NATIONAL OPEN UNIVERSITY OF NIGERIA
14-16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS
SCHOOL OF SCIENCE AND TECHNOLOGY
JANUARY/FEBRUARY 2013 EXAMINATION

CHM413 – ANALYTICAL CHEMISTRY II
JANUARY/FEBRUARY_2012/2013 EXAMINATION

Answer any four (Each question carriers a total 17 $\frac{1}{2}$ marks).
Duration: 2 hours

Question 1

a)   Distinguish between random and systematic errors
b)   Define the following terms:
    i) Standard deviation   ii)   Confidence limits
    iii) Accuracy   iv)   Precision

Question 2
Standard aqueous solutions of fluorescein are examined in a fluorescence spectrometer and yield the following fluorescence intensities.

Distance	2.1	5.0	9.0	12.6	17.3	21.0	24.7
Concentration (pg ml^{-1})	0	2	4	6	8	10	12

Determine the correlation coefficient.

Question 3
a)   Explain the basic principle of a liquid membrane electrode.
b)   Discuss the factors that affect the conductance of electrolyte solutions.

Question 4
a)   Discuss the various steps involve in preparation of columns.
b)   Explain the basic principle of ion-exchange chromatography.

Question 5
a)   Enumerate the applications of Differential scanning calorimeter.
b)   Differentiate between thin layer chromatography and column chromatography.

Questions 6
Write short notes on the following:
  a) Electrochemical deposition   b) Particulate radiation
  c) Electromagnetic radiation   d) Ion exchange techniques