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 (**SPECIAL/SUPPLEMENTARY**)

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) Shotgun proteomics
   ii) Schaal oven test
   iii) Silver staining
   iv) Isoelectric focusing (IEF)
   v) Pyro sequencing

b) Outline the steps involved in the sample preparation of the protein electrophoresis. (12 marks)

c) Explain the mechanism involved in a dynamic and rapid equilibrium of molecules between stationary and mobile phases of chromatography. (8 marks)

Question TWO

a) Outline the steps involved in the analysis of the protein gels. (16 marks)

b) List advantages of agarose gel electrophoresis. (4 marks)

Question THREE

a) Highlight any two advantages and disadvantages of polyacrylamide gel electrophoresis. (4 marks)
b) Describe the competitive design of immunoassay analysis (10 marks)
c) Explain the potential immobilization challenges affecting affinity ligand activity (6 marks)

Question FOUR

a) Explain reversed phase chromatography in the analysis of biomolecules. (14 marks)
b) Outline the steps for reversed phase chromatography separation. (6 marks)

Question FIVE

a) Give a description of the components required in setting up of a polymerase chain reaction (7 marks)

b) Describe in situ hybridization technique used in the analysis of nucleic acids. (5 marks)

c) Explain the use of fluorescent immunoassays (FIA) technique in biomolecules. (8 marks)