NATIONAL OPEN UNIVERSITY OF NIGERIA
14/16, Ahmadu Bello Way, Victoria Island

SCHOOL OF SCIENCE AND TECHNOLOGY
October, 2013 Examination

COURSE CODE: CHM413

COURSE TITLE: ANALYTICAL CHEMISTRY II

INSTRUCTION: Six questions to answer four
Duration: 2 hours

Question 1

a) Define the term 'error' (2 $\frac{1}{2}$ marks)
b) List and explain the various types of error (8 marks)
c) Differentiate between accuracy and precision.
(7 marks)

Question 2

Seven measurements of the pH of a buffer solution yielded the following results;
8.13, 8.21, 7.95, 8.21, 8.18, 8.20, 8.23
Calculate:

i) Mean (3 $\frac{1}{2}$ marks)
ii) Median (4 marks)
iii) Standard deviation (5 marks)
iv) The 95% confidence limits for the true mean. (5 marks)

Question 3

a) Explain the basic principle of a liquid membrane electrode.
(8 $\frac{1}{2}$ marks)

b) List and explain the factors that affect the conductance of electrolyte solutions. (9 marks)

Question 4

a) List and explain five applications of the differential scanning calorimetry. (10 marks)
b) Explain the basic principle of ion-exchange chromatography.
(7 $\frac{1}{2}$ marks)

Question 5

a) Discuss the factors that affect the conductance of electrolyte solutions.
(8 $\frac{1}{2}$ marks)

b) Differentiate between thin layer chromatography and column chromatography. (9marks)

Questions 6

Write short notes on the following:

a) Electrochemical deposition b) Particulate radiation
c)Electromagnetic radiation

d) Ion exchange techniques. (4 $\frac{1}{2}$ markeach; total of 17 $\frac{1}{2}$ marks)