

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE AWARD OF DEGREE
OF BACHELOR OF SCIENCE IN BIOCHEMISTRY.

BIOC 220: BASIC METABOLISM I

STREAMS: BIOC Y2S1

TIME: 2 HOURS

DAY/DATE: THURSDAY 7/12/2017

2.30 P.M - 4.30 P.M.

INSTRUCTIONS:

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

QUESTION ONE [30 MARKS]

- (a) Describe metabolism and explain its significance. [5 Marks]
- (b) Describe the cellular mechanisms of controlling blood glucose concentrations in the body. [5 Marks]
- (c) Using sketches list and describe the hormone interaction with various areas of metabolism. [5 Marks]
- (d) Using examples, differentiate between anabolism and catabolism. [5 Marks]
- (e) Metabolism sometimes involves the use of molecules with reducing power.
Giving examples, state the roles of these reducing molecules. [3 Marks]
- (f) Substantiate the distinct differences between aerobic vs. anaerobic glycolysis. [4 Marks]
- (g) Write short notes on ketolysis. [3 Marks]

QUESTION TWO [20 MARKS]

- (a) Using suitable illustrations, describe the glycolytic pathway, as well as the role of enzymes in this process. [10 Marks]
- (b) What is the significance of glycolysis in the glycolytic pathway? [4 Marks]

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- (c) Glycogen is synthesized depending on the demand for glucose and ATP. Using structural illustrations, describe this process. [6 Marks]

QUESTION THREE

- (a) Describe one clinical condition resulting from disorders in carbohydrate metabolism. [10 Marks]
- (b) Illustrate the synthesis and breakdown of lipids and the clinical condition arising from abnormalities in this process. [10 Marks]

QUESTION FOUR [20 MARKS]

- (a) Explain the process and the biological importance of photosynthesis. [10 Marks]
- (b) Phenylketonuria is a metabolic disorder arising from protein metabolism. Explain how this condition arises. [5 Marks]
- (c) Elucidate the process of glucose control in the biological systems. [5 Marks]
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