MACHAKOS UNIVERSITY

University Examinations 2018/2019

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: 23/9/2019 **TIME: 2.00-4.00 PM**

INSTRUCTIONS

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

SECTION A

QUESTION ONE

a) How are saturated and unsaturated fatty acids different? (3 marks)

b) Describe the basic structure of an amino acid and the formation of a peptide bond. (3 marks)

c) Show the distinction between a nucleotide and a nucleoside (3 marks)

d) Using Fisher projection of a Glucose molecule as an example, explain D and L configuration of carbohydrates. (3 marks)

e) Outline six differences between DNA and RNA (3 marks)

f) Distinguish the following terms

i. Simple lipds and complex lipds (3 marks)

ii. Chromatography and Spectrophotometry (3 marks)

iii. Catabolism and anabolism (3 marks)

iv. Sustrate level phosphorylation and oxidative phosphorylation (3 marks)

v. Primary level and secondary level of proteins (3 marks)

SECTION B

QUESTION TWO

a) Account for a gross 4 ATPs produced during glycolysis and a net of 2 ATPs (10 marks)

b) Lipids may be classified as either storage or membrane bound. Give a detailed account of the following groups of lipids.

i. Triacylglyerols (5 marks)

ii. Phospholips (5 marks)

QUESTION THREE

Discuss the semi conservative nature of DNA replication (20 marks)

QUESTION FOUR

Using relevant structural examples, explain the classification of carbohydrates. (20 marks)

QUESTION FIVE

Discuss sickle cell anaemia in view of the process of gene expression (20 marks)