



# 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

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## 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.