TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN INDUSTRIAL MICROBIOLOGY AND BIOTECHNOLOGY

DIPLOMA IN NUTRITION AND DIETETICS

ACH 2106 : FUNDAMENTALS OF INORGANIC CHEMISTRY

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: Pick Date Dec 2016

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 (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE

1(a) Define the term atomic property of an element 2mks

(ii) List down six atomic properties of an element 6mks

b(i) State three types of subatomic particles in an atom 3mks

(ii) For each subatomic particle in b(i) above, give their mass and charge 3mks

c(i) Define the term radioactivity 2mks

(ii) Describe the term isotope and give three ways in which they are used in the medical field 8mks

d.Define the following terms

(i) Atom 1mk

(ii) Molecule 1mk

(iii) Atomic weight 1mk

(iv) Element 1mk

(v) Compound 1mk

(vi) Mixture 1mk

Question TWO

a(i) Distinguish empirical formula from molecular formula 2mks

(ii) A compound contains 9.75% by mass Magnesium, 13.01% Sulphur, 26.02% Oxygen and 51.22% water of crystallization. If the relative molecular mass of the compound is 246, determine the molecular formula of the compound. (Mg =24; S =32; O =16; H =1) 8mks

b(i) Define the term orbital 2mks

(ii) Write the chemical formulae for the following compounds

(A) Potassium Dichromate 1mk

(B) Silver Chromate 1mk

(C) Magnesium Bicarbonate 1mk

Question THREE

a(i) In representing a chemical equation, certain basic requirements have to be satisfied. State four requirements 8mks

b(i) Define the term oxidation number 1mk

(ii) Determine the oxidation number of the following

(A) Chlorine in ClO_3^- 2mks

(B) Vanadium in VO_4^{3-} 2mks

(C) Chromium in $K_2Cr_2O_7$ 2mks

Question FOUR

a(i) State five characteristics of covalent compounds 10mks

(ii) Write a balanced equation for the action of Hydrogen Sulphide on Sulphur dioxide producing water and Sulphur 5mks

Question FIVE

(a)(i) Distinguish nucleon from orbital 2mks

(ii) Identify the four orbitals in the second main energy level (main shell) of Flourine atom 4mks

(iii) Determine the number of electrons in the full third main shell of an atom 2mks

(b) Write equations to show what happens when

(i) Silver Nitrate solution is added to Sodium Chloride solution 2mks

(ii) Zinc metal is added to dilute Sulphuric acid solution 2mks

(c) Write ionic equations for reactions in (b)(i) and (ii) above 3mks