



# TECHNICAL UNIVERSITY OF MOMBASA

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Faculty of Applied and Health Sciences

Pure and Applied Sciences

## UNIVERSITY EXAMINATION FOR:

Bachelor of Technology in Applied Chemistry (Analytical Option)

ACH 4309 :Drug Analysis.

END OF SEMESTER EXAMINATION

**SERIES:**Second Semester 2016

**TIME:**2HOURS

**DATE:**Pick DateSelect MonthPick Year

### 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 and answer any other two questions

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

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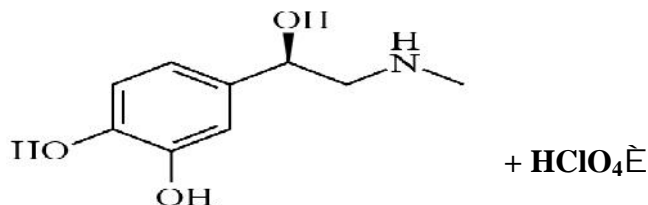
### Question ONE

- a) Differentiate between the following terms,
  - i) Protophilic and protogenic Solvents (2 marks)
  - ii) Gravimetric and titrimetric analysis (2 marks)
  - iii) Differential centrifugation and rate-zonal centrifugation (2 marks)
- b) Using an example describe how law of mass action aid gravimetric analysis. (4 marks)
- c) Explain why water should be avoided during non aqueous titration of weak bases and acids (4 marks)
- d) Briefly describe the digestion process ofKjeldhal's method of nitrogen determination (3 marks)
- e) Give two reasons why dissolution testing is an important drug analysis test during manufacturing of drugs. (2 marks)
- f) Describe how to determine end point during Karl Fischer titration (3 marks)

- g) Name two methods that are used in alcohol estimation in galenicals (2 marks)
- h) State two factors that lead to friability of a tablet (2 marks)
- i) Describe how to determine endpoint during diazotization titration (4 marks)

### Question TWO

- a) Complete the following reaction for non aqueous titration of adrenaline (2 marks)



- b) State with reason the solvent that can be used in the above reaction. (3 marks)
- c) Use equations to represent the answer (3 marks)
- d) Outline method used to prepare 0.1 N acetous perchloric acid. (4 marks)
- e) State precautions to take during preparation of the perchloric acid. (3 marks)
- f) Explain the use of masking and demasking reagents in complexometric titrations (5 marks)

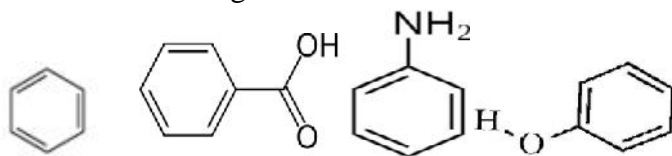
### Question THREE

- a) Define radioimmunoassay? (2 marks)
- b) Outline the steps involved in aradioassay technique in drug analysis (6 marks)
- c) State 3 advantages of ultrafiltration (3 marks)
- d) Briefly describe a procedure for separating drug molecules in plasma using ultrafiltration (3 marks)
- e) EDTA is a very nonselective reagent used in complexometric titration, list six methods that can be used to increase the selectivity of EDTA. (6 marks)

### Question FOUR

- a) 20 paracetamol tablets were found to weigh 10 g in total. Outline steps involved in the determination of absorbance of the tablets at 285 nm wavelength (6marks)
- b) A sample containing 0.10 grams of tetraphenylcyclopentadienone, with a molecular weight of 384 grams per mole, dissolved and diluted in methanol to a final volume of 1.00 liters
- i) Determine molarity of sample (2 marks)
- ii) If the path length was 1.0 cm and the absorbance at 343 was 0.89, then determine e it molar absorptivity (2 marks)

- c) Outline steps involved in the extraction of the following compounds found in a pharmaceutical drug. (10 marks)



### Question FIVE

- a) A solution of 5% w/v silver nitrate was used to precipitate chlorine molecules in 0.25g of sodium chloride in distilled water.
- Write an equation for the reaction (2 marks)
  - Calculate the volume of silver nitrate required in the reaction (4 marks)
  - Calculate percentage purity of sodium chloride if 0.6288g of AgCl was obtained (4 marks)
- b) Describe thin layer chromatography. (2 marks)
- c) State 3 advantage does it offer over paper and column chromatography? (3 marks)
- d) Outline a method to identify the presence of undesirable specific organic compounds present as impurities in pharmaceutical substances using Morphine in Apomorphine Hydrochloride as an example (5 marks)