

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS
RESIT/SPECIAL

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

BIOC 202: BIOCHEMISTRY OF CARBOHYDRATES

STREAMS: BSC (BIOC)

TIME: 2 HOURS

DAY/DATE: TUESDAY 02/02/2021

5.00 P.M. – 7.00 P.M.

INSTRUCTIONS

(i) Answer All the Questions

(ii) Do not write on the question paper

QUESTION ONE (30 MARKS)

- (a) Raffinose is a trisaccharide that is widely found in legumes and cruciferous vegetables.
- (i) Draw the Haworth projection formula of Raffinose. (3 Marks)
 - (ii) Explain how it is digested in human gut. (5 Marks)
 - (iii) Explain major uses of this sugar. (3 Marks)
- (b) Draw Fisher projections formula for the following sugars.
- (i) D-Galactose
 - (ii) D-Fructose
 - (iii) D- glucose
 - (iv) D-Arabinose (8 marks)
- (c) Describe the biological significance of hyarulonic acid. (8 Marks)
- (d) Explain why corticosteroids and cephalosporins are used to treat rheumatoid arthritis caused by clostridial and streptococcal infections. (4 Marks)

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QUESTION TWO (20 Marks)

- (a) Monosaccharides occur in cyclic form rather than linear form. Using structures show how D-Fructose undergoes cyclization to form pyranose and furanose rings. (5 marks)
- (b) Draw the structures of Lactose and Trehalose. (4 Marks)
- (c) How do they differ in their structure and functions? (8 Marks)

QUESTION THREE (20 Marks)

- (a) Draw the structures of any four (4) sugar alcohols and outline their applications. (8 Marks)
- (b) Using structural formulae distinguish between agar and carrageenan. (4 Marks)
- (c) Discuss the biomedical applications of β -glucans. (8 Marks)
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