



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES
DEPARTMENT OF BIOLOGICAL SCIENCES
FIRST YEAR SECOND SEMESTER EXAMINATION FOR
BACHELOR OF SCIENCE IN POPULATION HEALTH
HPH 104 BIOCHEMISTRY

DATE: 29/5/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer question one and any other two questions

Section A

- a) Describe key characteristics of amino acids (3 marks)
- b) Describe three chemical mechanisms in macromolecules formation (3 marks)
- c) explain enantiomer using glyceraldehyde as an example (3 marks)
- d) Outline SIX functional features of fatty acids (3 marks)
- e) Outline three common reactions encountered in biochemical processes (3 marks)
- f) Describe briefly THREE Structural representation of sugars (3 marks)
- g) Describe Watson and Crick Model of DNA (3 marks)
- h) Describe the structure of any three aliphatic amino acids (3 marks)
- i) Evaluate the reactional features of the polymerization of amino (-NH₃⁺) and carboxyl (-COO⁻) groups of amino acids. (3 marks)
- j) State six functional characteristics of proteins (3 marks)

QUESTION TWO (20 MARKS)

- a) Discuss using examples stereoisomerism of monosaccharides (10 marks)
- b) Discuss tertiary and quaternary protein structures (10 marks)

QUESTION THREE (20 MARKS)

Discuss the structural and functional features of FIVE polysaccharides

QUESTION FOUR (20 MARKS)

Discuss the mechanisms of enzymatic regulation

QUESTION FIVE (20 MARKS)

Derive the Michael-Menten equation and explain its importance in enzymatic catalysis