Candidate's No...……

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION AND CULTURE

FORM TWO SECONDARY EDUCATION EXAMINATIONS

0032 **CHEMISTRY**

TIME: 2.00 HOURS.

INSTRUCTIONS

1. This paper consists of three sections A, B and C.
2. Answer all questions on spaces provided in each question.
3. Write your examination number on the top right hand corner of every page.
4. All writings must be in black or blue pen except for diagrams which must be in pencil.
5. Cell phones are not allowed in the examination room.
6. The following constants may be used
   Atomic masses: H = 1, C = 12 and O = 16

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	**SCORE**	**INITIALS OF EXAMINER**
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
TOTAL		

This paper consists of 8 printed pages.

Candidate's No...……

SECTION A (10 Marks)

This section consists of ten (10) multiple choice items. You are required to answer all questions in this section.

1. Write down the letter of the most correct response in the box provided in each question.

(i) The states of matter are:- ☐

A. Element, gas and mixture.
B. Liquid, moisture and element.
C. Water, moisture and solid.
D. Gas, liquid and solid.

(ii) A Substance which absorbs water/moisture from the atmosphere and forms a solution is called: ☐

A. Efflorescent.
B. Amphoteric.
C. Hygroscopic.
D. Deliquescent.

(iii) The correct statement about metals is that:- ☐

A. React with acids to give gases.
B. React with acids to give hydrogen gas.
C. Have more than one valency.
D. All have magnetism.

(iv) In Chemistry, experiments test: ☐

A. Data.
B. Problems.
C. Hypotheses.
D. Observation.

(v) In any chemical change: ☐

A. Energy is not created.
B. Energy is either absorbed or given out.
C. Energy is created.
D. Energy is neither liberated nor absorbed.

(vi) Which of the following sets of apparati are suitable for measuring the volume of solutions?

A. Burette, pipette and beaker.
B. Burette, pipette and conical flask.
C. Measuring cylinder, burette and pipette.
D. Burette, flat bottomed flask and pipette.

(vii) The substance that can burn your skin is best described as:

A. Flammable.
B. Corrosive.
C. Explosive.
D. Toxic.

(viii) Sublimation is the process whereby

A. Substances float in liquids when heated.
B. Substances change directly to vapour without the liquid state when heated.
C. A mixture of solid substances is separated by heating.
D. An alcohol is separated from water.

(ix) Which of the following chemical species have the same number of electrons.

A. K^+, Ca^{2+}, Cl^- and Ar
B. Cl, Be and O^{2-}
C. O^{2-}, Ca^{2+} and Mg^{2+}
D. Na^+, Mg^{2+}, Be^{2+} and Li

(x) The process of chlorination in water treatment aims at.

A. Killing micro organisms.
B. Syrup making.
C. Forming suspension.
D. Removing bad odours.

SECTION B (20 Marks)

2. You are provided with two lists A and B. Choose a word(s) from list B which matches the statement or phrases in list A and write its letter against the appropriate statement in the space provided.

LIST A	LIST B
(i) Supports Combustion ……	A. Isobars
(ii) Used for grinding solid chemicals ……	B. Isotopes
(iii) Desiccators ……	C. Mercury
(iv) The same atomic number but different mass number ……	D. Ionic bond
(v) Compound ……	E. Covalent bond
(vi) Liquid metal ……	F. Acids
(vii) Basic salt ……	G. Oxygen
(viii) Formed by electron sharing ……	H. For drying solids
(ix) Contain H^+ as the only positive ions ……	I. Mortar and pestle
(x) Method used to extract oil from seeds ……	J. Water
	K. MgOHCl
	L. Argon
	M. Bases
	N. Milk
	O. Solvent extraction

SECTION C (70 Marks)

3. (a) Mention any four instruments found in First Aid Kit.

(i) ……

(ii) ……

(iii) ……

(iv) ……

(b) State what is observed when the following simple experiments are performed:

(i) Carbon dioxide gas is passed through limewater for 32 seconds.

……

……

(ii) Water is added to white copper II sulphate

……

……

(iii) A glowing splint of wood is lowered into a jar full of carbon dioxide

……

……

4. The figure below is part of the periodic table which includes the first twenty elements. The numbers in the table are the atomic numbers of some elements.

Groups

Periods								
	1							2
		4		6		8		
	11	12					17	

(a) (i) For each number, write the symbol of the corresponding element.

1. _____ 2. _____ 4. _____ 6. _____

8. _____ 11. _____ 12. _____ 17. _____

(ii) Write a formula which represents a compound formed between an element with atomic number 1 and element with atomic number 17. _____

(b) (i) Considering the elements with atomic number 12 and 17, which is a metal and which is a non-metal.

……

……

(ii) What types of oxides are formed by elements with atomic numbers 11 & 12?

……

……

5. Complete and balance the following chemical reaction equations.

(i) $Ca + H_2O \rightarrow$

(ii) $BaCl_2 + H_2SO_4 \rightarrow$

(iii) $CuSO_4.5H_2O \xrightarrow{\text{Heat Strongly}}$

(iv) $ZnCO_3 + HCl \rightarrow$

(v) $Al + HCl \rightarrow$

6. (a) What is matter

……

……

(b) Write the names of the following processes of changing matter from one state to another.

(i) Solid to liquid.

(ii) Liquid to gas.

(iii) Gas to Liquid.

(iv) Liquid to solid.

(c) Find the oxidation number of the following underlines elements.

(i) $\underline{N}O_2^-$

(ii) Na$\underline{O}$H

(iii) $\underline{C}O_2$

(iv) $Na_3\underline{P}O_4$

(v) $\underline{S}O_4^{2-}$

7. (a) Write three differences between oxidation and reduction.

Oxidation	**Reduction**
(i)	(i)
(ii)	(ii)
(iii)	(iii)

(b) Write down ionic equation of the following reactions:

(i) The reaction of barium chloride with sodium sulphate solution.

……

(ii) The reaction of dilute hydrochloric acid and calcium carbonate.

……

8. (a) Write the reaction equation for the preparation of oxygen by decomposition of hydrogen peroxide by using manganese IV oxide as a catalyst.

……

(b) Write a chemical formula for each of the following compounds:

(i) Calcium hydrogen carbonate ……

(ii) Iron III oxide ……

(iii) Copper II nitrate ……

(iv) Sodium hydrogen sulphate ……

9. (a) What is Molecular Formula.

……

(b) A certain compound has a molecular mass of 60g and has the following percentage composition by weight Carbon 40%, Hydrogen 6.67% and Oxygen 53.3%.

(i) Calculate the empirical formula of the compound

……

(ii) Determine its molecular formula

……

10. (a) Air is said to be a mixture. Explain.

……

……

(b) State four points of modern atomic theory.

(i) ……

(ii) ……

(iii) ……

(iv) ……

(c) (i) What is a flame?

……

……

(ii) What are the two types of flame?

(i) ……

(ii) ……