



Technical University of Mombasa

Faculty of Applied and Health Sciences

DEPARTMENT OF **ENVIRONMENT AND HEALTH SCIENCE**

DIPLOMA IN ENVIRONMENTAL SCIENCES

(DES 12S)

ACH 2102: FUNDAMENTAL CHEMISTRY

SPECIAL/SUPPLEMENTARY: EXAMINATIONS

SERIES: February 2013

TIME: 2 HOURS

INSTRUCTIONS:

You should have the following for this paper

- *Answer booklet*

This paper consists of **FIVE** questions.

Answer Question **ONE (compulsory)** and any other **TWO** questions

This paper consists of 2 **PRINTED** pages

Question ONE

- a) Explain why the solubility of carbonytic decrease with increase of number of carbon atom
(5marks)
- b) State any FIVE types of chemical solutions (5marks)
- c) Differentiate between reducing agent and oxidizing agent (4marks)
- d) Explain why aldehyde and ketones have higher boiling point than non-polar compound of similar molecular weight. (4marks)
- e) Why do ionic compounds easily dissolves in water (4marks)
- f) Using relevant examples explain why second ionization energy is greater than first imitation energy (4marks)

Question TWO

- a) Explain two types of polymerizing two examples in each case (4marks)
- b) Write the steps for the IUPAC system of nomendutire of alkane (4marks)
- c) Explain why 2-methylbutane have higher boiling point than 2, 2-dimethy C pupane (4marks)
- d) Differentiate between saturated and unsaturated and unsaturated hydrocarbon (3marks)

Question THREE

- a) Discuss FOUR methods of preparation of alkenes showing the reacting product and the catalyst.
(12marks)
- b) Explain the treat of ionization energy down & across the period (3marks)

Question FOUR

- a) Nitrogen gas combine with hydrogen to form Ammonia as shown below



Describe giving reason the effect on the position of equilibrium if

- (i) Temperature is increased from 25°C to 98°C (3marks)
- (ii) Pressure is decreased (3marks)
- (iii) Hydrogen is reduced (3marks)
- (iv) Catalyst is used (2marks)
- b) Use the equation below to identify
- (i) Oxidized and reduced species (2marks)
- (ii) Reducing and oxidizing agent (2marks)

Question FIVE

- a) Explain the periodic trend of
- (i) Ionization energy (3marks)
- (ii) Electronegativity (3marks)
- (iii) Melting point (3marks)
- (iv) Reactivity (3marks)
- Down the group and across the groups
- b) Explain why group I elements are none reactive than group two elements (3marks)