



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN PHARMACEUTICAL TECHNOLOGY

ACH 2215 : INORGANIC CHEMISTRY

SPECIAL SUPPLEMENTARY EXAMINATION

SERIES:AUGUST2017

TIME:2HOURS

DATE:Pick DateSep2017

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) Discuss the diagonal relationship of boron with silicon (6 marks)
- b) Explain the relationship between the atomic size and ionization energy (4marks)
- c) Explain any three factors influencing ionization energy (6marks)
- d) State any **FOUR** chemical properties of Alkali metals, support each with a balanced equation (4 marks)
- e) Explain each of the following observations:
 - i) Phosphorous is stored under water (1marks)
 - ii) Mercury is stored in iron bottles (1marks)
 - iii) Sodium is stored under paraffin (1marks)
 - iv) Nitrous oxide rekindles a glowing splint (1marks)
- f) Oxygen is a gas but sulphur is a solid at room temperature suggest reasons for this occurrence (3marks)
- g) Give reasons why Aluminium oxide is amphotenic white Boric oxide is acidic (3 marks)

Question TWO

Describe the sulphate process for the manufacture of pigment grade TiO_2 and explain why TiO_2 has replaced lead as paint pigment use **(15marks)**

Question THREE

- Outline any four properties of beryllium that make it differ from the rest of the alkaline earth metals **(4 marks)**
- Transition elements and D-block elements are two terms that are easily confused.
 - Using appropriate definition explain why Zn and Sc are not transition metals **(4marks)**
 - What would be the oxidation state of the ions of Sc and Zn **(2 marks)**
- Explain how ionic radius influences covalent or ionic nature of a compound **(3 marks)**
- State any FOUR industrial uses of complex compounds **(2 marks)**

Question FOUR

- Explain the following statements:
 - Aluminium Chloride is essentially covalent while Aluminium Fluoride is ionic **(3 marks)**
 - Aqueous solution of Aluminium compounds are acidic **(3 marks)**
- The ionization value IE_1 of magnesium is 737 kJ mol^{-1} higher than that of Sodium (Na) 496 kJ mol^{-1} explain **(4marks)**
- State any FIVE characteristics of transition metals **(5marks)**

Question FIVE

- Describe the periodic trend of **(12 marks)**
 - Electronegativity
 - Ionization energy
 - Melting point
 - Atomic radius
- Explain why the first elements in each group exhibit considerable differences from the rest of the elements of the same group **(3 marks)**