TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN INDUSTRIAL MICROBIOLOGY AND BIOTECHNOLOGY

ACH 2106: FUNDAMENTALS OF INORGANIC CHEMISTRY

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: SEPTEMBER 2018

TIME: 2HOURS

DATE: Pick DateSep2018

Instructions to Candidates

You should have the following for this examination

Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attemptquestion ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE

1(a)	State the Hess's law of constant heat summation	2mks
(b)	Define the following terms	
(i)	An endothermic compound	2mks
(ii)	An exothermic compound	2mks
(iii)	Heat of formation of a compound	2mks
(iv)	Heat of combustion of a compound	2mks
(c)	Show the schematic representation of ionic bond of the following compounds	
(i)	Sodium chloride	2mks
(ii)	Calcium Flouride	2mks
(iii)	Magnesium Sulphide	2mks

(d) Define the following terms

(i) Atomic radius 2mks

(ii) Van der waals radius 2mks

(iii) Covalent radius 2mks

(iv) Ionic radius 2mks

(e) In representing a chemical equation, certain basic requirements have to be satisfied. List four requirements. 4mks

(f) Write a balanced equation for the action of hydrogen sulphide on sulphur dioxide producing water and sulphur 2mks

Question TWO

2(a) Define the following terms

(i) Covalent bond 2mks
(ii) Metallic bond 2mks
(iii) Ionic bond 2mks
(iv) Hydrogen bond 2mks
(v) Van der waals forces 2mks

(b) 1.32g of Magnesium were dissolved in dilute hydrochloric acid and the solution was then heated in a stream of hydrogen chloride. 5.2g of anhydrous magnesium chloride remained. Find the simplest formula for magnesium chloride. (Mg=24, Cl=35.5) 5mks

Question THREE

3(a) With a well labeled diagram, describe the atomic structure 7mks

(b) Define the following terms

(i) Hunds rule 2mks

(ii) Aufbau principle 2mks

(iii) Octet rule 2mks

(iv) Paulis exclusion principle 2mks

Question FOUR

4(a) Draw a well labeled diagram of the hydrogen spectrum 10mks

(b) State the five rules used in determining the filling of orbitals in the ground state 5mks

Question FIVE

5(a) Describe the term isotope and give three ways in which they are being used in the medical field

7mks

(b) Showing all the steps involved, write a balanced redox equation considering the oxidation of sulphite ion SO_3^{2-} into Sulphate ion SO_4^{2-} by acidified potassium permanganate 8mks