TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

BACHELOR OF TECHNOLOGY IN APPLIED CHEMISTRY

(ANALTICAL OPTION)

ACH 4407 : BIOANALYTICS I (**MAIN**)

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: Pick Date Dec 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE

a) Describe the following terms; (10 marks)
   i) Rancimat test
   ii) Single nucleotide polymorphism
   iii) Enzyme immunoassay
   iv) Spacer arms
   v) Bisulfite conversion

b) i) Using liquid chromatography mass-spectroscopy- mass-spectroscopy methodologies outline steps for protein analysis (4 marks)
   ii) Explain the classical methods used in the analysis of lipids (6 marks)

c) Describe DNA analysis under the following;
   i) DNA nanoball sequencing (3 marks)
   ii) Sequencing with mass spectrometry (3 marks)

d) Describe mutational screening. (4 marks)

Question TWO

a) List any four applications of affinity chromatography. (4 marks)
b) Describe the challenges encountered in running protein electrophoresis (16 marks)

Question THREE

a) Explain the general workflow in two-dimensional electrophoresis experimentation. (14 marks)
b) Describe immobilization of proteins using Glutathione S-transferase - tagging. (6 marks)

Question FOUR

a) Explain plant lipid analysis using the gas chromatography technique. (10 marks)
b) Describe the components of High-performance liquid chromatography instrumentation. (10 marks)

Question FIVE

In cell disruption step for sample preparation, outline methods and applications for each of the following;

a) Gentle cell lysis (10 marks)
b) Vigorous cell lysis (10 marks)