THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A CONSTITUENT COLLEGE OF JKUAT)

(A Centre of Excellence)

Faculty of Applied and Health Sciences

DEPARTMENT OF **PURE AND APPLIED SCIENCES**

DIPLOMA IN SCIENCE LABORATORY TECHNOLOGY
(DSLT 10 S)

ACH 2320 : CHEMICAL ANALYTICAL TECHNIQUES

SPECIAL/SUPPLEMENTARY: EXAMINATIONS

SERIES: FEBRUARY 2013

TIME: 2 HOURS

INSTRUCTIONS:

You should have the following for this paper

- *Answer booklet*

This paper consists of ***FIVE*** questions.
Answer Question **ONE (compulsory)** and any other **TWO** questions
*This paper consists of **2 PRINTED** pages*

Question ONE

a) State FOUR properties of a filter paper. **(4marks)**
b) List down FOUR disadvantages of precipitation method of separation **(4marks)**
c) Differentiate between co-precipitation and surface absorption **(4marks)**
d) Explain how filterability of precipitate can be improved **(4marks)**
e) State FOUr properties of precipitation reagents **(4marks)**
f) Explain factors which determine particle size of a precipitate **(4marks)**
g) State FOUR properties of an idea membrane for reverse osmosis application. **(4marks)**
h) Differentiate between thermal gravemetric and differentiate thermol analysis **(2marks)**

Question TWO

a) Explain how the following factors affect the nature and purity of the crystals formed during precipitation **(12marks)**
   (i) Digestion
   (ii) Temperature
   (iii) Concentration of ions and solubility of solids
   (iv) Rate of precipitation
b) State THREE advantages of gravimetric methods of analysis **(3marks)**

Question THREE

Describe how differentiae scanning culorimentry (dsc) technique is used to study the behavior of polymer when subjected to heat **(15marks)**

Question FOUR

a) State FOUR types of co-precipitation **(4marks)**
b) Explain the mechanism of precipitate formation **(11marks)**

Question FIVE

a) Explain the effect of chemical modification on membrane performance. **(6marks)**
b) State and differentiate the two types of differential scanning culorimetry **(6marks)**
c) Differentiate between first order transition and second order transition as used in DSC technique. **(3marks)**