



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**DEPARTMENT OF PURE AND APPLIED SCIENCES**  
**2020\_2 EXAMINATIONS...**

**COURSE CODE:** CHM315

**CREDIT UNIT:** 2

**COURSE TITLE:** CARBOHYDRATE CHEMISTRY

**TIME:** 2 HRS

**INSTRUCTION:** Answer question 1 and any other 3 questions

**QUESTION 1**

- Give a short explanation on the utilization of monosaccharide in both plants and animal metabolism. **[6 marks]**
- Show that the length of a named pentose arabinose can be shortened to a named tetrose erythrose through Ruff degradation. **[5 marks]**
- Provide a short definition of sugar alcohols and list five examples. **[7 marks]**
- Give the systematic name for sucrose and what does the name indicate. **[7 marks]**

**QUESTION 2**

- Provide the component of the monosaccharides given in table below **[5 marks]**

S/N	Disaccharide	Component monosaccharides
	Sucrose	
	Maltose	
	Trehalose	
	Lactose	
	Melibiose	

- Give the chemical structure of:

- Trehalose **[5 marks]**
- Cellobiose **[5 marks]**

**QUESTION 3**

Although all the disaccharides are made up of two glucopyranose rings, their properties differ in interesting ways, discuss the comparison of disaccharides. **[15 marks]**

**QUESTION 4**

- Write short note on the followings: **[6 marks]**  
(i). Polydextrose, (ii). Modified starch and (iii). Hydrogenated glucose syrup
- how is Cellulose Gum or Carboxymethyl Cellulose formed from cellulose. **[3 marks]**
- Give 6 common uses of cellulose gum. **[6 marks]**

**QUESTION 5**

- a. i). Describe the preparation of Viscose Rayon [**2 marks**]  
ii). Give the general equation for transformation of Cellulose to Rayon. [**3 marks**]
- b. Without structures, write short notes on these heteropolysaccharides; [**5 marks**]
  - i. Arabinoxylan and ii. Chitin
- c. List the physiologically most important glycosaminoglycans. [**5 marks**]