



**NATIONAL OPEN UNIVERSITY OF NIGERIA  
UNIVERSITY VILLAGE, PLOT 91 CADASTRAL ZONE, NNAMDI AZIKIWE  
EXPRESS WAY, JABI - ABUJA.**

**FACULTY OF SCIENCES**

**DEPARTMENT OF PURE AND APPLIED SCIENCES**

**FEBRUARY/MARCH 2018 EXAMINATION**

**COURSE CODE: CHM 315**

**COURSE TITLE: CARBOHYDRATE CHEMISTRY**

**TIME: 2 HOURS**

**INSTRUCTION: Question one is compulsory. Answer question one and  
any other three questions.**

### **QUESTION ONE**

- |   |         |
|---|---------|
| 1ai) What do you understand by the term carbohydrate?                     | 3 marks |
| 1aii) Using all criteria, outline the classes of carbohydrates.           | 7 marks |
| 1b Write the structure of D-(+)-glucose and D-(+) mannose.                | 4 marks |
| 1c) Write short note on sucrose.  | 5 marks |
| 1di) Describe briefly polysaccharides.                                    | 2 marks |
| dii) Differentiate between homopolysaccharides and heteropolysaccharides. | 4 marks |

## QUESTION TWO

- 2a) Discuss briefly glucosides. 4 marks
- 2b) Distinguish between furanose and pyranose, giving one example in each case. 4 marks
- 2c) With an equation show the reaction of aldose sugars in HOBr. 7 marks

QUESTION TWO = 15 Marks

## QUESTION THREE

- 3a) With accompanying chemical equation of D-(+)-glucose and D-(+)-mannose, explain briefly osazone formation. 15 marks

## QUESTION FOUR

- 4ai) Write short note on monosaccharides. 3 marks
- 4aii) Discuss briefly classification of monosaccharides. 7 marks
- 4b) Give the structural formula of the following compounds: D-Erythrose and fructose. 5 mark

## QUESTION FIVE

- 5a) In a tabular form, describe disaccharide under the following headings: Example of disaccharide ii) Description iii) Component monosaccharide. 7½ marks
- 5b) Explain briefly the word starch. 3 marks
- 5c) In the presence of a strong oxidizing agent, the two hydroxyl functional group in aldose are oxidized to give   X   compound. Show with an equation the formation of compound X. 4½ marks

