

**CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

Semester 1 Examinations 2014

Module Title: Analytical Microbiology

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 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 2014

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.

Cleanrooms have applications in a variety of settings.

- (a) Discuss this statement, giving an indication of their importance in each of FOUR individual settings. (10 Marks)
- (b) Show, with the aid of a clearly labelled diagram, the typical design of a cleanroom. Include an indication of direction of airflow in your diagram. (15 Marks)
- (c) List the principal surfaces, services and floor features designed to minimise potential contamination within the cleanroom. (8 Marks)

Q2.

(a)

Different materials require different sterilisation methods. Discuss this statement, using FOUR examples of sterilisation methods used routinely and the types of materials for which each method is suitable. (16 Marks)

(b)

Particle counters are commonly used in cleanrooms. Indicate

- (i) Why these devices are used in this setting (4 Marks)
and
- (ii) How they work. (13 Marks)

Section B

Q3.

Mycoplasma spp. are important contaminants in the pharmaceutical industry.

Give an account of

- (a) How they differ from other contaminating bacteria (8 Marks)
- (b) The undesirable effects of mycoplasma on cell culture (10 Marks)
- (c) How mycoplasmas may be detected in the laboratory (15 marks)

Q4.

Enterococci are important indicators of the faecal contamination of water.

- (a) Explain the basis of selective medium KF Streptococcus Agar when used for the detection and enumeration of enterococci. (10 Marks)
- (b) Describe the Lancefield's grouping method for the identification of streptococci and enterococci. (10 Marks)
- (c) Outline when the catalase test is used in the lab, and how it is conducted. (13 Marks)