



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

a(i) Define the term bulk property of an element 2mks

(ii) List six bulk properties of elements 6mks

b(i) List six atomic properties of elements 6mks

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

(ii) For each subatomic particle in c(i) above, give their mass and charge 6mks

d(i) With a well labeled diagram, describe atomic structure 7mks

(ii) Define the following terms

- (A) Covalent bond 2mks
- (B) Metallic bond 2mks
- (C) Ionic bond 2mks

Question TWO

- a. In representing a chemical equation, certain basic requirements have to be satisfied. List four requirements 8mks
- b(i) Write a balanced equation for the action of Hydrogen Sulphide on Sulphur dioxide producing water and Sulphur 5mks
- (ii) Distinguish empirical formula and from molecular formula 2mks

Question THREE

- (a) State six characteristics of ionic compounds 6mks
- (b) Write the chemical formula for the following compounds
- (i) Potassium Dichromate 2mks
- (ii) Silver Chromate 2mks
- (iii) Magnesium Bicarbonate 2mks
- (c) Using the s,p,d,f notation, write the electronic configurations of the following elements having atomic numbers as follows
- (i) 25 1mk
- (ii) 30 1mk

(iii) 45

1mk

Question FOUR

(a) State the following rules

(i) Hund's rule

2mks

(ii) Aufbau principle

2mks

(iii) Octet rule

2mks

(iv) Pauli's exclusion principle

2mks

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 $\text{K}_2\text{Cr}_2\text{O}_7$

2mks

Question FIVE

(a)(i) Copy and complete the following table

Atomic number	Element	Mass/g	No. of moles	No. of particles
23	Sodium	9.2		
197	Gold		2×10^{-3}	
56	Iron			2×10^{21}
238	Uranium	0.119		
118.7	Tin			10^{22}
107.9	Silver		5.5	
63.55	Copper	2.54		
4	Helium			3×10^{24}
12	Carbon		6×10^{-2}	
207.2	Lead	18.63		

10mks

(ii) State the five rules used in determining the filling of orbitals in the ground state

5mks