

**W1-2-60-1-6**

**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS 2018/2019**

**FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR THE DEGREE OF BACHELOR OF PHARMACY**

**PHA 2115: INORGANIC CHEMISTRY II**

**DATE: SEPTEMBER, 2019 TIME: 3 HOURS**

INSTRUCTIONS: ANSWER ANY FIVE QUESTIONS

**QUESTION ONE: 20 MARKS**

a. Explain the following steps in analysis

 i. Plan of analysis (2 marks)

 ii. Removal of analyte from interfering compounds (2 marks)

 iii. Dissolution of sample (2 marks)

 iv. Drying (2 marks)

 v. Sampling (2 marks)

b. Indicate the type of bonding in or between:-

 i. Water molecules (1.5 marks)

 ii. Hydrogen ion (1 mark)

 iii. Hydrogen fluoride (1.5 marks)

 iv. Magnesium bromide (1 mark)

c. Provide ascending order of :-

 i. Lionisation energy (2 marks)

 ii. Atomic/lonic radius (2 marks)

     

 Given reasons for your answer in each case

d. Explain how temporary hardness of water can be removed by any suitable method (1 mark)

**QUESTION TWO: 20 MARKS**

a. Distinguish between:-

 i. and hybudesation (2 marks)

 ii. Lonisation energy and lattice energy (2 marks)

b. Explain the merits and demerits of using instrumental methods of analysis as compared to classical methods of analysis. (4 marks)

c. Provide the type of structure for the following:-

 i. Water (1 mark)

 ii. Carbondioxide (1 mark)

 iii. Methane (1 mark)

d. Explain the following:-

 i. Electro negativity (1 mark

 ii. Radioactivity (1 mark)

 iii. Halt life (1 mark)

 iv. Isotopes (1 mark)

e. Explain how you would determine the molarity of hydrochloric acid used acid base reaction in ………………. colour indicator is used to determine the end point. (5 marks)

**QUESTION THREE: 20 MARKS**

a. Explain the various processes that occur ……………. (10 marks)

 i. Alpha

 ii. Beta

 iii. G…..

 Interacts with matter

b. Explain the following nodes of decay: (10 marks)

 i. Electrum cophare

 ii. Negatron

 iii. Ga……

 Under the following sub-heading

 i. Nature

 ii. General equation and specific equation

 iii. Decay scheme

**QUESTION FOUR: 20 MARKS**

a. Describe how a half life of a radenuchde can be determined. (5 marks)

b. Complete the following nuclear reactions and identify the products or reactants

 i.  (1 mark)

 ii.  (1 mark)

 iii.  (2 marks)

c. Describe briefly the applications of radioactivity under the following:-

 i. Analytical chemistry (3 marks)

 ii. Industry (3 marks

 iii. Agriculture (2 marks)

 iv. Medicine (2 marks)

**QUESTION FIVE: 20 MARKS**

a. Describe the analytical laboratory infrastructure (10 mark)

b. Write balanced half cell and overall reactions that the following redox reactions

i.  (2 marks)

ii.  (3 marks)

iii.  (3 marks)

c. Provide electronic configuration of

  (2 marks)

**QUESTION SIX: 20 MARKS**

a. Explain the various/ the following types of bonds, giving one examples in each case:-

 i. Hydrogen bonding (4 marks)

 ii. Ionic bonding (4 marks)

 iii. Dative bonding (4 marks)

 iv. Covalent bonding (4 marks)

 v. Metallic bonding (4 marks)

**QUESTION SEVEN: 20 MARKS**

a. Provide a balanced chemical reaction that occurs when

 IS BURNT UNDER

 i. Plentiful supply of oxygen (2 marks)

 ii. United amount of oxygen (2 marks)

b. Explain the effects of

 i. Carbon monoxide (CO)

 ii. Carbon dioxide (CO2)

 When eruvted with the environment (14 marks)