

Autumn Examinations 2016

Module Title: Science of Food and Health

Module Code: FOOD6001

School: Science and Informatics

Programme Code: SNHSC_8_Y1

SHERB_8_Y1

SPHB1_8_Y1

SBIOS_7_Y1

SCEBS_8_Y1

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Instructions: Answer **Q1** and **three** other questions.

All questions carry equal marks (25 marks).

Duration: 2 hours

Sitting: Autumn 2016

Requirements for this examination: Calculator

<p>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.</p>
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Q1. COMPULSORY QUESTION. Answer all parts.

- (a) A student was analysing the nutritional content of a milk sample. For one experiment, the student added 2.5ml of Biuret reagent to the milk sample and observed a colour change from blue to purple. What does the colour change indicate? **(2 marks)**
- (b) You have been given a protein standard stock solution of 250µg/ml. You want to make 0.5ml of a 20µg/ml standard. Use the formula given below to calculate the volume of stock solution **and** the volume of water you need to use.

$$C_1V_1=C_2V_2$$

C₁ = initial stock solution

V₁ = volume of stock solution

C₂ = concentration of protein in standard you are making

V₂= final volume **(8 marks)**

- (c) 100g of a 14" Deep Dish Cheese Pizza, contains 11.36g protein, 10.34g fat, 33.93g carbohydrate, 42.09g water and 561mg sodium. Calculate the total calorie value in 100g of this pizza. **(7 marks)**
- (d) A fortified breakfast cereal contains 4.2mg iron per serving (30g). What percentage of the reference intake (RI) for iron is provided by a 30g serving of fortified breakfast cereal? Note the RI for iron is 14mg/day. **(2 marks)**
- (e) In an experiment to determine enzymatic activity in fruit extracts, it was found that cucumber gave a zone of clearing in a tributyrin plate, but not in a milk agar or starch agar plates. What enzymatic activity do these results suggest is present in cucumber? **(2 marks)**
- (f) When a glucose hexokinase assay was carried out on 7UP, the absorbance of 7UP was found to be 0.365, and the absorbance of the standard was 0.349. Use the formula below to determine the concentration of glucose in 7UP.

$$\text{Concentration of glucose (mmol/Lt)} = \frac{\text{Absorbance of sample}}{\text{Absorbance of standard}} \times \text{Concentration of Standard (mmol/Lt)}$$

Glucose standard: 5.56mmol/Lt **(4 marks)**

Q2.

- (a) Write a short note on the biological value of proteins. **(6 marks)**
- (b) Discuss the long term damage that can occur as a result of uncontrolled diabetes. **(8 marks)**
- (c) Briefly explain the benefits of fibre to the body. **(6 marks)**
- (d) State five factors influencing the nutritional requirements of sports people. **(5 marks)**

Q3.

- (a) Explain the difference between extrinsic and intrinsic sugars. **(4 marks)**
- (b) Outline the effects of monounsaturated and polyunsaturated fats on LDL and HDL cholesterol levels. **(4 marks)**
- (c) Write a note on prebiotics, probiotics and synbiotics. Include one example of each in your answer. **(12 marks)**
- (d) Outline dietary changes that can be made to manage the symptoms of irritable bowel syndrome. **(5 marks)**

Q4.

- (a) Write a note on the functions of fat in the diet. **(8 marks)**
- (b) Outline the role of salt in the development of stomach cancer. **(5 marks)**
- (c) Explain what plant sterols are and their role as a functional ingredient. **(6 marks)**
- (d) Outline three concerns of caffeine supplementation in sports people. **(6 marks)**

Q5.

- (a) State four functions of vitamin C. **(4 marks)**
- (b) Mary is a 45-year old female with a height of 1.56m and weight 72kg. Mary's waist circumference is 94cm and her hip circumference is 110cm.
 - (i) Calculate Mary's body mass index (BMI) and waist-hip ratio (WHR).
 - (ii) For the BMI and WHR calculated in (i), indicate what these values mean. **(10 marks)**
- (c) Explain what ACE-inhibitors are and their role in manufactured functional foods. Give an example of an ACE-inhibitor in your answer. **(5 marks)**
- (d) Explain in detail the difference between food allergy and food intolerance. **(6 marks)**