

CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

Semester 1 Examinations 2016

Module Title: Biomanufacturing Science

Module Code: BIOL8012

School: Science and Informatics

Programme Title: BSc in Nutrition and Health Science

BSc in Herbal Science

Programme Code: SNHSC_8_Y4

SHERB_8_Y4

Internal Examiner: Dr. Máire Begley

External Examiner: Dr Eibhlís O'Connor

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 2016

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) High Pressure carbon dioxide (HPCD) processing
- (b) Pulsed electric field processing
- (c) Food Extrusion
- (d) Modified Atmosphere Packaging
- (e) High Pressure Processing (HPP)
- (f) Applications of transgenic plants in biopharming

(4 x 10 marks)

Q2.

- (a) Briefly outline 4 intrinsic factors affecting the growth of microorganisms in food. **(10 marks)**
- (b) Explain with the aid of a diagram what hurdle technology is. **(10 marks)**
- (c) Describe with the aid of specific examples the potential applications of bacteriocins in the food industry. **(10 marks)**

Q3. A pharmaceutical company is in the process of developing a new medicine. The active ingredient is predicted to be bitter tasting and the company have been advised to make a pro-drug. The company also has to decide what excipients to use and once their medicine is formulated they will want to examine its' stability and compare it to their competitors product.

- (a) Explain the two underlined terms. **(6 marks)**
- (b) Explain how the Inactive Ingredients Database may be of use to the company **(6 marks)**
- (c) Explain the different stability tests the company should carry out on their medicine. **(10 marks)**
- (d) Describe a sensory evaluation test that the company could do with a human sensory evaluation panel to match the taste of their medicine to their competitors product. **(8 marks)**

Q4.

In relation to genetically modified crops:

- (a) Explain with the aid of specific examples what cisgenesis and transgenesis are. **(8 marks)**
- (b) Outline the methods available for the detection of genetically modified organisms. **(12 marks)**
- (c) Explain how plants can be genetically engineered for biofuel production. **(10 marks)**