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 (ANALYTICAL CHEMISTY)

SZL 205: PRINCIPLES OF BIOCHEMISTRY

DATE: 7/12/2021 **TIME : 8.30-10.30 AM**

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) Distinguish between saturated and unsaturated fatty acids (3 marks)

b) Describe the fate of pyruvate under anaerobic conditions (3 marks)

c) Describe the formation of a peptide bond (3 marks)

d) State 3 noncarbohydrate precursors of gluconeogenesis (3 marks)

e) Describe disaccharides (3 marks)

f) Outline the role of enzymes that catalyze irreversible steps in glycolysis (3 marks)

g) Describe any 3 features of DNA double helix (3 marks)

h) Explain the properties of water soluble vitamins (3 marks)

i) Explain the distinction between a nucleoside and nucleotide (3 marks)

j) Citric acid cycle is a common pathway for oxidation of foodstuff. Justify (3 marks)

SECTION B: ANSWER ANY OTHER TWO QUESTIONS

QUESTION TWO (20 MARKS)

a) Discuss the mechanism of regulation of blood sugar level (10 marks)

b) Discuss the reactions of beta oxidation of fatty acids. (10 marks)

QUESTIONS THREE (20 MARKS)

a) Describe the process of glycogen synthesis in the liver (10 marks)

b) Discuss Mechanism of enzyme action (10 marks)

QUESTION FOUR (20 MARKS)

a) Discuss the formation of glucose from noncarbohydrate sources (10 marks)

b) Discuss transamination and deamination process with respect to amino acids metabolism. (10 marks)

QUESTION FIVE (20 MARKS)

Describe the process of gene expression in a prokaryotic cell.