MINISTRY OF EDUCATION AND VOCATIONAL TRAINING

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

URBAN WEST REGION - ZANZIBAR

FORM FOUR (IV) MOCK EXAMINATION 2025

CHEMISTRY 1

(For Both School and Private Candidates)

032/1

TIME: 3:00 HOURS

JUNE 2025

INSTRUCTIONS:

1. This paper consists of section **A, B** and **C** with a total of fourteen **(11)** questions.
2. Answer **all** questions in section **A** and **B** and **two (02)** questions from section **C.**
3. Cellular phone and any unauthorized material are **not allowed** in the examination room.
4. Write your **Examination Number** on every page of your answer booklet(s).
5. The following constants **may be used:**
   (a) Atomic masses: H = l, C = 12, O = 16, Na = 23, S = 32,Cl = 35.5, K = 39, Cu = 64.
   (b) Constants: i) Avogadro's number = 6.02×10^{23}/mol
   (ii) Standard temperature = 273K
   (iii) GMV at s.t.p = $22.4 dm^3$
   (iv) Standard pressure = 760mmHg

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SECTION A: (16 Marks)

Answer all questions in this section.

1. For each of the items (i)-(x) choose the correct answer from the given alternative and write its letter beside the item number in the answer booklet provided.

(i.) Form four students in a certain school were doing a scientific experiment about Malaria diseases in the coast region. Which among the following was used to accept or reject the hypothesis made?

A. Data interpretation B.Experimentation
C. Conclusion D. Hypothesis formulation
E. Problem identification

(ii.) The equation below shows the industrial production of ethane from a higher alkane

$$C_{12}H_{28(l)} \xrightarrow[70\ atm]{750^0\ C} C_2H_{4(g)} + C_3H_{6(g)} + C_8H_{18(l)}$$

The above process is called:

A. Cracking B. Double decomposition C. Sublimation
D. Distillation E. Chain decomposition.

(iii.) The following are nuclide notation of two particles $^{15}_{8}M$ and $^{17}_{8}M$. these particles are:

A. Isomers B. Isotopes C. Allotropes D. Molecules E. Radicals.

(iv.) In electrolysis, the equation of an element is the mass of the element liberated by:

A. 1 coulomb of electricity B. 96500 coulombs of electricity
C. 2 coulombs of electricity D. 95600 coulombs of electricity
E. Any number of electrons produced by an element.

(v.) Element X has atomic number Z and mass number A. What is the number of neutrons contained in the nucleus of that element?

A. $Z-$ B. A C. $A+Z$
D. Z E. $A-Z$

(vi.) Aluminium does not react with water and does not corrode much with air. Why?

A. It is below hydrogen in reactive series.
B. It form s stable carbonate which prevent reactions.
C. The metal is covered with protective coating of an oxide.
D. It is very stable. E. Does not react with water.

vii. The type of chemical reaction in which two aqueous solution react together toform one soluble compound and another insolublecompound is called.

A. Displacement reaction. B. Redox reaction.
C. Precipitation reaction. D. Synthesis reaction.
E. Decomposition.

(viii.) In the Bunsen burner a sooty flame is most likely to be formed when the .

A. Air holes are fully closed. B. Air holes are opened. C. Flame is noisy
D. Flame is smaller. E. Fuel is very small.

(ix.) Hydrogen react with sulphur to yield .

A. Hydrogen sulphide. B. Sulphuric acid. C. Hydrogen sulphate.
D. Sulphur dioxide. E. Sulphur trioxide.

(x.) The process by which water converted into water vapour or steam is called:

A. Condensation. B. Evaporation. C. Precipitation. D. Transpiration. E. Raining.

2. Match the items in **LIST A** with the responses in **LIST B** by wring the letter of the correct response beside the item number.

S/N	LIST A:	LIST B:
(i.)	It has strong chocking smell of urine.	A. Nitrogen
(ii.)	A greenish poisonous gas, denser than air used as military weapon.	B. Neon
(iii.)	It support plat life but does not support combustion.	C. Hydrogen
(iv.)	A colourless gas which is slight soluble inn water, neutral to litmuspaper and used as rocket fuel.	D. Oxygen E. Carbon dioxidef. Sulphur dioxide. G. Chlorine.
(v.)	A non poisonous gas, physically isolated from air and used to make fertilizers.	H. Hydrogen chloride I. Ammonia
(vi.)	It is colourless acidic gas with pungent smell used to control pH in chemical process.	

SECTION B: (54 Marks)

Answer all questions in this section.

3. (a) Laboratory technician wanted to confirm an unknown compound Y by using cobalt Chloride paper. Cobalt chloride paper change from blue to pink upon the addition of small amount of unknown compound Y.
   (i.) Identify the name and chemical formula of an unknown compound Y.
   (ii.) Name the other substance that can be used to confirm an unknown Y and provide its positive observation.
   (iii.) State three chemical properties of an unknown compound Y.
   (b) An organic compound contains 5.3g carbon, 0.44g hydrogen, 14.22g oxygen. Determine its empirical formula.

4. (a) Explain the meaning of the following terms:
   (i.) Electrolysis.
   (ii.) Electroplating.
   (b) State first and second Faraday's laws of electrolysis.
   (c) (i.) Write chemical equation for the reactions that take place at each electrode during the electrolysis of dilute sulphuric acid using platinum electrode.
   (ii.) 19,000 coulombs of electricity was passed through a solution of copper (II) sulphate in an electrolytic cell. Calculate the mass of copper deposited at the cathode.

5. Briefly explain what will be observed when;
   (a) A moist blue litmus paper is introduced into a gas jar containingchlorine gas.
   (b) A red flower is introduced into a gas jar containing chlorine gas.
   (c) Few drops of concentrated sulphuric acid are added on sugar cane.
   (d) Concentrated sulphuric acid is added to hydrated copper (II) sulphate.
   (e) Few drops of concentrated hydrochloric acid are added on an egg shell.

6. (a) Why should the chemistry laboratory exits open outwards?
   (b) Why do cold food not smell from a distance?
   (c) Mention two conditions for a substance be called matter.
   (d) What type of changes are these?
   (i.) Rotting of mangoes.
   (ii.) Magnetization of iron or steel.
   (iii.) Jewelry tarnishes (change colour)
   (iv.) Digestion of food in the body.

7. (a) Why is the reaction rate generally the fastest at the beginning of a reaction?
   (b) Give one good reason for each of the following:

(i.) A mixture of methane and chlorine do not react in the dark but react in the sunlight
(ii.) Why potatoes cook quickly in boiling water when cut into small pieces?
(iii.) Fruit ripe faster during summer than during winter.

(c) The production of ammonia through the Haber process involves the following reversible reaction: $N_2(g) + 3H_2(g) \longrightarrow 2NH_3(g)$
(i.) Suggest two conditions that are likely to shift the equilibrium position from left to right.
(ii.) Name the catalyst used in the Haber process

8. (a) People living near Geita gold mines face the challenges of destruction of their infrastructures. As an expertasses three major ways which can be used to control environmental impact that are caused by extraction of metals through mining.

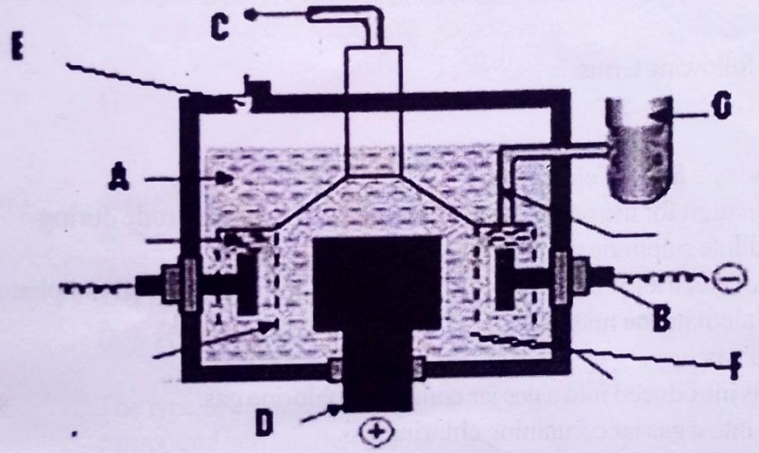
(b) A teacher told form two students to write a well balance chemical equations for the action of heat on iron (II) sulphate, action heat on calcium hydrogen carbonate and action of heat on ammonium nitrate but they failed to do because it is above their level. As form four student help them to write these chemical equations correctly.

SECTION C: (30 Marks)
Answer two (02) questions only in this section.

9. (a) Differentiate the following terms:
(i.) Physical weathering from chemical weathering.
(ii.) Soil texture from soil structure.

(b) Discuss how do the following factors influence soil formation:
(i.) Climate
(ii.) Living organisms.
(iii.) Topography of an area.
(iv.) Parent rocks.

10. Study carefully the figure below and then answer the questions which follow



(a) Name the above apparatus.
(b) Explain what is the use of this apparatus?
(c) State what the letters A, B, C, D, E, F and G represent?
(d) Name the ore used in this process.
(e) Is the substance in (G) a metal or non-metal?
(f) With the aid of chemical equation explain the reaction of substance in G with water.
(g) Explain also the effect of litmus paper on the resulting solution of the reaction in (f) above.

11. (a) Explain the following terms:
(i.) Titration.
(ii.) End point.
(iii.) Mean titre.

(b) An acid solution was prepared by dissolving 0.767 dm^3 of hydrogen chloride gas in water at S.T.P to make 0.25dm^3 of solution. 18 cm^3 of this solution were enough to neutralize 25cm^3 containing 9.864g of the compound $YHCO_3$ per liter of solution. Find the relative atomic mass of metal Y and hence identify metal Y (give name and chemical symbol)