NAME.....CLS.....C.NO.....ADM.....

NYABURURU GIRLS' NATIONAL SCHOOL
OUR LADY OF LOURDES

DATE DONE..... TIME .....

INVIGILATOR.....

DATE RETURNED.....

DATE REVISED.....

CHEMISTRY THEORY
C.A.T 2
TERM I 2016
TIME: 2 HOURS

INSTRUCTIONS.

- Write your name, class number and admission number in spaces provided.
- Answer **ALL** questions in the spaces provided.
- Candidate should check the question papers to ensure that all the papers are printed as indicated and no questions are missing.

FOR EXAMINER'S USE ONLY

QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
1 - 9	80	

THIS PAPER CONTAINS 10 PRINTED PAGES

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1a] write an equation to show the effect of heat on the nitrate of:-

i) Potassium (1mk)

.....

ii)Silver (1mk)

.....

b) The table below shows the information of some elements A,B ,C and D

ELEMENT	ATOMIC NUMBER	ATOMIC RADII (nm)	IONIC RADII (nm)
A	3	0.134	0.074
B	5	0.09	0.012
C	13	0.143	0.050
D	17	0.099	0.181

I) in which period of the periodic table is element A? Explain (2mks)

.....

ii) Explain why the atomic radius of

A) A is greater than that of B (2mks)

.....

.....

B) D is smaller than its ionic radius (2mks)

.....

.....

iii) Select the element which is in the same group as C (1mk)

.....

iv) Using dots (.) and crosses (x) to represent the outermost electrons, draw diagram to show bonding in the compound formed when A reacts with D (2mks)

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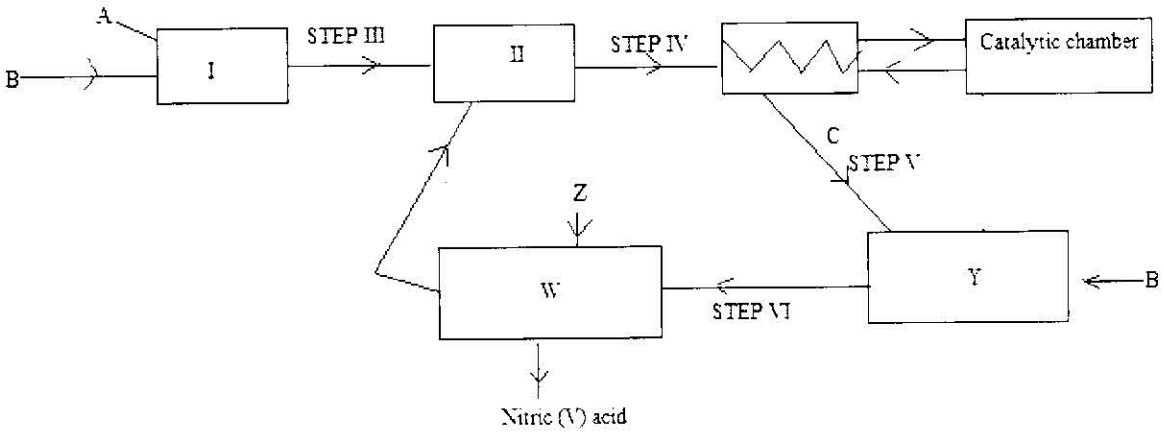
2. The flow chart below shows the industrial manufacture of nitric (v) acid



a) Name gases ; (2mks)

A.....

B .....

b) Identify chamber I (1mk)

.....

C) State the function of chamber I (1mk)

.....

.....

d) State the function of chamber X (1mk)

.....

.....

e) Name the catalyst used in the process above (1mk)

.....

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f) Write the equations in;

i) Catalytic chamber (1mk)

.....

.....

ii) chamber Y (1mk)

.....

g) Name three gases entering chamber w from chamber Y (3mks)

.....

.....

h) Name substance Z (1mk)

.....

i) write the equation in chamber W to produce nitric V acid (1mk)

.....

j) Name two substances being recycled in the process above (2mks)

.....

.....

K) State how nitric V acid is produced from the nitric (iii) acid produced in the process above (1mk)

.....

.....

3. Explain the following in terms of structure and bonding

a) Graphite is a good conductor of heat and electricity (2mks)

.....

.....

.....

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b) Diamond is poor conductor of heat and electricity (2mks)

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4. Describe how you would prepare dry lead II nitrate starting with lead metal (3mk)

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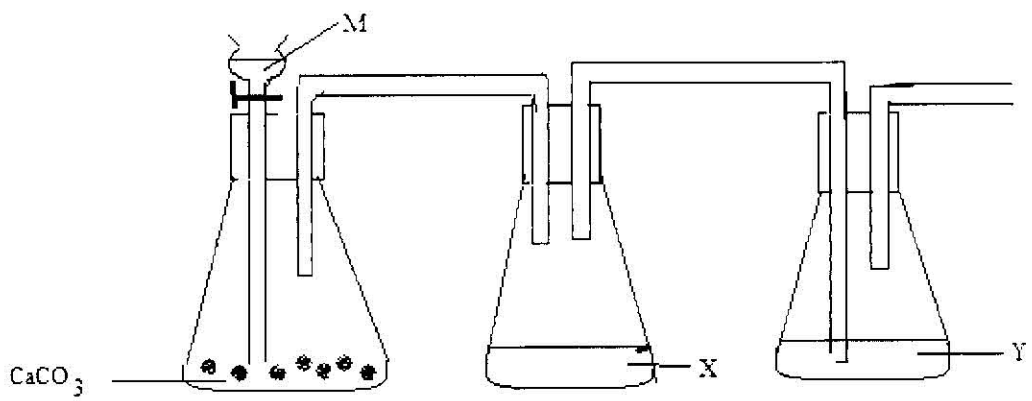
5) (I) The setup was used to prepare carbon Iv oxide gas .



A) Complete the set up to collect the gas (1mk)

B) Name substance M (1mk)

.....

C) Write the equation for the reaction to produce carbon IV oxide gas (1mk)

.....

D) Identify substances (2mks)

X.....

y.....

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e) State the function of (2mks)

X.....

y.....

f) State three uses of carbon IV oxide (3mks)

.....

.....

II) A) Explain the observations made when a piece of burning magnesium ribbon is placed in a gas jar full o f carbon IV oxide gas. (2mks)

.....

.....

.....

B) In the Solvay process for the manufacture of sodium carbonate, brine and ammonia are used as the main raw materials.

i) Name two other raw materials (2mks)

.....

ii) Name two substances recycled in this process (2mks)

.....

.....

iii) Name the only by-product **not** recycled in this process. (1mk)

.....

iv) State two uses of the byproduct in (iii) above (2mks)

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.....

v) State two uses of sodium carbonate. (2mks

.....

.....

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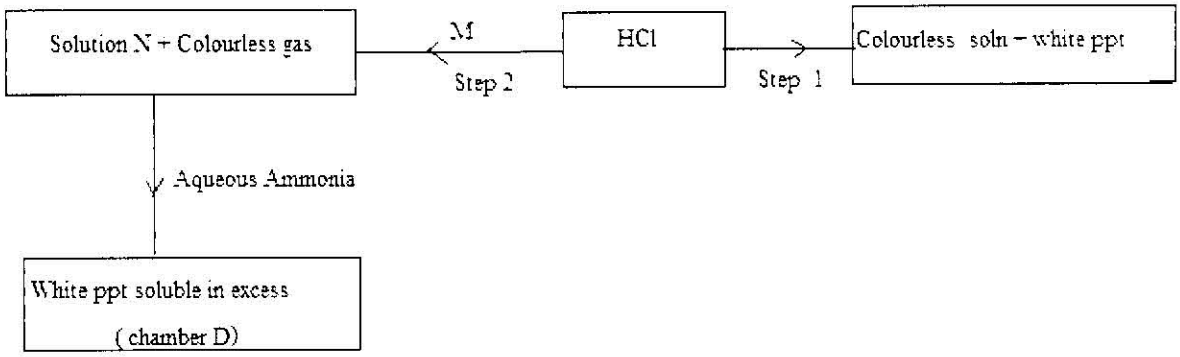
vi) The flowchart below shows the reactions of hydrochloric acid with various chemicals



i)Name metal M (1mk)

.....

ii) Write the formula of the formulae formed in D. (1mk)

.....

III) Name the substance used in step 1 (1mk)

.....

iv) Name the type of reaction in step 2 (1 mk)

.....

7. Define the following terms;

a) Atomic mass (1mk)

.....

.....

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b) Ionization energy (1mk)

.....

.....

c) The first ionization energy of element X is 715kJ/mol, while its second ionization energy is 903kJ/mol. Explain (2mks)

.....

.....

II) To which group does element X belong (1mk)

.....

Give a reason (1mk)

.....

.....

8. Chlorine gas was bubbled into water for some time and to the resulting solution a blue litmus Paper was dipped into it.

A) State the observations made (2mks)

.....

.....

B) Explain the answer above. (1mk)

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.....

.....

c) State three physical properties of chlorine gas. (1mk)

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.....

.....

9. (a) What is rust? (1mk)

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(b) Give **two** methods that can be used to prevent rusting (1mk)

.....

.....

(c) Name **two** substance which speeds up the rusting process (1mk)

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10. In an experiment, a piece of magnesium ribbon was cleaned with steel wool. 2.4g of the clean magnesium ribbon was placed in a crucible and completely burnt in oxygen.

After cooling the product weighed 4.0g

a) Explain why it is necessary to clean magnesium ribbon (1mk)

.....

.....

b) What observation was made in the crucible after burning magnesium ribbon? (1mk)

.....

c) Why was there an increase in mass? (1mk)

.....

d) Write an equation for the major chemical reaction which took place in the crucible (1mk)

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e) The product in the crucible was shaken with water and filtered. State and explain the Observation which was made when red and blue litmus paper were dropped into the Filtrate. (2mks)

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