



MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)
University Examinations for 2015/2016 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

**FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE IN BIOLOGY**

SZL 205: PRINCIPLES OF BIOCHEMISTRY

DATE: 12/8/2016

TIME: 2:00 – 4:00 PM

INSTRUCTIONS:

**ANSWER ALL QUESTIONS IN SECTION A (COMPULSORY) AND ANY OTHER
TWO QUESTIONS IN SECTION B.**

SECTION A (30 MARKS) ANSWER ALL QUESTIONS

QUESTION ONE

- a) Briefly, describe the fate of pyruvate under anaerobic conditions. (3 marks)
- b) Describe the major differences between glycolysis and gluconeogenesis (3 marks)
- c) Give an account on oxidation of fattyacids. (6 marks)
- d) Describe the general structure of amino acids. (2 marks)
- e) i. Differentiate between nucleoside and nucleotide (2 marks)
ii. Describe the components of a nucleic acid. (3 marks)
- f) Describe various types of ribonucleic acid (RNA). (3 marks)
- g) Describe the minerals required for both physiological and biochemical functions (3 marks)
- h) Describe 3 major functions of proteins to the living organisms. (3 marks)

SECTION B ANSWER ANY TWO QUESTION

QUESTION TWO (20 MARKS)

- a) Glycolysis is an essential process for cellular respiration. Describe how glucose is metabolized to pyruvate. (16 marks)
- b) Describe the three important irreversible reaction singlycolysis. (4 marks)

QUESTION THREE (20 MARKS)

- a) Describe the metabolic pathways of amino acids (10 marks)
- b) Describe protein synthesis, including transcription, RNA processing, and translation. (10 marks)

QUESTION FOUR (20 MARKS)

- a) Using a relevant example, describes how fatty acids are synthesized in the body. (14 marks)
- b) Describe the classification of lipids. (6 marks)

QUESTION FIVE (20 MARKS)

- a) Describe the roles of carbohydrates in humans (6 marks)
- b) Describe regulation of gluconeogenesis (2 marks)
- c) Glucose is stored in the body as glycogen. Describe the process of glycogen synthesis (12 marks)