



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

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

QUESTION 2

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

S/N	Disaccharide	Component monosaccharides
	Sucrose	
	Maltose	
	Trehalose	
	Lactose	
	Melibiose	

- b. Give the chemical structure of:

- i. Trehalose **[5 marks]**
- ii. 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

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