



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (ANALYTICAL CHEMISTRY)

SZL 205: PRINCIPLES OF BIOCHEMISTRY

DATE: 17/8/2021

TIME: 2:00 – 4:00 PM

INSTRUCTIONS

ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS

SECTION A (COMPULSORY)

QUESTION ONE (30 MARKS)

- a) Distinguish between linear and branched biomolecules using examples. (3 marks)
- b) Explain the role of nucleic acids in living organisms. (3 marks)
- c) Describe the role of coenzymes and cofactors in metabolism (3 marks)
- d) Explain three functions of proteins in living organisms (3 marks)
- e) Describe the structural components and organization of carbohydrates. (3 marks)
- f) Differentiate between saturated and unsaturated fatty acids and give an example in each case. (3 marks)
- g) Distinguish between informational and non-informational biomolecules using examples. (3 marks)
- h) Explain meaning of the term “protein conformations” (3 marks)
- i) Explain the biological significance of polysaccharides (3 marks)
- j) Describe the structural organization and composition of amino acids (3 marks)

SECTION B: ANSWER ANY TWO QUESTIONS IN THIS SECTION

QUESTION TWO (20 MARKS)

Explain the process of carbohydrate metabolism in living organisms

QUESTION THREE (20 MARKS)

Describe the structures and functions of various types of lipids

QUESTION FOUR (20 MARKS)

- a) Explain the levels of protein structure (4 marks)
- b) Discuss protein biosynthesis and degradation (16 marks)

QUESTION FIVE (20 MARKS)

- a) Discuss the main processes of lipid metabolism. (10 marks)
- b) Discuss the structure of nucleic acids (10 marks)