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**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**14-16 AHMADU BELLO WAY, VICTORIA ISLAND LAGOS**

**MARCH/APRIL 2016 EXAMINATION**

**SCHOOL OF SCIENCE AND TECHNOLOGY**

**COURSE CODE: CHM315**

**COURSE TITLE: Carbohydrate Chemistry**

**TIME: 2 hours**

**Instruction: Answer any 4 questions**

1 a. Define carbohydrates (2marks)

b. Mention five importance of carbohydrates (5marks)

c. What are glycosides? (7½ marks) the ***equation for the reaction will be required***

d. Monosaccharides are classified according to three different characteristics: Enumerate these characteristics (3marks)

2a.Classify the following carbohydrates into four major named groups according to their sizes:

Cellulose, Chitin. Fructose, Galactose,Glucose, Glycogen, Lactose, Maltose, Raffinose, Stachyose, Sucrose, (7½ marks)

**b.** In tabular form, describe the composition of the following disaccharides**;**

|  |  |  |
| --- | --- | --- |
| **disaccharide** | **description** | **Component monosaccharides** |

gentiobiose, maltose, trehalose, lactose and cellobiose. (10 marks)

**3. Give the structures of the following carbohydrates:**

i. D-glucose (straight chain) (2marks) ii D-Arabinose (Straight Chain) (2marks)

iii.D-Fructose (Straight Chain) (2marks) iv. D-Mannose (Straight Chain) (2 Marks)

v. D-Galactose (Straight Chain) (2marks)

vi Mention one difference each between D- glucose and the monosaccharides mentioned in ii –v (4marks)

vii Using structures **only** differentiate between Ribose and Deoxyribose (3½marks)

4 .Write short notes on the following giving the structure of a named example in each case:

1. Ketose (6marks) b.Non -reducing sugars(6marks) c. Sugar Alcohols (5½marks)

5a Define the term Homopolysaccharides (1½marks)

b. Write briefly on glycogen (***marks will be given for a neatly represented structure representing glycogen*** (8marks)

**c. Write two uses each of the following**

i. Agar ii. Carrageenan iii. Glucomannan iv. Inulin (8marks)

6. a.Write briefly on osazones ( 12 marks) ***Marks will be given for correctly presented equation***

b. Using Chemical structures only show the relationship between the osazones of glucose and mannose (5½marks)