TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN ANALYTICAL CHEMISTRY

DAC 15S

ACH 2204: Instrumental methods of analysis I

END OF SEMESTER EXAMINATION

SERIES:DECEMBER2016

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. Attemptquestion ONE (Compulsory) and any other TWO questions.
Do not write on the question paper.

Question ONE
a) In instrumental analysis how does bandwidth affect spectrophotometric accuracy (4marks)
b) Give any FOUR classification of instruments (4marks)
c) List FOUR factors that affect sensitivity of an instrument (4marks)
d) Difference between limit of detection and limit of quantitation (4marks)
e) Define the following
  (i) Selectivity (2marks)
  (ii) Sensitivity (2marks)
f) State the two methods of achieving signal enhancement (2marks)
g) Give TWO advantages and two disadvantages of automation in instrumentation (4marks)
h) Distinguish between
  (i) Mass spectroscopy and infrared spectroscopy (2marks)
  (ii) Atomic absorption spectroscopy and atomic emission spectroscopy (2 marks)

Question TWO
a) Describe how fourier analysis helps in reduction of noise (5marks)
b) Explain FIVE various sources of noise in analytical instrumentation (10marks)

Question THREE

a) Stray light is one of the factors that affect photometric accuracy, give FIVE different sources of stray light. (10marks)

b) Describe the working principles of a phototube detector (5marks)

Question FOUR

a) Define the term amplifier and explain how it helps to reduce noise (5marks)

c) State and explain the factors that affect beer lamberts law. (10marks)

Question FIVE

a) Using a sketch diagram Describe the working principles of a double beam spectrophotometer (10 marks)

b) State FIVE advantages of a double beam spectrophotometer over a single beam spectrophotometer. (5marks)