

**CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

Semester 1 Examinations 2015/16

Module Title: Analytical Microbiology

Module Code: BIOM 7001

School: Science

Programme Title:

BSc in Applied Bioscience with Biotechnology – Stage 3

BSc (Hons) in Pharmaceutical Biotechnology – Stage 3

BSc in Analytical and Pharmaceutical Chemistry – Stage 3

BSc (Hons) in Analytical Chemistry with Quality Assurance – Stage 3

Programme Code: SBIBI_7_Y3; CR_SPHBI_8_Y3; CR_SCHEM_7; CR_SCHQA_8.

External Examiner(s): Dr Brendan O'Donnell

Internal Examiner(s): Dr Brigid Lucey
Ms Richenda Kiernan

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 2015

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.

Section A

Q1. Answer THREE of the following short questions. Each answer carries 11 marks.

- (a) The importance of using standard operating procedures in microbiology, and how they are derived
- (b) The principle and the method of the membrane filtration test for sterility testing.
- (c) Techniques used to prevent false positive results in microbiology
- (d) Distinguish between selective and non-selective agars, giving a well-explained example of each, indicating also a situation where each of these may be useful.
- (e) The validation of methods for use in microbiology is important. Give an example of how you might validate a new method for use.

(33 Marks)

Q2. In the pharmaceutical industry:

- (a) Discuss the importance of having positive and negative pressure in cleanrooms, giving examples of how and where these strategies are used (11 Marks)
- (b) Describe why particle counters are important to monitor cleanrooms, and briefly give an indication of how they work (11 Marks)
- (c) Outline the microbiological considerations that are important in pharmaceutical manufacture (11 Marks)

Section B

Q3. (a) Give an indication of why cryptosporidium is a significant public health problem. Include in your answer an outline of its reservoirs, the spectrum of human infection with this pathogen, and some interventions used to prevent contamination.

(15 Marks)

(b) Give an account of THREE laboratory methods that may be used to detect cryptosporidium.

(18 Marks)

Q4. (a) Describe some environmental reservoirs of the genus Salmonella, and indicate how it may be transmitted to humans.

(6 Marks)

(b) Show, using a clearly labelled diagram, an algorithm (scheme) for the isolation and identification of a salmonella from a sample received in the laboratory.

(15 Marks)

(c) Describe any two of the tests listed in the algorithm above in detail.

(12 Marks)