

**CORK INSTITUTE OF TECHNOLOGY**  
**INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

**Autumn Examinations 2011**

**Module Title:     Nutritional Analysis**

**Module Code:         BIOL7018**

**School:                 Biological Sciences**

**Programme Title:**     Bachelor of Science (Honours) in Herbal Science – Year 2  
                                 Bachelor of Science (Honours) in Nutrition and Health Science – Year 2

**Programme Code:**     **SHERB\_8\_Y2**  
                                 **SNHSC\_8\_Y2**

**External Examiner(s):** Prof. E. Williamson, Dr Julia Green, Dr Alison Gallagher  
**Internal Examiner(s):** Germain Levieille

**Instructions:**             **Answer any 3 of the 5 questions asked. Each question carries an equal mark weighting.**  
                                 **Please state clearly the questions addressed in your paper.**

**Duration:**                2 Hours

**Sitting:**                  Autumn 2011

**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:**

- a) What is the “protein efficiency ratio” (PER) of a food. How can this ratio be determined experimentally for a food product? (12 marks)
- b) What is meant by “limiting amino acid” in food ingredients and its consequences in nutrition. (10 marks)
- c) Discuss the concept of “complete protein”; explain this concept and its implications in human nutrition. (12 marks)

**Q2:**

- a) Give short descriptions and definitions for: (16 marks)
  - 1. EAR
  - 2. RDA
  - 3. Tolerable Upper-Intake Level (UL)
  - 4. Adequate Intake (AI)
- b) Discuss the concept of optimal nutrition and how it relates to dietary reference standards. (10 marks)
- c) Supported by examples, elaborate on the micronutrients recommended intakes and the Health issues resulting from deficiencies and toxicity levels. (8 marks)

**Q3:**

- a) Give a definition for:
  - i) Glycaemic Index (5 marks)
  - ii) Glycaemic Load (5 marks)
- b) What is the relation between GI and GL? (7 marks)
- c) Discuss the meaning of Glycaemic Index, Glycaemic Load and Insulin Index in human nutrition and the risks associated with sustained high GI diet. (17 marks)

**Q4:**

- a) Describe the Kjeldahl method and discuss its advantages and limitations. (14 marks)
- b) The total protein concentration of a food ingredient can be measured through a number of colorimetric methods. Describe one of these methods used to determine the total protein content of a food product. (10 marks)
- c) Proteins can be “salted out” of a mixed solution. Discuss this method of separation of the protein. (10 marks)

**Q5:**

- a) What is malnutrition? (7 marks)
- b) Discuss the issue of risks of the different forms of under-nutrition. (12 marks)
- c) Discuss the issue of protein-energy malnutrition (PEM) and explain particularly the main diseases resulting from these conditions with PEM. (15 marks)