**GATITU MIXED SECONDARY SCHOOL**

**END OF TERM ONE EXAM (CAT 1)**

**CHEMISTRY**

**FORM III 2015**

***INSTRUCTIONS:***

* *Answer all the questions in the spaces provided*
* *Remember to write your name and admission number.*

1. Study the flow chart below and answer the questions that follow.

ETHANOL

D

CONC. H2SO4

A

C

Br2

H2 High pressure

B

O2 (excess)

Gas F

E

Na Lime water

White Precipitate

Gas G

1. Identify substances: (4 marks)

A\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

B\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

F\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

G\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) Write down the equation for the formation of:

(i) Substance C (1 mark)

(ii) E and F (2 marks)

(iii) Gas G (2 marks)

c) Substance D was found to have a molecular mass of 42,000. Determine the number of molecules present in the substance. (H=1, C=12) (2 marks)

d) State:

(i) The condition necessary for the conversion of ethanol to substance A. (1 mark)

(ii) The catalyst required in the conversion of A to B. (1 mark)

1. The results below were obtained in an experiment conducted by form 3 students

from Keringeti Secondary school using Magnesium.

- Mass of the crucible + lid = 19.52g

- Mass of the crucible + lid + Magnesium Ribbon = 20.36g

- Mass of the crucible + lid + Magnesium oxide = 20.92g

1. (i) Use the results to find the percentage mass of Magnesium & Oxygen in Magnesium oxide

(2 marks)

(ii) Determine the empirical formula of magnesium oxide. (Mg=24.0, O=16.0) (2 marks)

b) Sodium hydroxide pellets were accidentally mixed with sodium chloride 8.8g of the

mixture were dissolved in water to make one litre of solution. 50cm3 of the solution

was neutralized by 20cm3 of 0.25M sulphuric acid.

(i) Write an equation for the reaction that took place. (1 mark)

(ii) Calculate the:

number of moles of the substance that reacted with sulphuric acid. (2 marks)

number of moles of the substance that would react with sulphuric acid in the

one litre solution (1 mark)

(iii) the percentage of sodium chloride in the mixture. (2 marks)

(H=1.0; Na=23.0; Cl=35.5; O=16.0)

Give the systematic names of the following compounds

* 1. CH3 CH2 CH2 CH − CH3  (1 mark)

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CH3

(ii) H Cl (1 mark)

C = C C CH3

H CH3 H

(b) Study the flow chart below and answer the questions that follow.

CaC2 + x

Ca (OH) 2

1 mole HCl

Step 2

Z

C2H4

H H

C C

H H 2

1 mole H2

Step 3

H2 150oC

Step 4

CH3CH3

Gas Y

Step 1

200oC high pressure

Step 5

1. Identify reagent x (1 mark)

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1. Name the catalyst used in step 4. (1 mark)

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1. Draw the structural formulae of gas y. (1 mark)

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1. What name is given to the process that takes place in step 5? (1 mark)

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1. Identify substance Z. (1 mark)