



CRAWFORD UNIVERSITY
FAITH CITY, IGBESA, OGUN STATE
2010/2011 SUMMER EXAMINATIONS

COLLEGE: NATURAL AND APPLIED SCIENCES

DEPARTMENT: BIOLOGICAL SCIENCES

UNIT: BIOCHEMISTRY

COURSE CODE: BCH 211 COURSE UNIT: 3 TIME ALLOWED: 3 HOURS

COURSE TITLE: STRUCTURE AND CHEMISTRY OF BIOMOLECULES

INSTRUCTION: ANSWER ANY FIVE QUESTIONS

- 1 (a) Show the formation of hemiketals and hemiacetals from the reaction of alcohols with aldehydes and ketones. Explain how this formation relates to the Haworth perspective formulas of pyranose and furanose.
(b) Although lactose exists in two anomeric forms, no anomeric forms of sucrose have been reported. Explain?
- 2 (a) An unknown substance containing only C, H and O was isolated from goose liver. 0.423g of the substance produced 0.620g of CO₂ and 0.254g of H₂O after complete combustion in excess oxygen. Is the empirical formula of this substance consistent with its being a carbohydrate? Explain.
(b) Mention and Draw the structural formula of *one* example for each of the following derivatives of sugar: *amino sugars, acidic sugars, deoxy sugars, sugar esters, glycosides, sugar alcohol and disaccharide*
- 3 (a) Explain the classification of lipids
(b) Draw the structure of the following :
i. stearate ii. plasmalogens iii. Sphingomyelin
iv. Phosphatidates v. galactocerebrosides
4. Discuss the physical and chemical properties of fats and oils.
5. Discuss the DNA molecule as postulated by Watson and Crick
6. (a) Enumerate the major functions of protein. Give examples
(b) Describe briefly, the main properties of amino acids
7. (a) Enumerate the major properties of enzymes
(b) List the main classes of enzymes. Give *two* examples in each class