



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

**UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR**

**FOURTH YEAR SECOND SEMESTER MAIN
EXAMINATIONS**

**FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN MEDICAL LABORATORY
SCIENCES**

COURSE CODE: BML426

COURSE TITLE: HUMAN NUTRITION AND DIETETICS

DATE: 20TH APRIL 2023 TIME: 11.00AM – 01.00PM

INSTRUCTIONS TO CANDIDATES

This paper is divided into three sections, **A B** and **C**, carrying respectively: Multiple Choice Questions (**MCQs**), Short Answer Questions (**SAQs**) and Long Answer Questions (**LAQs**). **Answer all questions. DO NOT WRITE ON THE QUESTION PAPER.**

TIME: 2 HOURS

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 4 Printed Pages. Please Turn Over

SECTION A: Multiple Choice 16 Questions carrying (20Marks)

1. Malabsorption is at the heart of many cases of malnutrition and it
 - a) May have a role in cobalamin deficiency
 - b) Explains many mineral deficiency disorders
 - c) Could underlie anorexic nutritional conditions
 - d) Is implicated in prolonged prothrombin time
2. Optimum body copper levels contribute to physio-chemical well-being, like
 - a) Prevention of bone resorption
 - b) Destruction of over-aged collagen
 - c) Countering myofibril contraction
 - d) Erythropoiesis
3. Truth concerning the so-called metabolic syndrome is that
 - a) Disordered protein metabolism is its hallmark
 - b) It is basically an energy malnutrition problem
 - c) Abnormality of certain enzymes drive it
 - d) It is a coagulopathy disorder
4. Body fat deficiency has been blamed on steatorrhoea and
 - a) It may promote macrocytic, hypochromic anaemia
 - b) Contributes to low *International Normalised Ratio* values
 - c) It may result from hepatic cholestasis
 - d) It can be attributed to renal lithiasis
5. Refeeding syndrome complications include the following **SAVE** for
 - a) Steatosis
 - b) Pancreatitis
 - c) Direct hypobilirubinaemia
 - d) Cholestasis
6. Nutrients known to protect cell membrane oxidative stress include
 - a) Vitamin A
 - b) Trace elements
 - c) Vitamin E
 - d) Retinal
7. Values of skeletal muscle mass indicating sarcopenia) could be diagnostic of
 - a) Vitamin A overnutrition
 - b) Copper undernutrition
 - c) Vitamin D deficiency
 - d) Body lipid excess
8. Low muscle strength as a nutritional status parameter suggests problems with
 - a) Iron
 - b) Calcium
 - c) Carbohydrates
 - d) Leptin
9. Optimum diet for a healthy human gut microbiome is typically
 - a) Saturated fatty acid-rich
 - b) Poor in albumin
 - c) Fiber-rich
 - d) Rich in oxidants

10. Micronutrients affecting haematological function of nutritional status includes
 - a) Vitamin C
 - b) Vitamin A
 - c) Fe
 - d) Folate
11. Anthropometry is included in assessment in nutritional status and markers include
 - a) Body mass index (BMI)
 - b) Muscle creatinine kinase isozyme
 - c) Blood lipid profile
 - d) Lymphocyte count
12. 1,25-dihydroxycholecalciferol influences nutrition-related processes, like
 - a) Bone hydroxyapatite breakdown
 - b) Development of some leucocytes
 - c) Body mineral imbalance in adults
 - d) Oxidative stress on kidneys
13. Short chain fatty acid-rich diets protect against type2 diabetes mellitus by
 - a) Lowering lipogenesis
 - b) Promoting bulimia
 - c) Increasing anorexia
 - d) Up-regulating leptin production
14. Iron (Fe) is an important mineral in human nutrition and truth about it is that it
 - a) Is an inorganic microcronic nutrient
 - b) Is a haematopoietic macronutrient
 - c) It promotes bone resorption
 - d) Is a neuro-muscular regulator
15. A laboratory results profile including: Dyslipidaemia, elevated serum urea and creatinine and blood cardiac troponin is suggestive of:
 - a) Malnutrition-related cardiomyopathy
 - b) Nephropathic complication of energy malnutrition
 - c) From a case of respiratory dysfunction
 - d) To be accompanied also with high blood HDL
16. Metabolic syndrome-associated with obesity goes with increased insulin resistance contributed by adipose tissue cytokines (adipokines), including
 - (a) Interleukin-4 (IL-4)
 - (b) Tumor necrosis factor gamma (TNF- γ)
 - (c) Leptin
 - (d) Adiponectin

SECTION B: Short Answer Questions (40 Marks)

1. Adipocytes are essential in energy metabolism. Explain the role in this of
 - a) Brown adipose tissue (BAT) (2marks)
 - b) White adipose tissue (WAT) (2marks)
 - c) What is the contribution of the adipokine, leptin in anorexia?(2marks)
2. Define the concept metabolic syndrome and highlight its nutritional basis (5marks)
3. Explain the role of the immune system in the satiety-appetite balance the perturbation of which contributes to the cachexia of PEM associated with certain chronic pyrexia and anorexic pathological conditions (5marks)
4. Briefly describe the involvement of H.pylori infection in malnutrition (5marks)
5. Explain how dietary fatty acids could affect nutritional status of an individual(4marks)
6. In the course of intervention to correct some nutritional health issues, a possible pathological outcome is the so-called “*re-feeding*” syndrome. Explain this *re-feeding syndrome* and provide its signature hallmark laboratory diagnostic biomarkers and what their values are like in presence of the syndrome(5marks)
7. Explain the role of protein nutrition in body calcium homeostasis? (5marks)
8. Explain the role of nutrition in disordered haemostasis, as a haematological dysfunction. (5marks)

SECTION C: LONG ANSWER QUESTIONS (60Marks)

1. Explain the pathology of **marasmus**, including its aetiology and pathogenesis, laboratory markers and expected changes in these. (20marks)
2. Discuss iron and folate nutritional deficiency-related anaemia focusing on the aetiology, pathogenesis and laboratory diagnosis (20marks)
3. Explain the role of gut microbiome in nutritional health (20marks)