

**CORK INSTITUTE OF TECHNOLOGY  
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

**Summer Examinations 2013**

**Module Title:     Nutritional Analysis**

**Module Code:        BIOL7018**

**School:                Science & Informatics**

**Programme Title:**    B.Sc. (Honours) in Herbal Science  
                              B.Sc. (Honours) in Nutrition and Health Science  
                              BSc in Applied Biosciences

**Programme Code:**    SHERB\_8\_Y2  
                              SNHSC\_8\_Y2  
                              SBIOS\_7\_Y2

**External Examiner(s):** Dr. J. Green, Prof T. Sweeney,  
**Internal Examiner(s):** Germain Levieille

**Instructions:**        Answer any 4 of the 5 questions asked. Each question carries a equal  
                              mark weighing.  
                              Please state clearly the questions addressed in your paper.

**Duration:**            2 Hours

**Sitting:**               Summer 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.** a) Give a definition of the basal metabolic rate (BMR). (5 marks)
- b) Describe the experimental conditions for the measure of BMR of a person. (8 marks)
- c) An individual consumes 21 L of O<sub>2</sub> in 1 hour at basal conditions. Caloric equivalent of O<sub>2</sub> is 4.8 Calories/L. The body surface area is 1.6 m<sup>2</sup>. Calculate the BMR of this individual. (5 marks)
- d) What are the factors modulating the BMR of individuals? (7 marks)
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- Q2.** a) Describe the evolution of bone mass during a person lifetime. (4 marks)
- b) Give a definition of peak bone density. (2 marks)
- c) Explain the bone turnover (also called bone remodelling) and how this affects the bone mass of the individual. (5 marks)
- d) What are the lifestyle and nutritional factors contributing to bone development? (8 marks)
- e) Discuss the consequences of poor bone structure in at-risk demographic groups. (6 marks)
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- Q3.** a) Give a definition of the Estimated Energy Requirement (EER). (3 marks)
- b) What are the components of the energy expenditure of an individual? (5 marks)
- c) Discuss the factors affecting the energy expenditure of an individual. (5 marks)
- d) What the definition of the AMDR (Acceptable Macronutrient Distribution Range)? (3 marks)
- e) Give an estimation of the values of AMDR. (3 marks)
- f) Discuss the obesity problem of Ireland in terms of EER and AMDR. (6 marks)

- Q4.** a) Give a definition of a vitamin. (5 marks)
- b) Vitamins can be grouped according to their solubility. List vitamins of both groups and discuss the common general properties shared by vitamins in these two groups. (6 marks)
- c) Describe the chemical nature of preformed and proformed sources of Vitamin A. (6 marks)
- d) Discuss the absorption, functions and role of Vitamin A together with risks associated with its deficiency and its excessive intake. (8 marks)
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- Q5.** a) What are the roles of Iron in the body? (4 marks)
- b) Give examples of nutritional sources of Iron and elaborate on the types of Iron in these foods. (4 marks)
- c) Describe the Iron absorption and explain the difference of absorption for each type of Iron. (7 marks)
- d) Comment on the requirements in Iron for adult male, young adult woman, post menopause woman. (3 marks)
- e) Elaborate on the issues of Iron deficiency and excess. (7 marks)