

CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

Semester 1 Examinations 2013

Module Title: Biomanufacturing Science

Module Code: **BIOL8012**

School: Science and Informatics

Programme Title: Bachelor of Science (Honours) in Nutrition and Health Science – Year 4

Programme Code: **SNHSC_8_Y4**

Internal Examiner: **Dr. Máire Begley**

External Examiner: **Prof. Torres Sweeney**

Instructions: Answer **Q1** and **two** other questions.
Q1 is worth 40 marks. All other questions carry equal marks (30 marks).

Duration: 2 Hours

Sitting: Winter 2013

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. COMPULSORY QUESTION

Write comprehensive notes on **four** of the following:

- (a) Food extrusion.
- (b) Pulsed electric field (PEF) processing.
- (c) Active food packaging.
- (d) Design of a sensory evaluation facility/lab.
- (e) Applications of transgenic plants in biopharming.
- (f) Excipients in pharmaceuticals.

(4 x 10 marks)

Q2

- (a) Explain with the aid of a diagram what hurdle technology is. **(6 marks)**
- (b) Briefly explain the mode of action of Class I bacteriocins and describe one possible application of bacteriocins in the food industry. **(8 marks)**
- (c) Explain what high pressure processing (HPP) is, outline what foods the process is suitable for and list 4 advantages and 4 disadvantages of HPP. **(16 marks)**

Q3. A pharmaceutical company is in the process of developing a new liquid medicine.

- (a) Explain how the Inactive Ingredients database may be of use to the company. **(3 marks)**
- (b) Explain a sensory evaluation test that the company could do with a human sensory evaluation panel to match the taste of their medicine to the leading competitor medicine. **(5 marks)**
- (c) Explain 4 possible sources of error associated with human sensory evaluation panels. **(8 marks)**
- (d) List 4 advantages of the electronic tongue over human sensory evaluation panels. **(4 marks)**
- (e) Explain what type of stability tests the company should perform on their medicine. **(10 marks)**

Q4.

- (a) A genetically modified potato trial is underway by Teagasc in Oakpark in Carlow. Explain how the potatoes were genetically modified. **(6 marks)**
- (b) Explain with the aid of a specific example how plants can be genetically modified to increase their resistance to insects. **(12 marks)**
- (c) Outline the methods available for the detection of genetically modified organisms **(12 marks)**