

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MSc HUMAN NUTRITION EXAMINATION – JANUARY 2024

Date: 23rd January 2024

Time: 9.30 a.m. – 12.30 p.m.

STRUCTURED ESSAY PAPER

Answer **all six (06) questions.**

Each question to be answered in a separate book.

1. A 15-year-old girl presented with iron deficiency anaemia.
 - 1.1. Describe how iron is regulated in the body in iron deficiency anaemia. (40 marks)
 - 1.2. Outline with reasons the information that should be collected in the history. (20 marks)
 - 1.3. Outline the nutritional advice you would give her. (20 marks)
 - 1.4. Describe two (02) key interventions available for the prevention of anaemia at the national level for this age group. (20 marks)

2.
 - 2.1. List the types of hyperglycaemic states during pregnancy. (20 marks)
 - 2.2. Outline the methods used to diagnose hyperglycemia in pregnancy. (20 marks)
 - 2.3. State the glycaemic control targets during pregnancy. (30 marks)
 - 2.4. Outline the principles of medical nutrition therapy in hyperglycaemia in pregnancy. (30 marks)

Contd...../2-

3. Outline the nutritional management in each of the following situations.
- 3.1. A mother of an exclusively breastfed 4-month-old baby will be starting work in 2 weeks. The mother will be away from home between 7.00 a.m. and 3.00 p.m. on weekdays. She seeks your advice on feeding the child during her absence. (30 marks)
- 3.2. A 3-year-old child is brought with 5 days of blood and mucous diarrhoea. Examination revealed a febrile child with features of some dehydration. The child's weight-for-height lies between the 2nd and 3rd standard deviations below the median. (30 marks)
- 3.3. A 13-month-old baby with global development delay is admitted following episodes of fits. The mother states that she takes about one hour to feed the child, and sometimes the child coughs when feeding. Examination revealed that the child has generalized hypertonia and drooling of saliva. The child is alert and afebrile. The weight-for-length is 3 standard deviations below the median. The paediatrician refers this child to you for immediate nutrition rehabilitation and a long-term plan to feed this child. (40 marks)
- 4.
- 4.1. Compare and contrast the following pairs, giving two (02) differences for each pair.
- 4.1.1 Monitoring and evaluation (10 marks)
- 4.1.2 Strategic planning and operational planning (10 marks)
- 4.1.3 Leadership and management (10 marks)
- 4.1.4 Programme and project (10 marks)
- 4.2. You have been invited to help an urban school to improve the healthy food consumption in its canteen.
- 4.2.1. List four (04) key groups associated with the school you would have discussions with to support this task. (20 marks)
- 4.2.2. Describe four (04) key steps, inclusive of at least one innovative (out-of-the-box) step, you would take to improve healthy food consumption from the canteen. (40 marks)

5.

5.1. Outline the principle of preservation in manufacturing each of the following value-added products.

5.1.1. Bitter gourd chips (05 marks)

5.1.2. Ginger preserves (05 marks)

5.1.3. Orange pulp (05 marks)

5.1.4. Cashew curry in metal cans (05 marks)

5.2.

5.2.1. Outline trans-fat and its applications in food industry.
(10 marks)

5.2.2. Outline the functions of 'active and intelligent' food packaging
(10 marks)

5.3. A 25-year-old woman presents with Crohn's disease, diagnosed five years ago. She experiences recurrent abdominal pain, bloating, and diarrhoea, particularly aggravated by fatty and spicy food. Her weight has significantly dropped over the past year, despite maintaining her usual dietary intake. She expresses frustration with managing her symptoms and anxieties about malnutrition and nutritional deficiencies.

5.3.1. Describe the key pathophysiological features of Crohn's disease and discuss their implications for optimal nutritional management in this patient. (20 marks)

5.3.2. List the key parameters you would assess in this patient's nutritional status. (10 marks)

5.3.3. Formulate a personalized dietary plan for this patient, considering her disease activity, symptom triggers and current nutritional status. (30 marks)

6. A Medical Officer (Human Nutrition) of a General Hospital wishes to determine the risk of developing low birth weight, prematurity and stillbirths among vegetarian versus non-vegetarian pregnant women through a cohort study.
- 6.1. Outline the steps of methodology suggested for this study. (30 marks)
- 6.2. List three (03) ethical issues of the study. (15 marks)
- 6.3. The cohort study followed up 80 vegetarian and 120 non-vegetarian pregnant women until the end of pregnancy. Birth outcomes are given in the table below.

Type of diet	Number of low birth weight children	Number of premature births	Number of still births	Total pregnant mothers
Vegetarian	20	8	2	80
Non-vegetarian	10	12	6	120
Total	30	20	8	200

Calculate the following in the vegetarian and non-vegetarian pregnant mothers.

- 6.3.1. Incidence of low birth weight (05 marks)
- 6.3.2. Incidence of premature births (05 marks)
- 6.3.3. Incidence of still births (05 marks)
- 6.4. Estimate the risk of being vegetarian on the following outcomes.
- 6.4.1. Low birth weight (10 marks)
- 6.4.2. Premature births (10 marks)
- 6.4.3. Still births (10 marks)
- 6.5. Interpret the results of the risk estimates in 6.4. (10 marks)