TECHNICAL UNIVERSITY OF MOMBASA

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:2 HOURS

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 anyother two questions

Do not write on the question paper.

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)

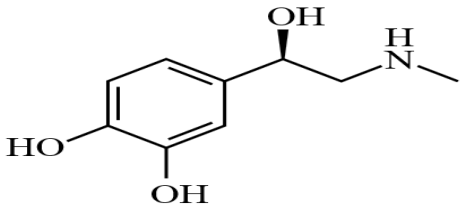
e) Give two reasons why dissolution testing is an important drug analysis test during manufacturing of drugs. (2 marks)

f) Describe how to determine end point during Karl Fischer titration (3 marks)

g) Name two methods that are used in alchohol 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)



+ $HClO_4$→

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)

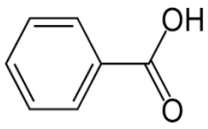
Question THREE

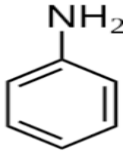
a) Define radioimmunoassay? (2 marks)
b) Outline the steps involved in aradioassay technique in drug analysis (6 marks)
c) State 3 advantages of ultrafiltration (3 marks)
d) Briefly describe a procedure for separating drug molecules in plasma using ultrafiltration (3 marks)
e) EDTA is a very nonselective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

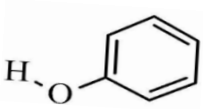
Question FOUR

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.
   i) Write an equation for the reaction (2 marks)
   ii) Calculate the volume of silver nitrate required in the reaction (4 marks)
   iii) 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)