



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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University Examinations 2023/2024

FIRST YEAR, SECOND SEMESTER EXAMINATION FOR DIPLOMA IN AGRICULTURE

AAD 2204: CHEMISTRY

DATE: DECEMBER 2023

TIME: 1.5 HOURS

INSTRUCTIONS: Answer question *one* and any other *two* questions

QUESTION ONE (30 MARKS)

- a) State the three sub-atomic particles (3 marks)
- b) Use the SPDF system to represent the electron arrangement of the following elements. (4 marks)
 - i. Sodium (11e)
 - ii. Titanium (22e)
- c) Highlight four contributions of chemistry towards advancement of agriculture in the world today. (4 Marks)
- d) What volume will 50g of ozone occupy at room temperature and pressure? (3 marks)
- e) State four types of orbitals (4 Marks)
- f) List five radicals of common chemical elements (5 marks)
- g) What volume of 0.65g of chlorine gas occupy at standard temperature and pressure. Chlorine c relative mass = 35.5 (5 marks)
- h) Highlight the three key classifications of hydrocarbons (3 marks)

QUESTION TWO (15 MARKS)

Discuss five chemical reaction of alkali metals under the following areas and indicate one balanced chemical reaction respectively

- i. Reaction with air/oxygen (3 marks)
- ii. Burning in air/oxygen (3 marks)
- iii. Reaction with water (3 marks)
- iv. Reaction with water vapour/steam (3 marks)
- v. Reaction with chlorine gas. (3 marks)

QUESTION THREE (15 MARKS)

- a) Discuss five characteristics of covalent compounds (10 marks)
- b) Write short notes on the difference between acid and base give an example in each (5 marks)

QUESTION FOUR (15 MARKS)

- a) Briefly discuss five factors affecting chemical reactions (10 marks)
- b) Give five rules used in naming branched alkyls (5 marks)