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:
a. 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)