Candidate's Examination Number. .....

THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
FORM TWO SECONDARY EDUCATION EXAMINATION

032 **CHEMISTRY**

Time: 2:30 Hours **Thursday, 19th November 2015 a.m.**

Instructions

1. This paper consists of sections A, B and C.
2. Answer **all** questions in the spaces provided.
3. **All** writing must be in black or blue ink **except** diagrams which must be in pencil.
4. **All** communication devices and calculators are **not** allowed in the examination room.
5. Write your **Examination Number** at the top right corner of every page.
6. The following atomic masses may be used: H = 1, O = 16, C = 12, N = 14, Na = 23, Al = 27, S = 32, K = 39, Ca = 40, Fe = 56, F = 19, Cu = 64.

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

F2-03 PM-RALG 2015

Candidate's Examination Number. .....

SECTION A (10 Marks)

1. For each of the items (i) – (x), choose the correct answer from the given alternatives and write its letter in the box provided.

(i) Which of the following is the most correct statement about hypothesis?
- A A fundamental concept or theory.
- B A possible explanation to the problem.
- C An important statement of a research conclusion.
- D A stage in data interpretation.

(ii) Which of the following is **not** among the gases composing air?
- A Noble gases
- B Carbon dioxide
- C Nitrogen
- D Hydrogen.

(iii) When an atom loses or gains electron, it becomes
- A an ion
- B anion
- C cation
- D charged ion.

(iv) A change of gaseous state to solid state without passing through a liquid state is called
- A Deposition
- B Sublimation
- C Condensation
- D Solidification.

(v) What is the type of a fire associated with electrical equipment?
- A Class E
- B Class C
- C Class F
- D Class B.

(vi) Which among the following are the two processes involved during distillation?
- A Evaporation and sublimation
- B Evaporation and crystallization
- C Evaporation and condensation
- D Evaporation and decantation.

(vii) Which of the following set of nuclide notation represents isotopes?
- A $^{18}_{9}X$, $^{16}_{9}X$, $^{19}_{0}X$
- B $^{18}_{9}X$, $^{18}_{9}X$, $^{18}_{0}X$
- C $^{16}_{8}X$, $^{18}_{8}X$, $^{18}_{9}X$
- D $^{16}_{8}X$, $^{17}_{8}X$, $^{18}_{8}X$.

(viii) The chemical used to test the presence of water in a substance is
A Cobalt II oxide
B Cobalt III oxide
C Cobalt chloride
D Copper II chloride.

(ix) When a burning fuel produces blue colour it means there are
A adequate supply of oxygen with production of soot
B inadequate supply of oxygen with production of more heat
C inadequate supply of oxygen with production of soot
D adequate supply of oxygen with production of more heat.

(x) Which of the following is the best apparatus for measuring accurately a fixed volume of a given solution?
A Measuring cylinder
B Beaker
C Pipette
D Burette.

SECTION B (20 Marks)

2. Match each item in **List A** with a correct response in **List B** by writing its letter below the number of the corresponding item in the table provided.

List A	List B
(i) Group of elements which reacts quickly with water to form alkaline solution.	A Metalloids
(ii) The ability of an atom to attract an electron.	B Non-metals
(iii) Group of elements in which their shells are completely filled up.	C Periodicity
(iv) A vertical column of elements in the periodic table.	D Transition elements
(v) Group of elements which reacts slowly with water to form alkaline solution.	E Electronegativity
(vi) Group of elements which reacts with metals to form salts.	F Alkali metals
(vii) Group of elements which reacts by receiving electrons.	G Halogens
(viii) The systematic arrangement of elements according to their increase in atomic numbers.	H Periodic law
(ix) Group of elements with high densities and melting points, and often act as catalysts.	I Alkali earth metals
(x) Group of elements which have both metallic and non-metallic characteristics.	J Rare non metals
	K Period
	L Noble gases
	M Periodic table
	N Group

ANSWERS

LIST A	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
LIST B										

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SECTION C (70 Marks)

3. (a) Define the following terms:

(i) Oxidation state.....

.....

(ii) An element.....

.....

(iii) A compound.....

.....

(iv) Fainting.....

.....

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

(i) Sodium sulphate.....

(ii) Sodium chloride.....

(iii) Calcium nitrate.....

(iv) Calcium oxide.....

4. Gas X can be prepared in the laboratory by the decomposition of hydrogen peroxide.

(a) Identify gas X.

.....

(b) State three physical properties of Gas 'X'.

(i) .....

(ii) .....

(iii) .....

(c) Mention three chemical properties of gas 'X'.

(i) .....

(ii) .....

(iii) .....

(d) State three uses of gas 'X'.

(i) .....

(ii) .....

(iii) .....

5. (a) Write the name of each of the following compounds:

(i) $(NH_4)_2CO_3$.....

(ii) $CaCl_2$.....

(iii) Na_2SO_4.....

(iv) $KClO_3$.....

(b) Give three differences between the following:

(i) Electrovalent compounds and covalent compounds.

Electrovalent Compounds	Covalent Compounds

(ii) Solutions and suspensions.

Solutions	Suspensions

6. (a) State two chemical properties of water.

(i) .....

(ii) .....

(b) Calculate the molar mass of each of the following compounds:

(i) $Al_2(SO_4)_3$.

(ii) $NaHCO_3$.

(iii) Fe_2O_3.

(c) State whether each of the following is a chemical or physical change:

(i) Burning of charcoal.....

(ii) Rusting of iron sheets.....

7. (a) Study the following Periodic Table and then answer the questions that follow.

I	II	III	IV	V	VI	VII	VIII
A							B
	C		D		E		
F	G					H	

(i) Write the collective name of elements in:

Group II .....

Group VIII .....

(ii) Name the elements which are represented by the following letters:

A ..... B .....

C ..... D .....

(iii) Write the electronic configuration of the following elements:

E ..... F .....

G ..... H .....

(b) Name two products in each of the following fields made by the application of chemistry.

Field	Products
(a) Medicine	
(b) Food and beverage industry	

8. (a) Calculate the oxidation number of the underlined elements:

(i) $K_2\underline{C}_2O_4$	(ii) $\underline{S}O_3^{2-}$

(b) What is the use of each of the following apparatus?

(i) Thistle funnel .....

(ii) Pipette .....

(iii) Wire gauze .....

(iv) Burette.....

9. When dilute hydrochloric acid is reacted with zinc metal, gas Z is formed.

(a) Identify the name of gas Z.

.....

(b) Mention four physical properties of gas Z.

(i) .....

(ii) .....

(iii) .....

(iv) .....

(c) State two uses of gas Z.

(i) .....

(ii) .....

10. (a) Define the following terms:

(i) Empirical formula .....

.....

.....

(ii) Molecular formula .....

.....

.....

(b) A compound consists of 85.7% carbon and 14.3% hydrogen by mass. If its relative molecular mass is 56. Calculate:

(i) Empirical formula.

(ii) Molecular formula.