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(University of Choice)

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

**(MAIN CAMPUS)**

**UNIVERSITY EXAMINATIONS (MAIN PAPER)  
2022/2023 ACADEMIC YEAR**

**FIRST YEAR SECOND SEMESTER EXAMINATIONS**

**FOR THE DEGREES OF  
MASTER OF SCIENCE IN MEDICAL LABORATORY  
SCIENCES (CLINICAL CHEMISTRY OPTION)**

**COURSE CODE: BMC 827**

**COURSE TITLE: ADVANCED NUTRITIONAL CHEMICAL  
PATHOLOGY**

**DATE: 21<sup>ST</sup> APRIL 2023**

**TIME: 11.00AM – 2.00PM**

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**INSTRUCTIONS TO CANDIDATES**

- *This paper has five (5) questions*
- *Answer questions ONE (1) and any other THREE (3)*
- *Answer the questions in the MMUST examination booklets provided*
- *Identify yourself by your university registration number only*
- *Write your university registration number on each leaf of the examination booklet with your answers*

**TIME: 3 Hours**

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over

1. Focusing on underlying biochemical derangements, write brief notes on the following:
  - a) Malnutrition as a manifestation of liver dysfunction (**marks**)
  - b) Adipokines and malnutrition (**5marks**)
  - c) Macrocytic hypochromic anaemia as a consequence of undernutrition (**5marks**)
  - d) Muscle strength as a functional indicator Vitamin D homeostasis and nutritional status (**5marks**)
  - e) Gut biome and malnutrition (**5marks**)
2. Discuss protein-energy malnutrition (PEM), emphasising chemo-pathological aspects of its pathogenesis and laboratory diagnosis (**25marks**)
3. Outline the general chemical pathology of malnutrition, in terms of disordered nutrient intake, buccal and gastric processing (digestion) for absorption, cellular uptake and body utilisation (**25marks**)
4. There is an intricate interface between dysfunction of many body organs and malnutrition. Explain this assertion in regard to the respiratory pulmonary dysfunction, focusing on the nutritional aetiology, pathogenetic mechanisms, biochemical manifestations and laboratory investigation of chronic airway obstructive disease (**25marks**).
5. Explain the fact of the *refeeding syndrome* being a complication of therapeutic intervention in cases of undernutrition. What is it, and what are its salient pathophysiochemical features, and underlying nutritional pathogenetic mechanisms? (**25marks**)