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

UNIVERSITY EXAMINATIONS

2021 / 2022 ACADEMIC YEAR

**MAIN EXAMINATIONS
MAIN CAMPUS**

SECOND YEAR SECOND SEMESTER EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN BIOCHEMISTRY**

COURSE CODE: SBM 224

**COURSE TITLE: METABOLISM OF AMINO ACIDS AND
NIRTOGENOUS COMPOUNDS**

DATE: THURSDAY, 21ST APRIL 2022

TIME: 3:00 – 5:00 P.M.

INSTRUCTIONS TO CANDIDATES

Answer ALL questions in section A and ANY TWO selected from section B

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over. 

SECTION A (SHORT ANSWER QUESTIONS, 40 MARKS)

1. Inosine monophosphate (IMP) can be synthesised in 3 steps. Show the pathway for IMP synthesis 2 from GAR to AICAR. (5 marks)
2. How does phenobarbital affect heme synthesis. (5 marks)
3. Draw the chemical structure of the 3 amino acids arginine, methionine and phenylalanine and discuss why each is classified as an essential amino acid. (5 marks)
4. Discuss Histidine catabolism. (5 marks)
5. Under what circumstances does one produce black urine? (5 marks)
6. Draw the chemical structure of Coenzyme A, 3-phosphoadenosine-5-phosphosulfate (PAPS) and Nicotinamide adenine dinucleotide (NAD). (5 marks)
7. Explain the role of gastrin, pepsinogen, gastric juice, secretin and trypsinogen in the digestion of dietary proteins. (5 marks)
8. Using a schematic diagram show the central role of amino acid in biological pathways including urea cycle, citric acid cycle, glycolysis etc. (5 marks)

SECTION B (ESSAY QUESTIONS, 30 MARKS)

9. Defective purine degradation can be seen in the clinical symptoms called gout. Describe gout, its causes and the drugs allopurinol and salicylic acid (15mks)
10. Catabolism of branched chain amino acids yields both NADH and FADH₂. Describe the breakdown of the 3 BCAA. (15 marks)
11. Describe Iron metabolism. (15 marks)