Candidate's No……

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION AND VOCATIONAL TRAINING

FORM TWO SECONDARY EDUCATION EXAMINATION, 2007

0032 **CHEMISTRY**

TIME: 2 HOURS

INSTRUCTIONS

1. This paper consists of three sections A, B and C.
2. Answer all questions in spaces provided for each question.
3. Write your examination number on the top right hand corner of every page.
4. All writing must be done in “black or blue pen” except for the diagrams which must be in pencil.
5. Cellphones and calculators are not allowed in the examination room.
6. The following constants may be used:
   Atomic masses: H = 1, C = 12, O = 16, and Na = 23.

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 10 printed pages.

Candidate's No……

SECTION A (10 Marks)

1. Write down the letter corresponding to the most correct answer in the box provided for each question.

(i) When a chemist studies a substance, he/she is interested in its:

A. force of attraction
B. shape
C. smell
D. properties

(ii) When you melt a piece of iron, it undergoes:

A. sublimation
B. physical change
C. chemical change
D. combination

(iii) One isotope of an element has atomic number A and mass number M. How many neutrons are contained in the nucleus of its atom?

A. M
B. A
C. A – M
D. M – A

(iv) The total number of protons and neutrons in the nucleus of an atom is called:

A. valency number
B. atomic number
C. molecule number
D. mass number

(v) Hydrogen gas can be collected by downward delivery because:

A. it burns in air with a pop-sound
B. it is more soluble than air
C. it is lighter than air
D. it can fill balloons

(vi) The reaction that takes place when limestone $CaCO_3$ is heated in the laboratory can be described as:

A. combination
B. decomposition
C. replacement
D. double decomposition

(vii) Which of the following warning signs is likely to be found on the bottle containing petrol?

A. oxidant
B. flammable
C. corrosive
D. irritant

(viii) The process of chlorination in water treatment aims at:

A. killing micro-organisms
B. removing bad odours
C. forming suspension
D. syrup making

(ix) Oxidation may be defined as:

A. loss of hydrogen by a substance
B. gain of hydrogen by a substance
C. reaction in which oxygen is lost
D. reaction in which electrons are increased

(x) Which of the following sets of symbols represents isotopes:

A. $^{16}_{7}W$ $^{16}_{8}W$ $^{16}_{9}W$

B. $^{16}_{8}X$ $^{17}_{8}X$ $^{18}_{8}X$

C. $^{16}_{8}X$ $^{17}_{8}X$ $^{18}_{9}X$

D. $^{16}_{7}Y$ $^{17}_{8}Y$ $^{18}_{9}Y$

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 phrase in list A and write its letter against the appropriate statement in the space provided.

LIST A		LIST B	
(i)	…… a homogenous mixture of two or more substances	A	Iodine tincture
(ii)	…… is liquid metal	B	Antibiotic solution
(iii)	…… ionizes completely when diluted in water	C	Existence of element in different physical forms of the same state
(iv)	…… is a chemical substance used to clean flesh cuts and bruises	D	Group of atoms acting as a single substance
(v)	…… allotropy	E	Have both the acid and basic properties
(vi)	…… amphoteric oxide	F	Shows different colours in acidic and alkaline medium
(vii)	…… ionization energy	G	The energy required to remove electron from outermost shell
(viii)	…… is a method used to extract oil from nuts	H	Bonding
(ix)	…… simplest formula that expresses its composition by mass	I	Strong acid
(x)	…… have got no independent existence	J	Weak acid
		K	Solution
		L	Suspension
		M	Mercury
		N	Copper
		O	Solvent extraction
		P	Decantation
		Q	Empirical Formula
		R	Chemical equation
		S	Radical
		T	Valency

SECTION C (70 Marks)

Write all the answers in the spaces provided for each question.

3. (a) Mention any four laboratory rules.

(i) ……

(ii) ……

(iii) ……

(iv) ……

(b) Name any three uses of water.

(i) ……

(ii) ……

(iii) ……

(c) (i) Why is Hydrogen gas used in filling balloons?

……

(ii) When an iron bar was left outside for two nights its colour changed into red brown. Give a reason.

……

4. (a) Define the term:

(i) First Aid

……

……

(ii) First Aid Kit

……

……

(b) Find the oxidation number of the following underlined elements

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

……

……

……

(ii) $\underline{S}O_3^{2-}$

……

……

……

(iii) $O\underline{H}^-$

……

……

……

(iv) $K\underline{Cl}O_3$

……

……

……

(c) Write the Chemical formulae of the following compounds

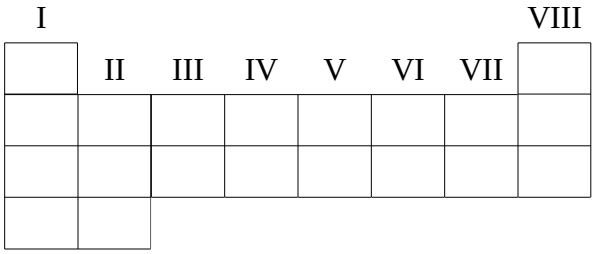
(i) Calcium Oxide ……

(ii) Sodium Hydrogen Carbonate ……

(iii) Phosphoric Acid ……

(iv) Lead (II) Nitrate ……

5. The diagram below represents a part of the periodic table. Study it carefully and answer the questions that follow:



(a) You are given elements D, C, B, A and E which have atomic numbers 1, 10, 14, 16 and 20 respectively. Place the elements in their respective groups and periods in the above periodic table.

(b) From the given elements identify the element with:

(i) an electronegative property ……

(ii) four valency ……

(iii) inert property ……

(iv) alkaline earth metal property ……

(v) a property of burning oxygen to form water ……

(c) (i) Write a chemical formula of a carbonate of element E.

……

(ii) Write a balanced equation which shows the decomposition of the carbonate in (c)-(i) above.

6. (a) Define molecular formula.

……

……

(b) A compound M is composed of 52.2% Carbon; 13.0% Hydrogen and the rest is Oxygen. If the molecular mass of M is 46:

(i) find the empirical formula of the compound.

(ii) find its molecular formula

7. To the named laboratory apparatus below draw and give the function of each.

	Name	Diagram	Use
(i)	Funnel		
(ii)	Mortar and Pestle		
(iii)	Wire Gauze		
(iv)	Test Tube		
(v)	Measuring Cylinder		

8. (a) Balance the following chemical equations.

(i) $KOH + H_2SO_4 \rightarrow K_2SO_4 + H_2O$

(ii) $N_2 + H_2 \rightarrow NH_3$

(iii) $NaOH + CO_2 \rightarrow Na_2CO_3 + H_2O$

(iv) $Mg(OH)_2 + H_2SO_4 \rightarrow MgSO_4 + H_2O$

(b) By using I.U.P.A.C. system, name the following chemical compounds.

(i) $CuSO_4$ ……

(ii) ZnO ……

9. (a) Define matter.

……

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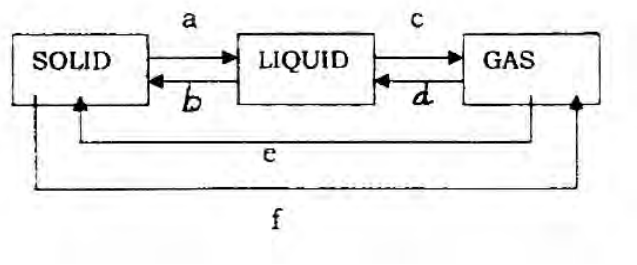
(b) Write the names of the following processes of changing matter from one state to another.



(i) a is ……

(ii) b is ……

(iii) c is ……

(iv) d is ……

(v) e is ……

(vi) f is ……

(c) State four points of the old Dalton's Atomic Theory

(i) ……

(ii) ……

(iii) ……

(iv) ……

10. (a) Draw a well labeled diagram for the preparation of Oxygen gas in the laboratory using $KClO_3$ and MnO_2.

(b) What is the importance of MnO_2 in the reaction above?

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……

(c) Oxygen is collected by downwards displacement of water.

Briefly explain why this method is used.

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