

**CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

Autumn Examinations 2013/14

Module Title: Cellular Biotechnology

Module Code: BIOT6006

School: Science

**Programme Title: Degree in Pharmaceutical Biotechnology
Degree in Nutrition and Health Science**

**Programme Code: CR_SPHBI_8_Y2
CR_SNHSC_8**

**External Examiner(s): Dr. Cormac Gahan
Internal Examiner(s): Dr. Rosemary Rea**

Instructions: Answer question 1 and 2 other questions. All questions carry equal marks.

Duration: Time = 2 hours

Sitting: Autumn 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.

- Q1.** Describe the growth of BHK cells in the laboratory using the following headings:
- Media – components, preparation and sterilization **(15 marks)**
 - Sub-culturing anchorage dependent cells **(20 marks)**
 - Use of haemocytometer for cell counting **(15 marks)**
- Q2.** (a) Distinguish between the following:
- Primary culture and secondary culture **(4 marks)**
 - Explant culture or enzymatic dissociation for making a primary culture **(8 marks)**
 - Finite cell line and continuous cell line **(5 marks)**
 - Anchorage dependant cells and suspension culture **(5 marks)**
- (b) Discuss methods utilized by cells for nutrient uptake **(28 marks)**.
- Q3.** (a) Describe the techniques used for monitoring growth of bacterial cells **(35 marks)**.
- (b) Define expression systems and compare the advantages and disadvantages of using an *E. coli* and yeast expression system **(15 marks)**.
- Q4.** Discuss the following:
- Use of cleanrooms in a biopharmaceutical facility **(35 marks)**
 - Five basic requirements of a growth medium **(15 marks)**