MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE IN POPULATION HEALTH

HPH 203: BIOCHEMISTRY

DATE: **TIME:**

INSTRUCTIONS

1. Anwer Question 1 (compulsory) and **any two** questions in Section B.
2. Use clean well labelled diagrams wherever appropriate.

SECTION A (COMPULSORY)

QUESTION ONE (30 MARKS)

a) Illustrate the difference between saturated and unsaturated fatty acids (3 marks)

b) Describe the basic structure of an amino acid and the formation of a peptide bond. (3 marks)

c) Show the distinction between a nucleotide and a nucleoside (3 marks)

d) Using Fisher projection of a Glucose molecule as an example, explain D and L configuration of carbohydrates. (3 marks)

e) Outline three differences between DNA and RNA (3 marks)

f) Illustrate one exception of the central Dogma theory (3 marks)

g) Illustrate substrate level phosphorylation in glycolysis (3 marks)

h) Distinguish between simple and complex lipids (3 marks)

i) Describe the secondary leve proteins (3 marks)

j) Describe the fermentative pathway of a starch particle in the human (3 marks)

SECTION B: ANSWER ANY OTHER TWO QUESTIONS

QUESTIONS TWO (20 MARKS)

a) Account for a gross 4 ATPs produced during glycolysis and a net of 2 ATPs (10 marrks)

b) Lipids may be classified as either storage or membrane bound. Give a detailed account of the following groups of lipids.

   i) Triglyerols (5 marks)

   ii) Phospholipids (5 marks)

QUESTION THREE (20 MARKS)

Discuss the synthesis of a protein starting from a segment of DNA

QUESTION FOUR (20 MARKS)

Using relevant structural examples, explain the classification of carbohydrates.

QUESTION FIVE (20 MARKS)

Account for a gross of 4 ATPs and a net of 2 ATPS during glycolysis (10 marks)

Describe the Krebs cycle of glucose metabolism (10 marks)