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**GARISSA UNIVERSITY**

**UNIVERSITY EXAMINATION 2020/2021 ACADEMIC YEAR ONE**

**SECOND SEMESTER EXAMINATION**

**SCHOOL OF SCHOOL OF PURE AND APPLIED SCIENCES**

**FOR THE DEGREE OF BACHELOR OF EDUCATION**

**COURSE CODE: CHE 111**

**COURSE TITLE: FUNDAMENTAL OF CHEMISTRY**

**EXAMINATION DURATION: 2 HOURS**

**DATE: 09/10/2021 TIME: 12.00-2.00 PM**

**INSTRUCTION TO CANDIDATES**

* **The examination has FIVE (5) questions**
* **Question ONE (1) is COMPULSORY**
* **Choose any other TWO (2) questions from the remaining FOUR (4) questions**
* **Use sketch diagrams to illustrate your answer whenever necessary**
* **Do not carry mobile phones or any other written materials in examination room**
* **Do not write on this paper**

**This paper consists of FOUR (4) printed pages *please turn over***

**NB: speed of light 3.0 x 108ms-1**

**QUESTION ONE (COMPULSORY)**

(a) Define the following terms

1. Redox reaction
2. Electronegativity
3. Shielding
4. Element
5. Hybrid orbitals
6. Resonance structures (**12 Marks**)

(b) Write the electron configuration of the following elements

1. Magnesium (Mg)
2. Potassium (K)
3. Silver (Ag)
4. Krypton (Kr) (**8 Marks**)

(c) Draw the Lewis structure in terms of dots of the following compounds

1. MgCl2
2. Cl2
3. [NH4]+
4. CO2
5. F2 (**10 Marks)**

**QUESTION TWO (20 Marks)**

1. What are the Lewis definitions of an acid and a base? (**4 Marks)**
2. Differentiate between intermolecular forces and intramolecular forces of attraction (**4** **Marks**)
3. Balance the following equations: (**12 Marks**)



**QUESTION THREE (20 Marks)**

1. Discuss briefly the following periodic trends for elements in the Periodic Table
2. Electron affinity
3. Ionization energy
4. Effective nuclear charge
5. Shielding
6. Atomic radius
7. Ionic radius (12 **Marks**)
8. Assign the oxidation numbers of the underlined elements
   1. Mn2O7
   2. NaH
   3. CrCl3
   4. OF2  (**8 Marks**)

**QUESTION FOUR (20 Marks)**

1. What is the frequency of light whose wavelength is 600 nm? (**6 Marks**)
2. Define the following:
3. Covalent bonding
4. Ionic bonding
5. Dative covalent bonding(**9 Marks**)
6. List the five main proposals in Dalton’s Atomic Theory of matter: (**5 Marks**)

**QUESTION FIVE (20 Marks)**

1. Describe Thomson’s Plum Pudding or Raisin Bun Atomic Model (**10 Marks)**
2. Describe Rutherford’s Nuclear Model of Atom (**10 Marks)**