

Adm..... Name..... Class.....

**GATITU SECONDARY SCHOOL P.O.BOX 327-0130 GATUNDU
FORM THREE C/CHEMISTRY PAPER 2 TERM 3 2014.**

Time 2 Hours.

INSTRUCTIONS

1. Write your name and admission number in the spaces provided .
2. Answer **ALL** the questions in the spaces provided.
3. Mathematical tables and silent electronic calculators may be used.
4. **ALL** working **MUST** be clearly shown where necessary.

FOR EXAMINER'S USE ONLY

QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
1		
2		
3		
4		
5		
6		
7		
TOTAL	80	

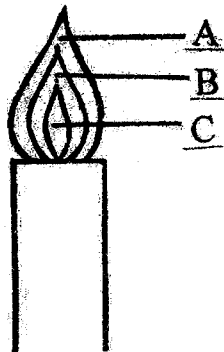
This paper consists of printed pages

Turn Over

1. (a) State two long-term effects of drug abuse. (1 mark)

(b) Explain why most laboratory apparatus are made of glass. (2 marks)

(c) The following diagram represents a non-luminous flame of the bunsen burner.



(i) Name the parts labeled

A _____

(1 mark)

B _____

(1 mark)

C _____

(1 mark)

(ii) Which of the parts in (c) above is the hottest?

(1 mark)

(iii) A non-luminous flame is preferred for heating. Explain.

(1 mark)

(d) (i) Name the other type of flame produced by a Bunsen burner. (1 mark)

(ii) Under what conditions does the Bunsen burner produce the flame you have named in d(i) above? (1 mark)

(e) After use, a non-luminous flame should be put off or adjusted to the other flame. Explain. (1 mark)

2. Below is a brief outline of a method used in preparing lead chloride.
 Lead carbonate is added to warm dilute nitric (V) acid. When the carbonate has reacted with the warm acid, more carbonate is added until the carbonate is in excess. The mixture is filtered. Some sodium chloride solution is added to the filtrate.

(a) (i) What observations are made when lead carbonate is added to the warm nitric (V) acid. (1 mark)

(ii) What happens when sodium chloride is added to the filtrate. (1 mark)

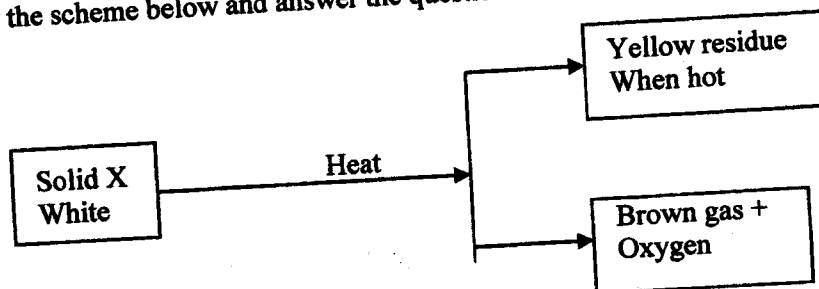
(b) Write an equation for the reaction between:
 (i) The carbonate and the acid. (1 marks)

(ii) The filtrate and sodium chloride (1 marks)

(c) Write an ionic equation for the reaction in b (ii) (1 marks)

(d) Name the reaction that takes place between the filtrate and sodium chloride. (1 mark)

(e) Study the scheme below and answer the questions that follow.

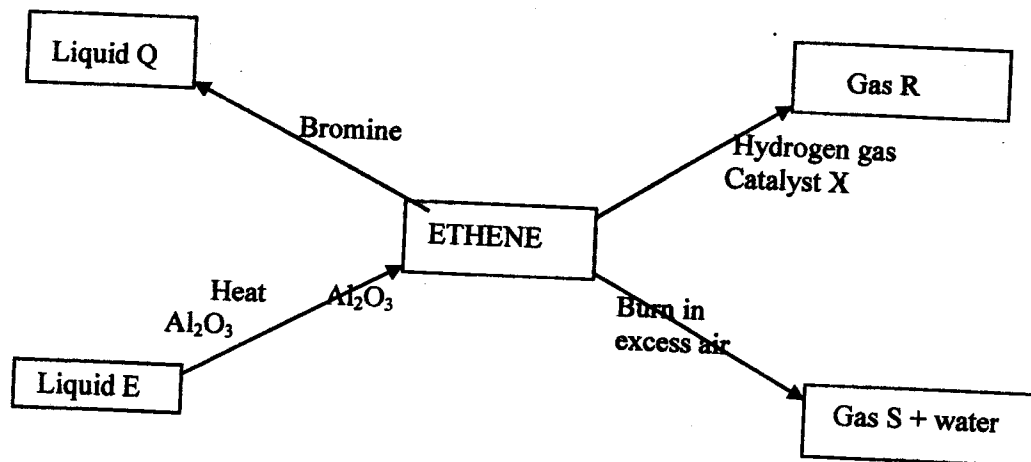


Name (i) Solid X _____ (1 mark)

(ii) The yellow residue _____ (1 mark)

(iii) Write an equation for the decomposition of solid X. (1 mark)

3. Use the reaction scheme below to answer the questions that follow.



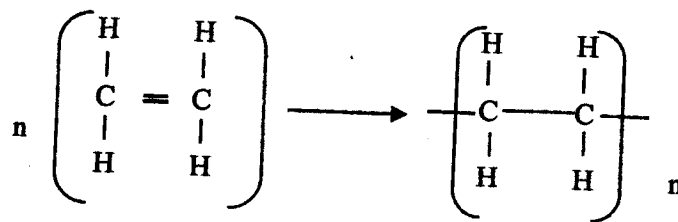
(a) (i) Give the names and formula of substances (4 marks)

<u>Name</u>	<u>Formula</u>
R _____	_____
S _____	_____
Q _____	_____
E _____	_____

(ii) Name the homologous series that gas R belongs. (1 mark)

(iii) Describe a chemical test which would be used to identify the gas S. (2 marks)

(b) Ethene C_2H_4 is the starting material for plastic bag carrier bags



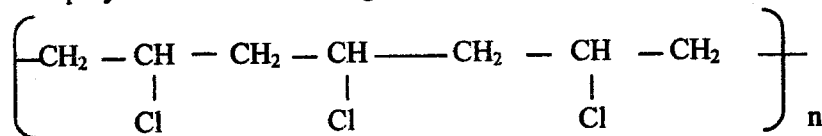
(i) Name the chemical reaction shown above. (1 mark)

(ii) Name the product formed by this reaction. (1 mark)

(iii) Explain why plastic bags should not be thrown away. (1 mark)

(iv) State one advantage a plastic bag has over a paper bag. (1 mark)

(c) A polymer has the following structure.



A sample of this polymer is found to have a molecular mass of 750.
Determine the number of monomers in the polymer.

(Cl = 1, C = 12, H = 1)

(1 marks)

4. The grid below represents part of the periodic table. Study it and answer the questions that follow. The letters do not represent the actual symbols of elements.

E			H				J	
	N							
F	G					L		K
							M	

(i) Identify the element which gains electrons most readily. (1 mark)

(ii) Which of the metals is the most reactive? Explain. (2 marks)

(iii) What name is given to the family to which elements E and F belong? (1 mark)

(iv) Explain why the ionic radius of F is smaller than that of L. (2 marks)

(v) Explain why element F forms ions more readily than E. (2 marks)

(vi) Write down the equation of the reaction between G and J. (1 mark)

(b) Study the table below and use it to answer the questions that follow.

Substance	X	Y	W	U	S	T
Melting point ($^{\circ}\text{C}$)	801	113 119	-39	-5	-10	1356
Boiling point ($^{\circ}\text{C}$)	1410	444	457	54	-36	2860
Electrical conductivity of solid	Poor	Poor	Good	Poor	Poor	Poor
Electrical conductivity of molten	Good	Poor	Good	Poor	Poor	Poor

(i) Name the type of bond that exist in:

W _____ (1mark)

X _____ (1mark)

(ii) Which substance has a molecular structure and exists in gaseous state at room temperature? (1 mark)

(iii) Both X and W conduct electricity in liquid state. Explain the difference in conductivity. (1 mark)

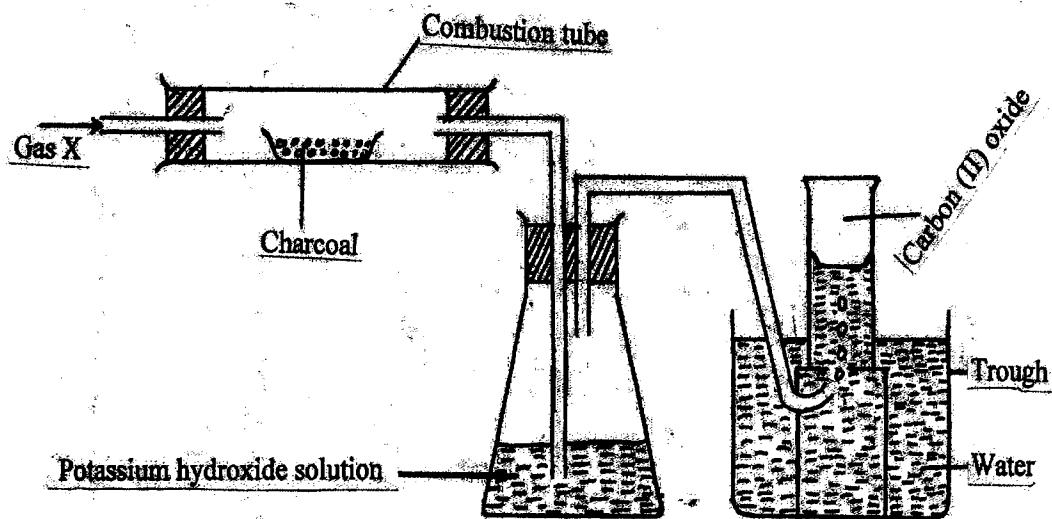
(a) Give the sources of carbon (IV) oxide and ammonia used in the solvay process. (1 mark)

Carbon (IV) oxide _____

Ammonia _____

(b) State one use of sodium carbonate. (1 mark)

(c) The diagram below is an experimental set up for the preparation of carbon (II) oxide. Study it and answer the questions that follow.



- (i) Identify gas X _____ (1 mark)
- (ii) State one condition that is missing in the set up but must be present for the experiment to proceed. (1 mark)
- (iii) What is the role of potassium hydroxide? (1 mark)
- (iv) Why is the gas collected using the method shown? (1 mark)
- (v) Name another substance that can be used instead of potassium hydroxide. (1 mark)
- (vi) Describe a simple test that can be used to distinguish between carbon (II) oxide and carbon (IV) oxide. (1 marks)

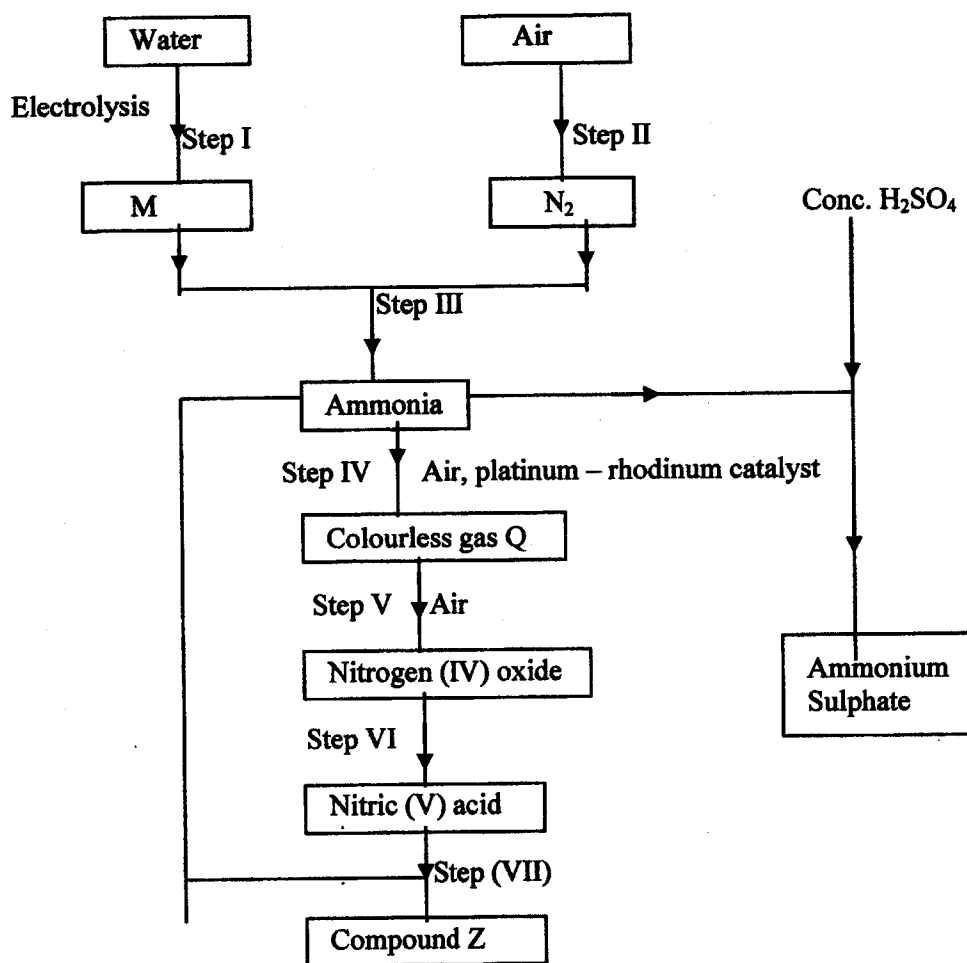
(vii) Why is it necessary to carry out the experiment in a fume cupboard? (1 mark)

5. (a) Fractional distillation of liquid air is mainly used to obtain nitrogen and oxygen.

(i) Name one substance that is used to remove carbon (IV) oxide from the air before it is changed into liquid. (1 mark)

(ii) Describe how nitrogen gas is obtained from the liquid air. (Boiling points nitrogen = -196°C , Oxygen = -183°C) (3 marks)

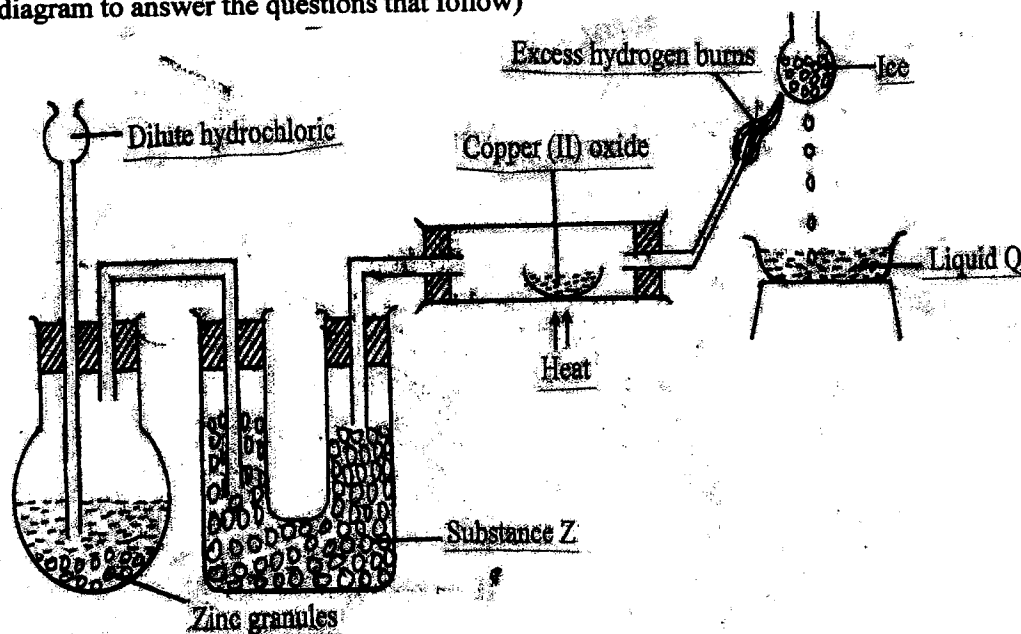
(b) Study the flow chart below and answer the questions that follow.



- (i) Name substance M _____ (1 mark)
- (ii) Identify gas Q _____ (1 mark)
- (iii) State one use of compound Z _____ (1 mark)

(iv) A fertilizer manufacturing industry uses 1400dm^3 of ammonia gas per hour to produce ammonium sulphate. Calculate the amount of ammonium sulphate produced in kg for one day if the factory operates for 18 hours.
 (N = 14, H = 1, S = 32, O = 16, 1 mole of gas = 24dm^3) (3 marks)

6.(a) In an experiment to investigate the properties of hydrogen, a student set up the apparatus as follows:
 (Use the diagram to answer the questions that follow)



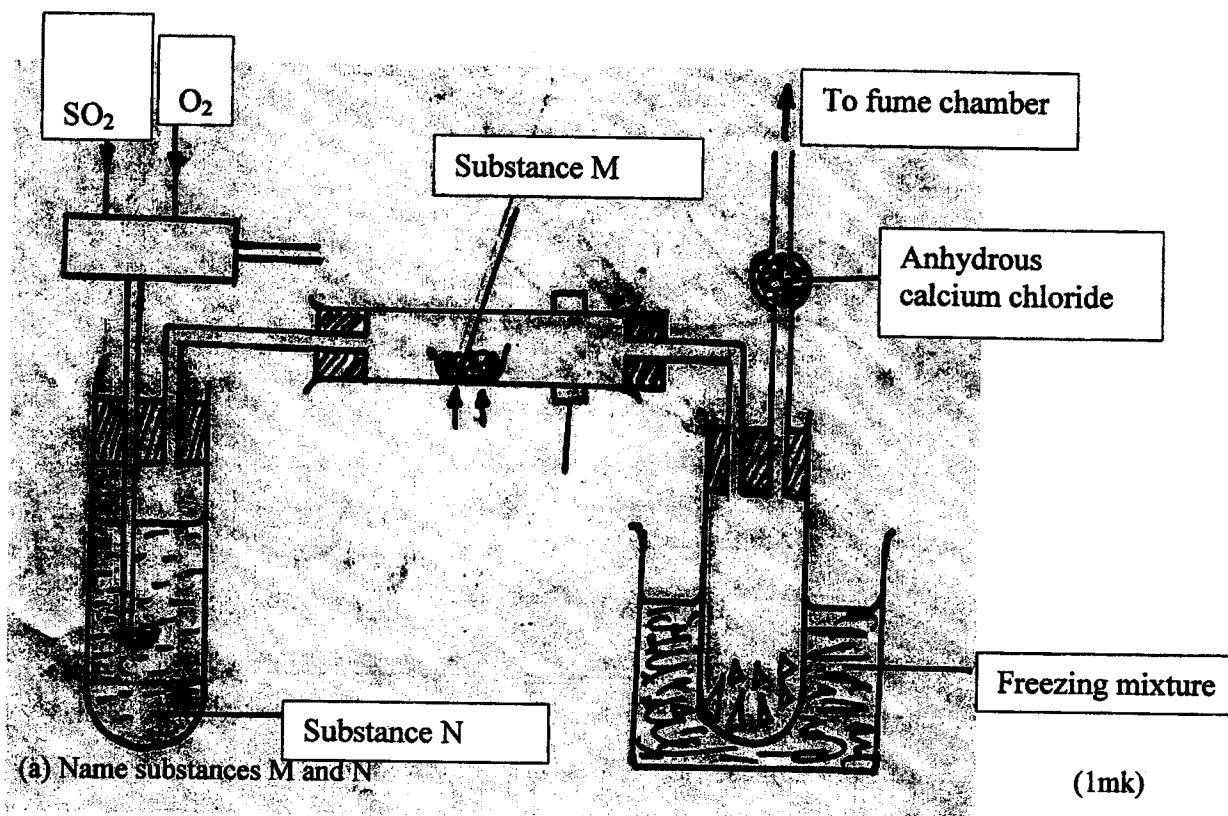
(i) Name substances Z and Q. (1 mark)

Z _____

Q _____

- (ii) State two properties of hydrogen that were being investigated. (2 marks)
- (iii) Give two precautions that should be taken towards the end of the experiment. (1 mark)
- (iv) State two reasons why it is not suitable to use dilute nitric (V) acid in the preparation of hydrogen? (1 mark)
- (v) Give a reason why hydrogen is used to fill meteorological balloons. (1 mark)
- (vi) Describe one chemical test that can be carried out to identify liquid Q. (1 mark)

7. The figure below represents a set-up that can be used to prepare sulphur (VI) oxide. Study it and answer the questions that follow



M.....

N

(b) State the function of substance N

(1mk)

(d) What is the advantage of using calcium oxide instead of anhydrous calcium chloride in the experiment above?

(1mk)

(II) Concentrated sulphuric (VI) acid is manufactured in large scale through contact process

(i) Identify two substances that are recycled during contact process

(1mk)

(ii) Why is recycling necessary? Give two reasons

(1mk)

(b)(i) Sulphur (IV) oxide gas is removed by scrubbing in the contact process. What is meant by scrubbing?

(1mk)

(ii) Write an equation showing how Sulphur (IV) oxide is scrubbed

(1mk)

(c) Explain why sulphur (VI) oxide is dissolved in concentrated sulphuric (VI) acid and not in water during contact process

(1mk)

(III) Given that a concentrated solution of sulphuric (VI) acid 18.2M, determine the volume of the concentrated sulphuric (VI) acid that can be mixed with distilled water to make one litre of 2M sulphuric (VI) acid solution

(2mks)