BONDO UNIVERSITY COLLEGE

UNIVERSITY EXAMINATIONS 2012/2013
FIRST YEAR FIRST SEMESTER EXAMINATIONS FOR BACHELOR OF SCIENCE COMMUNITY HEALTH AND DEVELOPMENT AND PUBLIC HEALTH

BUC

COURSE CODE: SCH 3111
TITLE: PHYSICAL CHEMISTRY

DATE: 11/12/2012 **TIME: 12.00-14.00PM**

DURATION: 2 HOURS

INSTRUCTIONS

1. **This paper contains TWO sections**
2. **Answer ALL questions in section A (Compulsory) and ANY other Two questions form section B**
3. **Write all answers in the booklet provided**

SECTION A

1. Define the terms: [8 mks]
    a. Chromatography
    b. Spectroscopy
    c. Nucleons
    d. Isotopes
    e. Nucleophiles
    f. Radicals
    g. Titration
    h. Carbocation

2. Name four major types of lipids [4 mks]

3. What is a chemical reaction? [2 mks]

4. Name and define the method of determining the concentration of an acidic or basic solution [3 mks]

5. Name four spectroscopic methods of chemical analysis [4 mks]

SECTION B (40 marks) Answer any two questions

1. a. Define mass spectroscopy and describe the functions of a mass spectrometer by discussing the five important stages involved during sample analysis [11 mks]

    b. State and give a short description of three chromatographic methods [9mks]

2. a. Name and describe using examples three types of radioactive decay [9 mks]
    b. With short notes outline three health risks of radiation [6 mks]
    c. Name five radiopharmaceuticals and their relevant applications [5 mks]

3. a. Give short descriptions of acids and bases (with examples) according to: Svante Arrhenius, Nicolaus Bronsted and Newton Lewis. [9 mks]

    b. State five important properties for both acids and bases [5mks]

c. Define the term buffer in acid-bases chemistry and give three examples [6 mks]

4. a. State five major functions of organic compounds in living organisms [5 mks]

b. Define the term isomers and name three types of isomers [4 mks]

c. Name and draw four functional groups important in biological molecules [4 mks]

d.With an example describe the term condensation as used in carbohydrate chemistry [4 mks]

e. Describe three off the four levels of the protein structure [3 mks]