CHUKA UNIVERSITY

UNIVERSITY SUPPLEMENTARY/SPECIAL EXAMINATIONS.

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

BIOC 208: BIOCHEMISTRY OF CARBOHYDRATES

STREAMS: BIOC **TIME: 2 HOURS**

DAY/DATE: THURSDAY 13/09/2018 **8.30 A.M -10.30 A.M**

INSTRUCTIONS

- **Answer All the Questions**
- **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 [2x4 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]

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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