INTERSECONDARY SCHOOLS EXAMINATION SERIES
ISESE
FORM FOUR OPENING TEST
CHEMISTRY 1
(For Both School and Private Candidates)

TIME 3:00 HRS

INSTRUCTIONS

1. This paper consists of sections A, B and C with a total of eleven (11) questions.
2. Answer all questions in section A and B and only two (2) questions from section C.
3. Non-programmable calculators are 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;

Atomic masses;

H=1, O=16, C=12, Cu=63.5, S=32, Cl=35.5, Ca=40, Na=23, N=14, Fe=56, Ag=108, Br=80, Zn=65

Avogadro's constant = 6.02 x 1023 G.M.V at S.T.P = 22.4 dm3

1 Faraday =96,500 coulombs Standard pressure = 760mmHg

Standard temperature = 273K

Density of water = 1000kg/m3

1 litre = 1dm3=1000cm3

Specific heat capacity of water = 4.18 KJ/kg

SECTION A (16 MARKS)

Answer **all questions** from this section

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

i) A chemistry teacher from UBN secondary school heated a colourless solid compound, then brown fumes of a gas were evolved. The colourless solid is most like to be;

a) Ferrous sulphate b) Silver chloride

c) Lead nitrate d) Magnesium sulphate e) Sodium peroxide

ii) A form four student was asked to test an unknown colourless solution with an indicator. When he added a few drops of P.O.P indicator, the solution turned pink. Which one of the following? chemicals should be added in excess so as to obtain colourless solution again?

a) Hydrochloric acid solution b) Sodium hydroxide solution

c) Ammonia solution d) Sodium chloride solution e) Lime water

iii) A student added few drops of Barium chloride solution to sodium sulphate solution, he obtained a white precipitate instantly. Which of the following type of chemical reaction has been carried out by the student?

a) Combustion b) Double displacement

c)Displacement d) Decomposition e) Redox

iv) Mr. Msaki from his stationery burned the used papers until smoke, ash, flame and soot were formed. What type of change took place?

a) Climatic change b) Physical change

c)Chemical change d) Physiological change e) Biological change

v) Mbuga added few drops of barium chloride in a test tube contain unknown sample solution, the white precipitates were observed, the unknown sample expected to be:

a) Metal carbonates b) Metal chloride

c) Metal sulphate d) Metal nitrate e) Metal hydrogen carbonate

vi) Methyl orange changes a colourless acidic solution on to:

a) Orange b) Red

c)Blue d) Pink e) Yellow

vii) A neutral PH point has a value of:

a)7 b) 0

c)14 d) 3 e) 8

viii) An anhydrous salt means a:

a) Salt that contains hydrogen in it b) Salt that contains water in it

c)A salt that contains no water of crystallization d) Salt that contains no hydrogen in it

e) None of the above

ix) A reaction needs 0.5 moles of magnesium ribbon. How much magnesium is grams is that?

a) 0.12g b)1.2g

c)12g d) 24g e) 11.2g

x) The number of carbon atoms in 2g of CO_2 are:

a) 2.7×10^{23} b) 2.7×10^{22}

c)$2.7x10^{18}$ d) $2.7x\ 10^{24}$ e) 2.7×10^{21}

2. Match the item in list A with a response in list B by writing the letter of correct response beside the item number in the sheet provided.

LIST A	LIST B
i. Spector ions	A. Alkali
ii. Weak electrolyte	B. Group I element
iii. Sodium carbonate	C. Ions that do not take part in chemical reactions
iv. Alkali metals	D. Citric acid
v. Brown fumes	E. Carbon dioxide gas
vi. A gas which turn lime water milky	F. Nitrogen dioxide gas

SECTION B (54 MARKS)

Answer **all questions** from this section

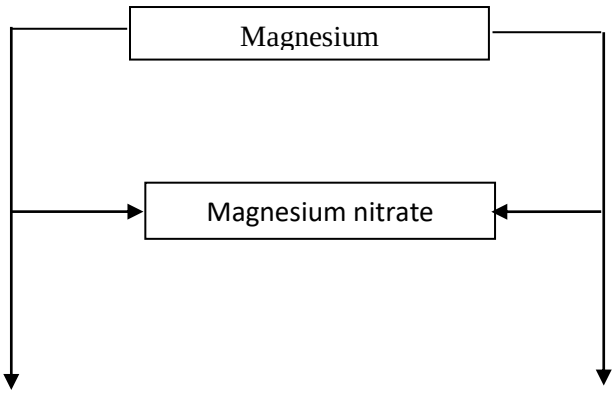
3. In one titration experiment performed by form three students, $25cm^3$ of hydrated sodium carbonate ($Na_2CO_3.XH_20$) were titrated against $20cm^3$ of 0.25M hydrochloric acid. The solution of sodium carbonate was made by dissolving 7.15g of the compound in $250cm^3$ of distilled water. Use the above data to calculate the following

a) Write down a balanced equation to represent the acid base reaction

b) i) Find the molarity of the hydrated sodium carbonate

ii) Calculate the value of X in the hydrated sodium carbonate

4. The scheme diagram below shows the precipitation of magnesium nitrate. Study it, then answer the questions that follow



Hydrogen gas Nitrogen dioxide + water

a) Identify substance P and Q

b) Write the equation for the reaction between magnesium and substance Q and P.

5. Baking powder contains sodium hydrogen carbonate mixed with an acid. When water is added, the baking powder releases carbon dioxide

a) How could you test the gas to show that it is carbon dioxide? (Equation is necessary)

b) Write a balanced chemical equation for the reaction of sodium hydrogen carbonate with sulphuric acid

6. Mr. Msaki added few drops of a solution of potassium iodine to a solution of lead nitrate

a) State the observation made

b) Write an ionic equation

c) Write balanced chemical equation for the reaction

7. A solution of sodium hydroxide is added to a sodium solutions of hydrochloric acid

a) Given that both solutions are at room temperature (180^0C) What type of reaction takes place if the final steady temperature of the reaction mixture is 36^0C?

b) Draw an energy level diagram for the reaction

c) Draw an energy profile for the reaction

8. The equation below shows a reaction between potassium and iodine

` $2K(s) + I_2(s) \longrightarrow 2I(s)$

a) Which substance is:

i) The oxidizing agent?

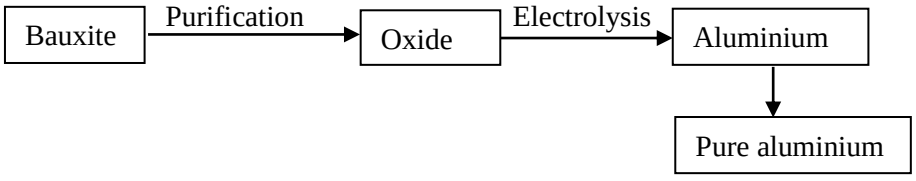
ii) The reducing agent?

b) Write the oxidation equation.

SECTION C (30 MARKS)

Answer two (2) questions from this section

9. The flow chart below shows the extraction of aluminium from bauxite.



a) In the purification process, the bauxite ore is heated to bright redness with sodium carbonate. Write an equation for the main reaction that take places

b) What is the electrolyte in the electrolysis of bauxite?

c) Draw a well-balanced diagram of the electrolytic cell used in the electrolysis of bauxite

d) Write the cathode and anode reaction reactions in the electrolysis of bauxite using the cell you have drawn in (c) above

10. a) Explain how can you obtain pure copper from blister copper (Diagram is necessary) with the aid of chemical equations

b)Extraction of metal termed as reduction process explain

11. a) Briefly explain three applications of electrolysis

b) What mass of copper will be deposited from a solution of copper (II) sulphate when a current of 7.5A is passed through for 1 minute and 40 seconds?

U.B.N COOPERATION O-LEVEL EXAMINATION SERIES 2025
TIME TABLE FOR ALL SUBJECTS
FORM TWO AND FORM FOUR
JANUARY SERIES

ALL SUBJECTS	DATE	TIME
SERIES – 01	20th January 2025	03:00 – 6:00 pm
SERIES – 02	27th January 2025	03:00 – 6:00 pm

CONTENTS COVERED

1. SERIES FORM TWO
(ALL TOPICS IN FORM ONE AND ONLY ONE TOPIC IN FORM TWO)
2. FORM FOUR
(ALL TOPICS IN FORM ONE, FORM TWO, FORM THREE AND ONLY ONE TOPIC IN FORM FOUR)

ADA : FORM TWO 15,000 MUHULA MZIMA
: FORM FOUR 15,000 MUHULA MZIMA
OFA : UKIFANYA MALIPO YA SERIES KABLA YA TAREHE 13 JANUARY MALIPO NI TSH 10,000 KWA KILA KIDATO
NB : ***MWISHO WA MALIPO NI TAREHE 20/01/2025
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U.B.N COOPERATION
O-LEVEL MONTHLY TEST 2025
FORM TWO AND FORM FOUR

OFA OFA

U.B.N COOPERATION TUNATOA OFA MAALUM YA KUJIUNGA NA GROUP LETU LA "U.B.N COOPERATION" KWA WAKUU WA SHULE NA WATAALUMA KWA TSH 100,000/= KWA KIDATO KIMOJA AMBAPO UTAPATA MITIHANI YA KILA MWEZI (MONTHLY TEST NA MARKING SCHEMES ZAKE) KWA MASOMO YOTE NDANI YA MIEZI SITA (MWEZI JANUARI – JUNE). OFA HII NI KWA KIDATO CHA PILI NA CHA NNE TUU. MWISHO WA KUJIUNGA NA OFA HII NI TAREHE 15/01/2025

KWA MAWASILIANO TUCHEKI KWENYE NAMBA 0624 254 757 WHATSAPP TU