

COURSE CODE: CHM 315

COURSE TITLE: CARBOHYDRATE CHEMISTRY

INSTRUCTION: Answer question 1 and any other 3 questions

CREDIT UNIT: 2

TIME: 2 HRS

- Q1a. Draw the Haworth projection and Chair conformation structures of the following:
- i)  $\alpha$ -D-glucopyranose (4 marks)
  - ii)  $\beta$ -D-galactopyranose (4 marks)
  - iii)  $\beta$ -D-allopyranose (4 marks)
- 1b. Write short note on each of the following compounds in carbohydrate chemistry
- i) Trehalose (5 marks)
  - ii) Uronic acid (4 marks)
  - iii) Gentiobiose (4 marks)
- Q2. a) Recommend, with reasons, a sugar alcohol for sugar-free candies production (5 marks)
- b) Cellulose – a suitable food for cow but not for human. Explain (5 marks)
  - c) Highlight five functions of alginic acid derivatives (5 marks)
- Q3. a) With the aid of equation, show conversion of D-(-)-ribose to ribonic acid (5 marks)
- b) Distinguish between aldonic acid and aldaric acid (5 marks)
  - c) Write the structure of xylan (5 marks)
- Q4 Write short notes on the underlisted phenomenon
- a) Hemicellulose (5 marks)
  - b) Beta-Glucan (5 marks)
  - c) Cellulose acetate (5 marks)
- Q5 a) Describe the production of hydrogenated glucose syrup from starch (4 marks)
- b) Define cellulose gum and state its three uses (5 marks)
  - c) Itemize three properties affected by slight change in OH orientation (3 marks)
  - d) Briefly describe the formation of glycoside (3 marks)