



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

MASTER OF SCIENCE IN CHEMISTRY

ACH 5102 : ADVANCED ANALYTICAL CHEMISTRY

Special/Supplementary Examinations

SERIES: SEPTEMBER 2018

TIME: 3 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 **SIX** Question(s). Attempt any **FOUR** questions.

Do not write on the question paper.

Question ONE

- (a) What is Analytical chemistry? (4 marks)
- (b) Write notes on the classification of analytical methods (10 marks)
- (c) Describe the Advantages and Limitations of Instrumental methods (11 marks)

Question TWO

Write succinct notes on:

- (a) Solving Single crystal structures from X-Ray diffraction data. (10 marks)
- (b) Advantages of Neutron diffraction over X-Ray diffraction (8 marks)
- (c) Neutron diffraction and Magnetic properties (7 marks)

Question THREE

- (a) What is Atomic emission spectroscopy? (5 marks)**
- (b) Write succinct notes on (i) Advantages ; ii) (Disadvantages, of Emission spectroscopy over other analytical techniques (20 marks)**

Question FOUR

Annotate the attached diagram of Absorption, Fluorescence and Phosphorescence and write notes on the processes therein (25 marks)

Question FIVE

For a Modern Pulsed Fourier Transform NMR describe its components their functions

Question SIX

- (a) What is 2D-NMR? (5 marks)**
- (b) With the aid of the attached diagrams, discuss the:**
 - (i) COSY spectra (10 marks)**
 - (ii) HETCOR spectra (10 marks)****of ethyl 2-butenate**