



MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF HEALTH SCIENCES

DEPARTMENT OF PUBLIC AND COMMUNITY HEALTH

FIRST YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (FOODS, NUTRITION AND DIETETICS)

HFN 144: MACRONUTREINTS

DATE: 27/1/2022

TIME: 8:30 – 10:30 AM

INSTRUCTIONS:

This paper consists of two sections A and B

SECTION A

Instructions

- This section has one question
- This question is **COMPULSORY**
- The question is 30 Marks

QUESTION ONE (30 MARKS)

- a) After fasting for a day then feeding on a meal containing a carbohydrate
- i) Explain the metabolic fate of glucose delivered to the liver (1 mark)
 - ii) Highlight the hormone (s) needed for the above processes in (i) to operate (1 mark)
 - iii) If the hormone(s) are absent or fails to function satisfactorily, what are the clinical consequences (1 mark)
- b) Explain the health benefits of omega-3 fatty acids (3 marks)
- c) Differentiate between the following and cite their dietary sources
- i) A saturated and unsaturated fatty acid (3 marks)
 - ii) Low density lipoprotein (LDLs) and High-Density Lipoproteins (HDLs) (3 marks)
 - iii) Soluble and insoluble fiber (3 marks)
- d) With examples explain the nutritional quality of proteins (3 marks)

- e) Water doesn't provide nutrients yet an important dietary component. Explain (3 marks)
- f) Explain the importance of fats to the bioavailability of other nutrients (3 marks)
- g) Justify why alcohol is classified as a macronutrient nutrient (3 marks)
- h) Highlight common food labels on carbohydrates and their interpretations. (3 marks)

SECTION B:

Instructions

- **This section has four (4) question**
- **Answer any two (2) questions**

Each question is 20 Marks

QUESTION TWO (20 MARKS)

- a) Discuss the effects of an alcoholic drinks on nutrient digestion and utilization in the body (10 marks)
- b) Describe the role of fats in insulating and protecting the body (10 marks)

QUESTION THREE (20 MARKS)

Kamau has a daily energy requirement of 2400 calories.

- a) Calculate his acceptable macronutrient distribution range for following nutrients (give your answer in grams)
 - i) Carbohydrates (4 marks)
 - ii) Proteins (4 marks)
 - iii) Fats (4 marks)
- b) Discuss the health consequences for Mr. Kamau if all his daily calories are sourced from only carbohydrate rich foods (8 marks)

QUESTION FOUR (20 MARKS)

- a) Discuss factors contributing to increased cases of severe protein deficiency in our Country. (10 marks)
- b) Discuss the possible health consequences for Williams Father, who neither takes any fatty food nor adds any fat to any of his daily food intakes (10 marks)

QUESTION FIVE (20 MARKS)

As part of treatment, a cancer patient was recommended for a major surgery of the small intestine. Discuss the effect on the digestion and absorption of following nutrients

- i) Carbohydrates (5 marks)
- ii) Proteins (5 marks)
- iii) Fats (5 marks)
- iv) Water (5 marks)