



**UNIVERSITY OF SWAZILAND**

**SUPPLEMENTARY EXAMINATION**

**PROGRAMMES: BACHELOR OF SCIENCE YEAR I IN AGRICULTURAL ECONOMICS AND AGRIBUSINESS, ANIMAL SCIENCE, AGRICULTURAL EDUCATION, AGRONOMY, FOOD SCIENCE, NUTRITION AND TECHNOLOGY, HOME ECONOMICS, HOMEECONOMICS EDUCATION, HORTICULTURE, AND TEXTILE AND APPAREL DESIGN MANAGEMENT**

**COURSE CODE: CP 101**

**TITLE OF PAPER: CHEMISTRY**

**Section 1: Inorganic Chemistry  
Section 2: Organic Chemistry**

**TIME ALLOWED: TWO (2) HOURS**

**INSTRUCTIONS: ANSWER FOUR (4) QUESTIONS WITH TWO QUESTIONS FROM EACH SECTION**

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**Section 1: Inorganic Chemistry**

**QUESTION 1**

- (a) Calculate the percentage of nitrogen in urea [CO(NH<sub>2</sub>)<sub>2</sub>]  
(Atomic masses: C=12, N = 14, H =1, O = 16) [10]
- (b) The chemical analysis of a compound gave the following results: 41.1% C, 5.5% H, and 43.8% O and 9.6% N. Calculate the empirical formula of this compound. [15]

**QUESTION 2**

Define or give brief descriptions of the following terms: (Each question carries 5 marks)

- (a) A reducing agent
- (b) A catalyst
- (c) Mixture
- (d) Matter
- (e) Exothermic reaction

**QUESTION 3**

- (a) You prepared a 0.02 M sodium carbonate solution as a standard base and you needed 15 ml of it (the base) to titrate 20 ml of sulphuric acid (H<sub>2</sub>SO<sub>4</sub>) of unknown concentration. Calculate the normality of the acid. [15]
- (b) Write a balanced equation for the reaction in (a) above. [10]

## Section 2: Organic Chemistry

## QUESTION 4

(a) Define or give short descriptions of the following terms: (Each question carries 2 marks)

- (i) Alkyne
- (ii) Aldehyde
- (iii) Unsymmetrical compound
- (iv) Essential amino acid
- (v) Carbonyl carbon
- (vi) Halogenation
- (vii) An ester
- (viii) Elimination reaction
- (ix) A hydrocarbon

(b) (i) State Markovnikov's Rule and give an equation to demonstrate the use of this rule

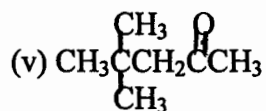
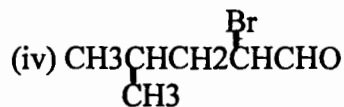
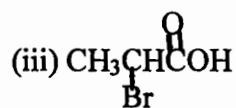
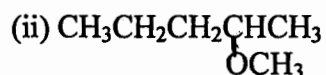
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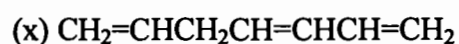
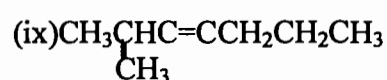
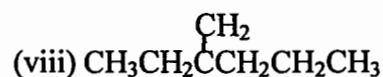
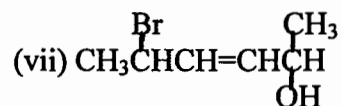
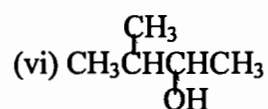
(ii) Explain the basis for carbon monoxide poisoning in humans

[3]

## QUESTION 5

(a) Write IUPAC names for each of the following: (Each question carries 2.5 marks)





## QUESTION 6

Copy and complete the following equations: (Each question carries 2.5 marks)

