation methods:

- (a) Give a brief account of FOUR different methods used for sterilisation together with an indication of how each of these methods may be useful.
(16 Marks)
- (b) Fitness for purpose of laboratory media may be determined using Mossel's ecometric technique.
 - (i) Give an account of how this method works, with the help of a clearly labelled diagram.
(12 marks)
 - (ii) Give an example of a medium that might be tested using Mossel's ecometric technique, along with two likely control organisms that might be used with the chosen medium.
(5 Marks)

Q2. List and discuss microbiological considerations in the pharmaceutical industry as they relate to

- (a) Cleanrooms and their successful operation
(15 Marks)
- (b) Microbial contamination or modification of products
(18 Marks)

Section B

Q3. Give an indication of the method and principle by which the protozoan parasite *Cryptosporidium* may be detected using

- (a) microscopy (two methods)
(14 Marks)
- (b) a commercial hybridisation-based method
(12 Marks)
- (c) Explain why it is important to test water supplies for *Cryptosporidium* spp.
(7Marks)

Q4. Write a detailed account of *Burkholderia cepacia*. In your answer include an account of

(a) Reservoirs (5 Marks)

(b) Its significance in Bioremediation (10 Marks)

(c) Its importance as a human pathogen (9 Marks)

(d) How this organism may be grown and identified in the laboratory (9 Marks)