

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

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

**BIOC 202: BIOCHEMISTRY OF CARBOHYDRATES**

STREAMS: BSC (BIOCHEM)

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 06/12/2017

11.30 A.M. – 1.30 P.M.

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**INSTRUCTIONS:**

- ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS
- DO NOT WRITE ON THE QUESTION PAPER

**QUESTION ONE (30 MARKS)**

- (a) What is the importance of carbohydrates? [2 marks]
- (b) Using glyceraldehyde as an example, explain stereoisomers. [4 marks]
- (c) With aid of a well labeled diagram, explain the chemical properties of monosaccharides. [5 marks]
- (d) Explain in detail the two forms of starch that are found in nature using appropriate diagrams. [8 marks]
- (e) What is the Maillard reaction? [4 marks]
- (f) Starch digestion is sequential. Explain this statement. [3 marks]
- (g) With the aid of an appropriate diagram, explain the structure of glycosaminoglycans. [4 marks]

**QUESTION TWO (20 MARKS)**

- (a) Describe in detail the structure and functions of heparin. [10 marks]
- (b) Describe the structure and functions of glycoproteins. [10 marks]

**QUESTION THREE (20 MARKS)**

- (a) Explain the significance of peptidoglycans in the formation of outer membrane and bacterial cell wall. [10 marks]

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- (b) What is the biological significance of:
- (i) Starch [5 marks]
  - (ii) Glycogen [5 marks]

**QUESTION FOUR (20 MARKS)**

- (a) Describe the structure and functions of cellulose. [10 marks]
- (b) Using specific examples explain the formation of disaccharides. [10 marks]
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