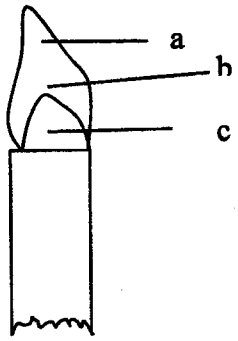
ADM.....NAME.....CLASS.....

GATITU SECONDARY SCHOOL P.O. BOX 327-01030 GATUNDU
FORM TWO CHEMISTRY END-TERM TEST
TERM III 2014

Instructions
Answer all the questions in the spaces provided

1. Consider the diagram below.



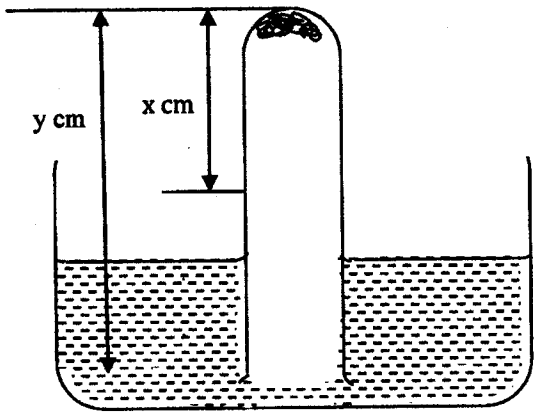
Name the regions labeled a, b, c. (3 marks)

a .....

b .....

c .....

2. Some moist iron wool was placed in a test tube and the tube was inverted and set up as shown below.



The apparatus was left for one week. The water level rose and iron wool turned red-brown.

(i) Write the chemical equation to show the rusting of iron. (1 mark)

(ii) Write the expression for an approximate percentage. (1 mark)

(iii) State two similarities between rusting and combustion.

(a) 1 mark)

(b) (1 mark)

(iv) State two methods of prevention of rusting. (2mks)

4. A student was asked to prepare Lead (II) chloride salt using the following ingredients; Nitric (V) acid, lead (II) oxide and hydrochloric acid. Using equations only explain how the salt can be prepared. (2 marks)

5. The nitrates of the following metals were heated strongly and observation made accordingly. The nitrate of metal **P** produced the metallic oxide, Nitrogen (IV) oxide and oxygen gas; and that of metal **Q** produced the metallic nitrite and oxygen gas. The nitrate of **R** produced metal **R,** nitrogen (IV) oxide and oxygen gas. Arrange the metals in order of reactivity beginning with the most reactive. (1 marks)

6. Use the table below to answer the questions that follow. (The letters are not actual symbols of the elements)

Element	Atomic number	M.P (^{0}C)
A	11	97.8
B	13	660
C	14	1410
D	17	-101
E	19	63.7

a) Write the electronic arrangement of elements
B and **D** (1mks)

b) Select an element which is

i) A poor conductor of electricity. (1mk)

ii) The most reactive non-metal. (1mk)

c) To which period of the periodic table does element **E** belong? (1mk)

d) Element **E** losses its outermost electron more readily than **A**. Explain. (1mks)

e) Use dots (•) and crosses (x) to represent the valence electrons and show the bonding in the compound formed between element **C** and **D.** (2mks)

f) Explain why the melting point of element **B** is higher than that of element (2mks)

g) Write an equation for the reaction that takes place between element **A** and water(1mk)

h) Describe how a solid mixture of the sulphate of element **E** and lead (II) sulphate can be separated into solid samples. (3mks)

7. The table below gives properties of four substances.

Substances	**Melting points**	**Boiling points**	**Electrical conductivity**	
			Solid	**Liquid**
A	1083	2567	Good	Good
B	-182	-164	Poor	Poor
C	1723	2230	Poor	Good
D	993	1695	Poor	Poor

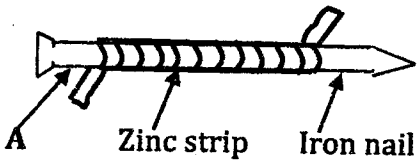
State with a reason which of the above is:-

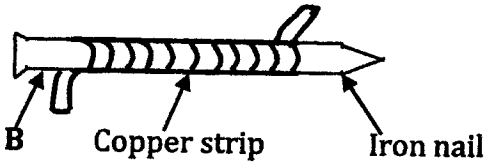
i) An ionic compound. (1mk)

ii) A metallic structure. (1mk)

iii) A giant atomic structure. (1mk)

8. The diagrams below represent two iron nails with some parts wrapped tightly with zinc strips, respectively.





What observations would be made at the exposed points **A** and **B** if the wrapped nails are left in the open for several months? Explain.

Observation at **A**. (1mark)

Explanation: (1mark)

Observation at **B**. (1mark)

Explanation: (1mark)

9. The grid below represents part of the periodic table. Study it and answer the questions that follow. The letters are not the actual symbols.

W				Q			S	
T			Y			R	U	
V						K	Z	

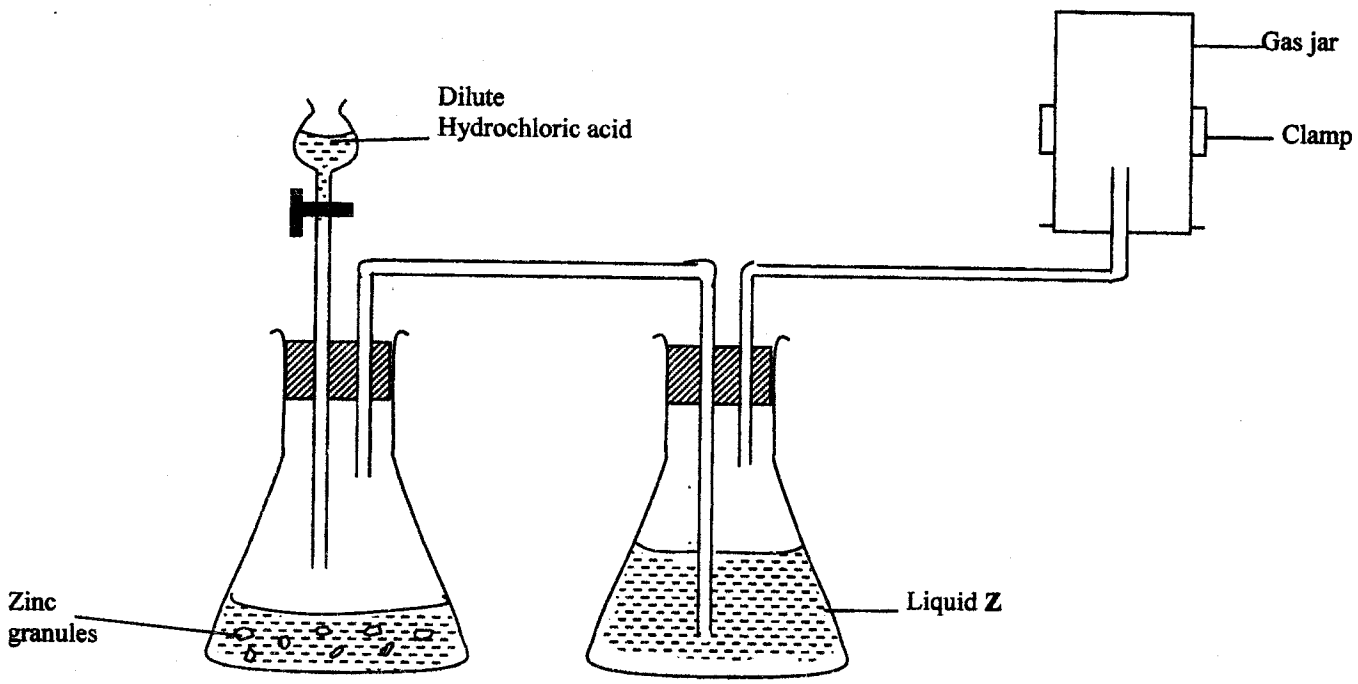
(a) Hydrogen can be placed in group I or group VII. Explain. (1 mark)

(b) Write the formula of the compound formed between element Y and R.(1 mark)

(c) How does the atomic radii of T and K compare. Explain. (1 mark)

(d) what name is given to the family of elements W, T and V. (1mk)

10. Study the diagram below and answer the questions that follow. **(3 marks)**



(a) Write an equation for the reaction between zinc granules and dilute hydrochloric acid. (1 mark)

(b) What property of hydrogen is demonstrated by the method of collection shown on the diagram? (1 mark)

(a) Hydrogen gas passed through liquid **Z**. What is the name of liquid **Z** and what is the purpose of liquid **Z**? (1 mark)

(b) Name one industrial use of hydrogen. (1 mark)

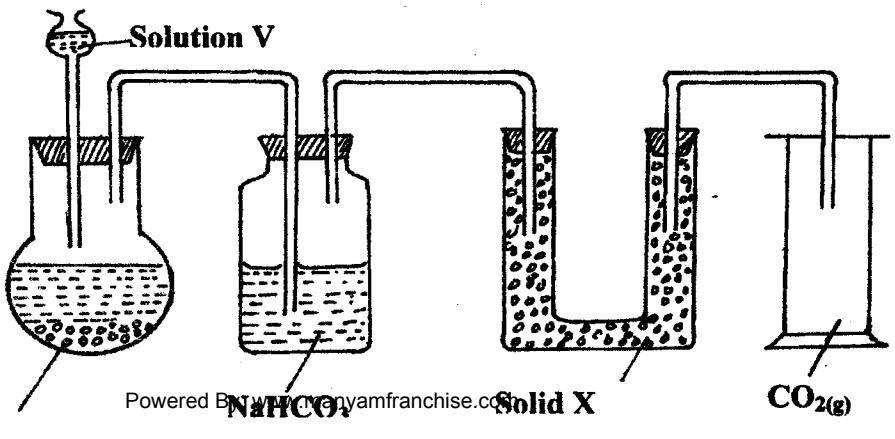
11. Dilute sulphuric (VI) acid reacts with aqueous sodium hydroxide to form a salt. Give the formula and name of the anion in the salt.

Name: (1 mark)

Formula: (1 mark)

12. Starting with zinc metal and dilute sulphuric acid, describe how a sample of zinc (II) sulphate may be prepared in the laboratory. (3mks)

13. The apparatus shown below were used for the preparation of hydrogen sulphide gas in the laboratory



a) Name;

i) Solution V (1mk)

ii) Solid X (1mk)

iii) Solid W (1mk)

b) Write an equation for the preparation of carbon (IV) oxide (1mk)

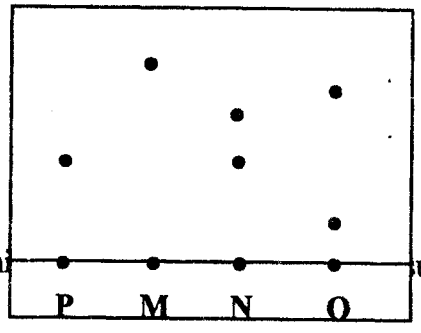
c) What property of the gas enables it to be collected by the method shown in the diagram? (1mk)

d) What is the purpose of the sodium hydrogen carbonate in the second flask? (1mk)

e) Name a liquid substance that can be used in place of solid X and give the name of the apparatus in which it is put in. (2mks)

f) State the observation that is made when carbon (IV) oxide is bubbled through calcium hydroxide solution. (1mk)

14. Three brands of inks M, N and O were suspected to be contaminated with substance P. The result is shown below;



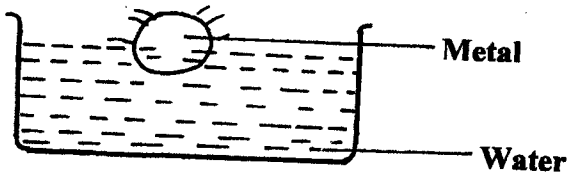
i) Wh ubstance P (1mk)

ii) Name the ink which was pure (1mk)

iii) Identify the other ink which was not pure (1mk)

15. State two uses of chlorine gas. (2mks)

16. Study the experiment below and answer the questions that follow. The gas produced ignites spontaneously



i) Which metal is used above (1mk)

ii) Which gas was produced (1mk)

iii) What will be the colour of phenolpthalein indicator in the resulting solution? (1mk)

17. Use the information in the table below to answer the questions that follow

Element	Atomic Radii (nm)	Ionic radii nm
D	0.231	0.133
E	0.181	0.099
F	0.160	0.065
G	0.195	0.114

a) i) Are the members in this group likely to be conductor or non – conductors? (1mk)

ii) Which element would have the lowest atomic number? Explain. (1mk)

18. Study the information below and answer the questions that follow:

Formula of the chloride	NaCl	$MgCl_2$	$AlCl_2$	$SiCl_4$	PCl_3	SCl_2	
M.P(^{0}C)	801	714	-	-70	-91	-80	
Formula of the oxide	Na_2O	MgO	Al_2O_3	SiO_2	P_4O_{10}	SO_2	Cl_2O7
M.P(^{0}C)	1190	3080	2050	1730	560	-73	-90

(a) Aluminium chloride $AlCl_3$, has an unexpected bond type and structure.

(i) State the type of bond and the structure in $AlCl_3$

Bond type ..... (1 mk)

Structure ..... (1 mk)

(b) Why is the melting point of $AlCl_3$ not indicated in the table above? (1mk)

(c) A piece of blue litmus paper is placed in a solution of sodium chloride and a solution of aluminium chloride. Explain what would be observed in each case.

Sodium chloride solution (1mk)

Aluminium chloride solution (1mks)

(d) Write down the equations for the reaction between the compounds of formula Na_2O and water. (1mk)