

THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY

FIRST SEMESTER EXAMINATIONS -- 2022

FOOD TECHNOLOGY – FOURTH YEAR DEGREE

FT412 ADVANCED NUTRITION

FRIDAY 3<sup>RD</sup> JUNE, 2022 - 8:20 AM

**TIME ALLOWED: 3 HOURS**

**INFORMATION FOR CANDIDATES:**

1. You have 10 minutes to read the paper. You must not begin writing in the answer book during this time.
2. **ANSWER ALL QUESTIONS.**
3. All answers must be written in the answer books provided.
4. Write your name and number clearly on the front page. Do it now.
5. Calculators are permitted in the examination room. Notes and textbooks are not allowed.
6. Show all workings and calculations in the answer book.

**MARKING SCHEME**

|            |            |
|------------|------------|
| Question 1 | [26 marks] |
| Question 2 | [29 marks] |
| Question 3 | [24 marks] |
| Question 4 | [21 marks] |

## ANSWER ALL QUESTIONS

1. (a) Select ANY TWO of the following periods in the life cycle and describe the important physiological changes during those stages and the nutritional requirements that are important at those stages. [8 marks]
- (i) Infancy.
  - (ii) Elderly.
  - (iii) Adolescence.
- (b) Discuss the nutritional quality and immunological factors or protection provided by the human breast milk. [6 marks]
- (c) Write short notes discussing brain development and nutrient needs in the first 1000 days of a child's life. [5 marks]
- (d) With regards to nutrition in sports and physical activity; choose ANY ONE of the following and answer: [7 marks]
- (i) Discuss the change in energy metabolism during physical activity.
  - (ii) Describe the physiological adaptations which occur in response to training and the dietary needs of athletes.

(Total = 26 marks)

2. (a) The causes of child undernutrition as per the UNICEF conceptual framework are categorized as; immediate, underlying and basic. Describe those causes, and the factors that lead to these categories of causes giving specific examples for each. [9 marks]
- (b) Suboptimal infant and child feeding practices is an important specific determinant of child under-nutrition in PNG. Discuss. [3 marks]
- (c) Define and discuss stunting and wasting in PNG and the need to eradicate them. [3 marks]
- (d) Describe what is meant by the concept; intergenerational cycle of malnutrition and explain the need to stop this cycle in PNG. [3 marks]
- (e) Food fortification and diet diversification are two food-based strategies to address micronutrient deficiencies globally. Define what these two strategies are, their importance and

discuss how they can be used to address micronutrient deficiencies in PNG. [8 marks]

- (f) Discuss the importance of public health measures in addressing micronutrient deficiencies in PNG. [3 marks]

(Total = 29 marks)

3. (a) Symptoms of type 1 diabetes include; frequent urination, unusual weight loss, fatigue, excessive thirst, extreme hunger, and ketosis. Explain these metabolic disturbances. [4 marks]
- (b) Type 2 diabetes is the most common form of diabetes, discuss how diet and physical activity can help you manage it. [4 marks]
- (c) Describe atherosclerosis and the risk it poses to cardiovascular diseases. [3 marks]
- (d) Describe what obesity is and state and describe ANY TWO factors that cause obesity. [5 marks]
- (e) Obesity in children is becoming a recognized problem in urban areas of PNG. What can we do to address this problem? [3 marks]
- (f) Elevated blood lipids and hypertension are two of the modifiable risk factors for cardiovascular disease. Discuss these two modifiable risk factors and the types of diets that are important to control these risk factors. [5 marks]

(Total = 24 marks)

4. (a) Write short notes giving descriptions of ANY ONE of the following direct measurements of nutritional status. These should include what they are, what they measure or what they are used for, advantages, limitations and other relevant details. [6 marks]
- (i) Dietary.  
(ii) Biochemical.  
(iii) Clinical.
- (b) Vital health statistics, economic factors and ecological factors are community health indices that reflect nutritional influences. Discuss what they are and how they help us assess nutritional status of a community. [3 marks]

- (c) Describe the current National Nutrition Policy and explain why it is important to have a national policy on nutrition. [3 marks]
- (d) Write short notes describing epidemiological studies, what do they measure, how important are they and how do they help us address nutritional problems? [3 marks]
- (e) What are intervention studies, what do they measure and explain their importance in addressing nutritional problems. [3 marks]
- (f) Describe the random controlled tests, and its main features explaining why this type of research design is referred to as the gold standard method? [3 marks]

(Total = 21 marks)