



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

**UNIVERSITY EXAMINATION FOR:**

**DIPLOMA IN ANALYTICAL CHEMISTRY**

**ACH 2201 : Chemical Analytical Methods I (paper 1)**

**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 Choose No questions. Attempt Choose instruction.

**Do not write on the question paper.**

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## Question ONE

- a) Define the following terms as employed in analytical chemistry;
  - I. Analyte (2 marks)
  - II. Matrix (2 marks)
  - III. Analysis (2 marks)
  - IV. Sample (2 marks)
- b) State the purpose of analytical chemistry (3 marks)
- c) Discuss the scope of analytical chemistry (8 marks)
- d) Differentiate between quantitative and qualitative analysis (4 marks)
- e) Briefly explain method validation (4 marks)
- f) Explain why sample pre-treatment is necessary (3 marks)

## Question TWO

- a) Differentiate between absolute and relative errors (3 marks)

b) With examples describe systemic errors

**(12 marks)**

### **Question THREE**

a) Briefly explain the steps involved in sampling in order to obtain a laboratory sample

**(3 marks)**

b) Describe the procedure for Sampling Homogeneous Solutions of Liquids and Gases

**(12 marks)**

### **Question FOUR**

a) Explain the importance of computing standard deviation in data analysis

**(3 marks)**

b) The following are five weight values obtained by an analyst during gravimetric analysis. Calculate the estimated standard deviation,  $s$ .

**(12 marks)**

weight in mg

20.16

20.18

20.20

20.22

20.24

### **Question FIVE**

Explain the following as applied in analytical chemistry

I. Signal processing

**(5 marks)**

II. Sensitivity

**(5 marks)**

III. Detection limit

**(5 marks)**