TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN ANALYTICAL CHEMISTRY

ACH 2304 : Applied Analytical Chemistry I (paper II)

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: SEPTEMBER 2018

TIME: 2 HOURS

DATE: Pick Date Sep 2018

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of Choose No questions. Attempt Choose instruction.

Do not write on the question paper.

Question ONE

a) What is soap? **(2 marks)**

b) Differentiate between saponifiable and unsaponifiable matter in soap **(4 marks)**

c) I A laboratory technologist analysed soap for glycerol. The following data was obtained during the titration stage. **(12 marks)**

Weight of soap sample	= 10 g
Volume of 0.125 N NaOH used	= 15 cm^3
Volume of 0.125 N NaOH for blank	= 2 cm^3

Given factor (F) = 1.151

Calculate the percentage Glycerol content of the soap (% w/w)

II List othe five (6) parameters which can be determined during soap analysis **(6 marks)**

d) Outline the oven method for analysis of volatile matter at 105 ^{0}C in soap **(6 marks)**

Question TWO

a) Classify and explain detergents according to electritical charge of the surfactant **(6 marks)**.

b) describe the following qualitative tests of detergents **(9 marks)**

Question THREE

a) List any three types of cosmetics **(3 marks)**

b) Briefly explain how the following tests are done on lipsticks **(12 marks)**

I. Melting point
II. Solubility test
III. Breaking point
IV. Aging stability

Question FOUR

a) The liberated Iodine is titrated against standard solution of Sodium thiosulphate using starch as an indicator. List any six (6) interferences in biological oxygen demand analysis. **(6 marks)**

b) Give the principle of the Winkler method with Azide modification for the determination of dissolved oxygen in water and waste water. **(9 marks)**

Question FIVE

A water analyst analysed a sample as follows-
25 mL of sample was pipetted in porcelain dish and 2-3 drops of phenolphthalein indicator added.
Pink colour developed and the sample was titrated with 0.02N H_2SO_4 till end point.
The volume of H_2SO_4 required was 3 ml.
2-3 drops of methyl orange were added and the titration continued until yellow colour changed to orange.
The volumes of H_2SO_4 required was 8 ml.

Calculate;

I. Phenolphthalein alkalinity, as mg $CaCO_3$/L **(7 marks)**
II. Total alkalinity, as mg $CaCO_3$/L **(8 marks)**