

Adm..... Name..... Class.....
GATITU SECONDARY SCHOOL, P.O.BOX 327- 01030 GATUNDU.
FORM THREE CHEMISTRY END OF TERM EXAM
TERM I 2015.

Instructions

Time 2 Hours

- Write your name admission number and class in the spaces provided above
- Answer all the questions in the spaces provided.

Question	Maximum score	Students score
1 to 8	80	

1. The number of protons, neutrons and electrons in particles A to F are given in the table below the letters do not represent the actual symbol of the elements:-

Particle	Protons	Neutrons	Electrons
A	3	4	2
B	9	10	10
C	12	12	12
D	17	18	17
E	17	20	17
F	18	22	18

- (a) Choose from the table the letters that represent:

(i) An atom of a metal.

(1mk)

(ii) A neutral atom of a non-metal.

(1mk)

(iii) An atom of a noble gas.

(1mk)

(iv) A pair of isotopes. Give a reason for your answer.

(2mks)

(v) A positively charged ion. Give a reason for your choice. (2mk)

(b) Using dots (.) and crosses to represent electrons draw the structure of B showing the distribution of electrons, protons and neutrons. (2mk)

2. The grid below shows a part of the periodic table. The letters do not represent the actual symbols.

Use it to answer the questions that follow:-

C								T
	K					U		
X	Y		M			Q	W	
J								Z

(a) Why are elements T and Z placed in the same group? (1mks)

(b) What name is given to the group in which elements C, X and J.? (1mk)

(c) Using crosses (X) to represent electrons, draw the atomic structure of element Q. (1mk)

(d) State the period and the group to which element Q belong. (1mk)

(e) (i) The ionic configuration of element G is $2.8 G^-$. G forms an ion of the type G^- . Indicate on the grid, the position of element G. (1mk)

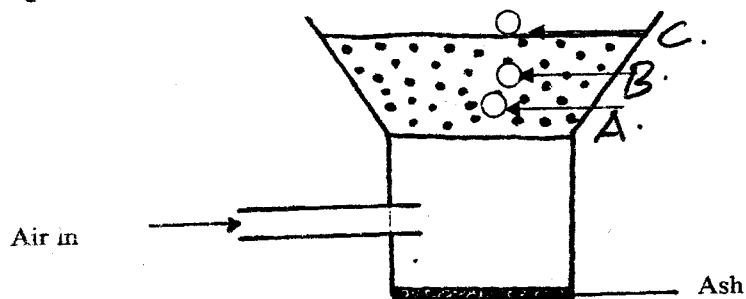
(ii) Write electron arrangement of the atom of element G (1mk)

(iii) State **one** uses of element U. (1mk)

3. a) State **two** uses of graphite

b) Both graphite and diamond are allotropes of element Carbon. Graphite conducts electricity diamond does not. Explain. (2mks)

c) The diagram below shows a charcoal stove with different regions



(i) Write an equation for the formation of the product in region B (1mk)

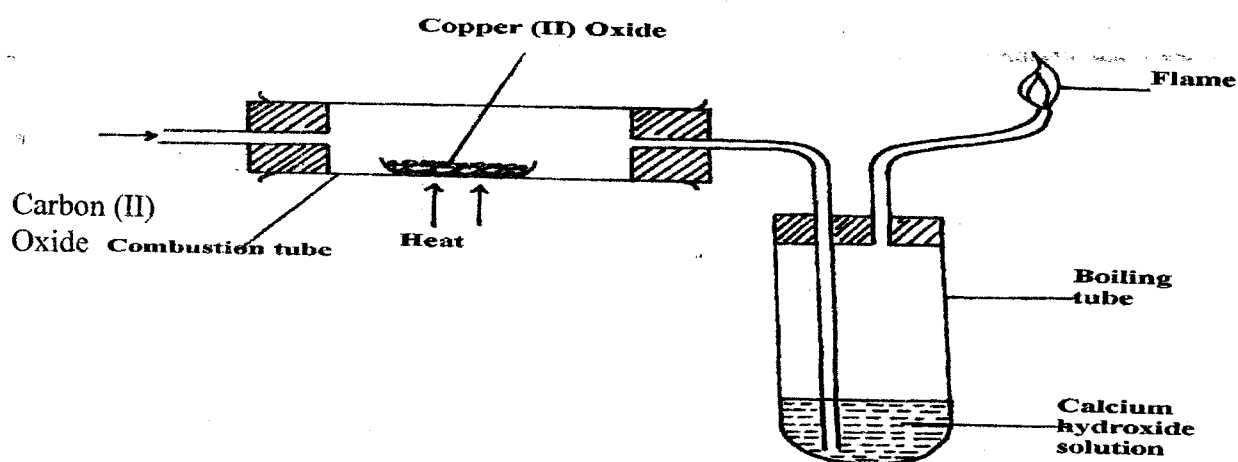
(ii) How would one avoid the production of the product at B? Give a reason for your answer. (2mk)

(iii) When the oxide of element H was heated with powdered Carbon, the mixture glowed and Carbon (IV) oxide was formed. When the experiment was repeated using the oxide of element J, there was no apparent reaction

(a) Suggest **one** method that can be used to extract element J from its oxide. (1mk)

(b) Arrange the elements H, J and Carbon in order of their reactivity starting with the most reactive. (2mks)

4. Study the experimental set-up below:

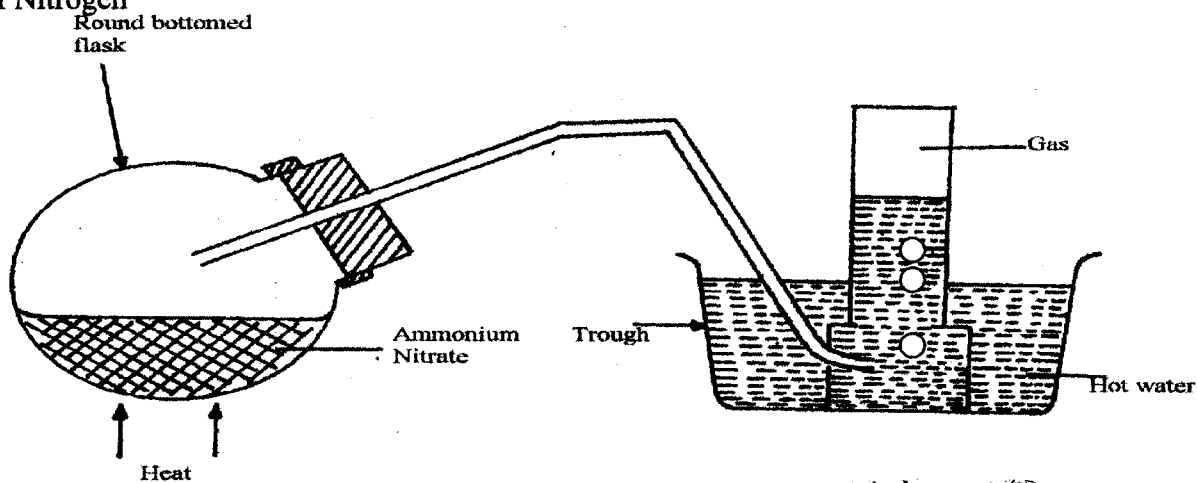


a) State **two** observations made in the set up as the experiment progressed. (2mks)

b) By use of a chemical equation, explain the changes that occurred in the boiling tube. (2mk)

c) Why was it necessary to burn the excess gas? (2mks)

6. The diagram below shows the apparatus for the laboratory preparation of one of the oxides of Nitrogen



a) (i) Name the gas being produced. (1mk)

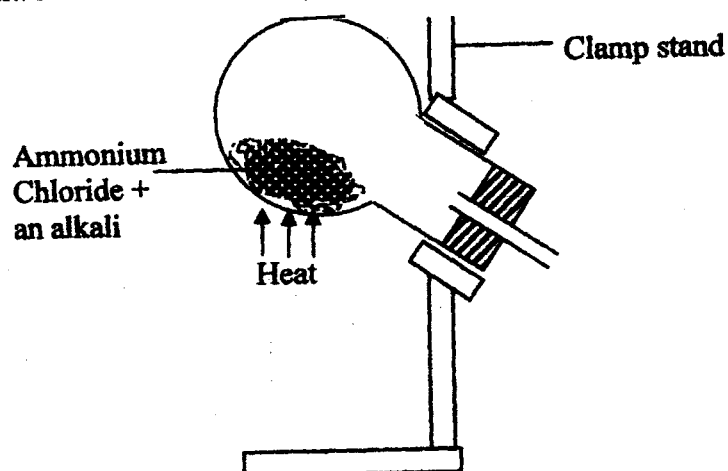
(i) Write the equation for the thermal decomposition of ammonium nitrate. (1mk)

(ii) The gas is being collected over hot water. Explain. (2mks)

(iv) State and explain the observations made when burning sulphur is lowered into a gas jar containing the gas. (2mks)

(b) (i) Name the catalyst used during catalytic oxidation of ammonia. (1mk)

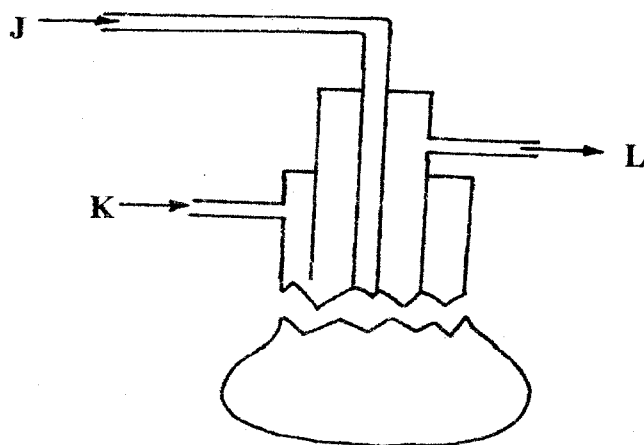
5. Ammonia gas is prepared in the laboratory by the action of an alkali on an ammonium salt. A student wanted to prepare a sample of ammonia gas in the laboratory.



- (a) Complete the diagram to show how dry ammonia can be collected. (Label your diagram fully). (3mks)
- (b) Give a suitable alkali that can be used in the above experiment. (1mk)
- (c) The flask containing ammonium chloride + an alkali is kept in a sloping position. Why is precaution observed? (1mks)
- (d) Concentrated sulphuric (VI) acid can not be used to dry ammonia. Explain with the help of an equation. (2mks)
- (e) Write an equation for the reaction that takes place in the above experiment. (1mk)
- (f) State two physical properties of ammonia gas. (2mks)

- i) Identify substances **X** and **Y** (2mks)
- ii) Write two equations for the reaction taking place in the absorption tower. (2mks)
- iii) The concentration of the acid obtained is about 60%. How can this concentration be increased to about 65%? (1mk)

8. Sulphur is extracted from underground deposits by a process in which three concentric pipes are sunk down to the deposits as shown below



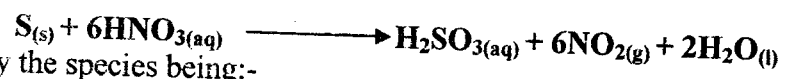
- (a) Name the process represented above (1mk)
- (b) What is passed down through pipes **J**, **K** **L**? (3mks)
- J**
- K**
- L**
- (c) i) what are allotropes? (2mks)

(i) Nitrogen (IV) oxide is the final product during catalytic oxidation of ammonia. Write two chemical equations for its formation. (2mks)

(ii) State two physical differences between Nitrogen (I) oxide and Nitrogen (IV) Oxide. (2mks)

(c) Nitric acid is prepared in the laboratory by action of concentrated sulphuric (VI) acid on a suitable Nitrate and distilling off the Nitric acid, in all glass apparatus.
 (i) Why must the apparatus be made of glass? (1mk)

(ii) Hot concentrated Nitric acid reacts with sulphur in the equation below:-

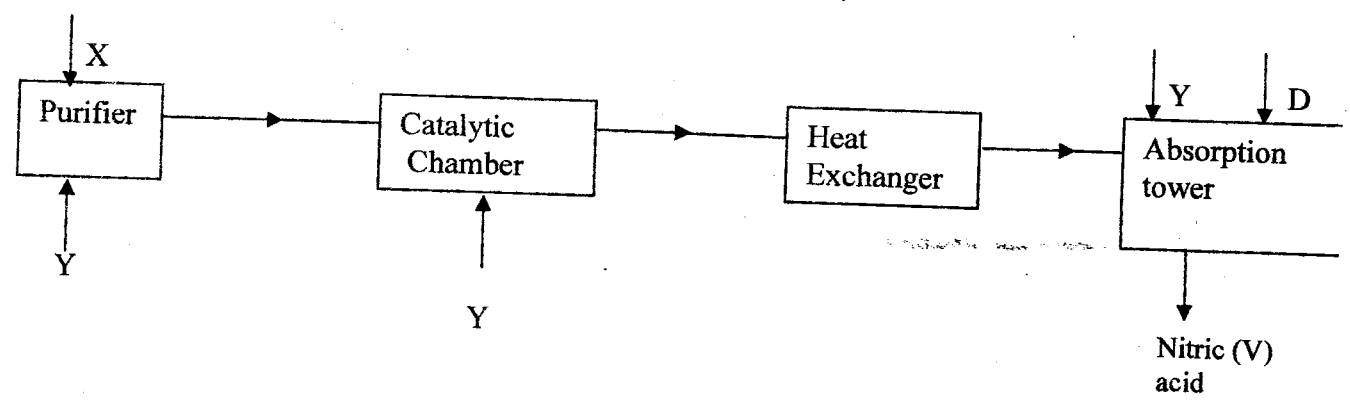


Identify the species being:-

Oxidised(1mk) Reduced(1mk)

(ii) Pure nitric acid is colourless but the product during its preparation is usually pale yellow. Explain. (1mk)

7. The flow chart below shows the industrial manufacture of nitric (V) acid



ii) Name the **two** allotropes of sulphur

(2mks)

(d) Describe how the following non crystalline forms of sulphur can be prepared in the laboratory.

(4mks)

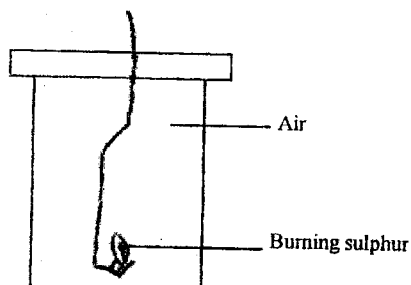
i) Colloidal sulphur

ii) Powdery sulphur.

(e) In the space below draw the structure of a sulphur molecule (S_8 ring) showing the arrangement of sulphur atoms.

(2mks)

(f) A piece of burning sulphur was lowered into a gas jar full of air as shown below. Two products were formed.



(i) Name the **two** products: (2mks)

(ii) Write balanced equations for the reactions that form the two products. (2mks)

(c) State **two** commercial uses of sulphur. (2mks)