

CHUKA



UNIVERSITY

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**THIRD YEAR EXAMINATION FOR THE AWARD OF
DEGREE OF BACHELOR OF SCIENCE IN BIOCHEMISTRY**

BIOC 221: BASIC METABOLISM II

STREAMS: BSC. BIOCHEMISTRY Y2S2

TIME: 2 HOURS

DAY/DATE: TUESDAY 6 /07/ 2021

8.30 AM – 10.30 AM

INSTRUCTIONS:

- Answer Question ONE and any other TWO Questions.
- Do not write on the question paper

QUESTION ONE (30 MARKS]

- Describe the different ways through which fatty acids can be utilized within the human body. [6 Marks]
- Explain how fatty acids are transported to the mitochondria for β -oxidation.[6 Marks]
- Explain how nitrogen that accrues in the degradation of amino acids in muscle tissue is transported to the liver. [6 Marks]
- Explain how flow through the urea cycle is controlled within the liver lobule.[6 Marks]
- Explain the application of asparaginase for the management of leukemia. [6 Marks]

QUESTION TWO (20 MARKS)

- Describe the biosynthesis of cholesterol. [10 Marks]
- Describe how transcriptional regulation of cholesterol biosynthesis works.[10 Marks]

QUESTION THREE (20 MARKS)

- a. Humans cannot efficiently utilize carbon contained in fatty acids for gluconeogenesis. However, plants can efficiently do so. Explain? [10 Marks]
- b. Explain the cause, pathogenesis, diagnosis and treatment of phenylketonuria. [10 Marks]

QUESTION FOUR (20 MARKS)

- a. Describe the structure and function of ferritin. [5 Marks]
 - b. Explain how heme is degraded, and how the degradation product is disposed of. [7 Marks]
 - c. Explain the rationale and application of phototherapy in newborns experiencing jaundice. [8 Marks]
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