



MACHAKOS UNIVERSITY

University Examinations 2019/2020 academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN BIOLOGY

SZL 205: PRINCIPLES OF BIOCHEMISTRY

DATE: 21/1/2021

TIME: 8.30-10.30 AM

INSTRUCTIONS

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

SECTION A

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Explain the following terms as used in carbohydrates:
 - i. Glycosidic bond
 - ii. Monosaccharide
 - iii. Disaccharide (3 marks)
- b) Outline three uses of proteins. (3 marks)
- c) Describe nucleic acids and their role in the cell. (3 marks)
- d) Briefly describe three uses of polysaccharides, giving examples (3 marks)
- e) Briefly describe the metabolism of lipids. (3 marks)
- f) Describe protein mobility in relation to their structure (3 marks)
- g) Explain the role of DNA (3 marks)
- h) State the role played by water within the cell. (3 marks)
- i) Distinguish between essential and non-essential amino acids, giving examples in each case (3 marks)
- j) State the three main macromolecules (3 marks)

SECTION B: ANSWER ANY TWO QUESTIONS FROM THIS SECTION

QUESTION TWO (20 MARKS)

Discuss the occurrence, metabolism and uses of carbohydrates.

QUESTION THREE (20 MARKS)

Explain the role of water as a solvent and its interaction with proteins poly saccharides and nucleic acids.

QUESTION FOUR (20 MARKS)

Describe the biosynthesis and function of proteins

QUESTION FIVE (20 MARKS)

Describe cellular metabolic pathways that lead to generation of energy.