Candidate's Examination Number ……

THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
FORM TWO SECONDARY EDUCATION EXAMINATION, 2000

0032 **CHEMISTRY**

Time: 2½ HOURS

INSTRUCTIONS

1. This paper consists of sections A, B and C.
2. Answer **ALL** questions.
3. Write your examination number at the top right corner of every page.
4. **ALL** writing must be in black or blue ink **EXCEPT** diagrams which must be in pencil.
5. Cellphones and calculators are not allowed in the examination room.
6. The following atomic masses may be used: $H = 1$, $O = 16$, $C = 12$, $Na = 23$, $S = 32$, $Ca = 40$

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.

SECTION A (10 MARKS)

Answer ALL questions from this section. Each question carries 3 marks.

1. Write down the letter of the most correct response for each question:

(i) The branch of science that studies matter and its changes is:
A. Physics
B. Biology
C. Chemistry
D. Geography

(ii) An atom with 7 protons and 8 neutrons has a mass number of:
A. 7
B. 8
C. 15
D. 1

(iii) The part of a Bunsen burner that controls air intake is:
A. Collar
B. Barrel
C. Base
D. Jet

(iv) A solution with a pH of 7 is:
A. Acidic
B. Alkaline
C. Neutral
D. Weakly acidic

(v) When an element from Group IV combines with an element from Group VI, the formula of the compound formed is:
A. MX_2
B. M_2X
C. MX
D. M_2X_2

(vi) Group VIII elements are known as:
A. Alkali metals
B. Halogens
C. Noble gases
D. Alkaline earth metals

(vii) The result of a neutralization reaction is:
A. Gas only

B. Water and salt
C. Acid and base
D. Salt only

(viii) Which of the following species have the same number of electrons?
A. O^{2-}, F^{-}, Ne, Na^{+}
B. K^{+}, Ca^{2+}, Cl^{-}
C. Mg^{2+}, Al^{3+}, Si^{4+}
D. Li^{+}, Be^{2+}, B^{3+}

(ix) A spatula is used for:
A. Measuring liquids
B. Transferring small amounts of solids
C. Heating substances
D. Filtering mixtures

(x) The purpose of distillation in water treatment is to:
A. Remove solid particles
B. Kill micro-organisms
C. Remove dissolved impurities
D. Add minerals

2. Match each item in List A with a correct response in List B by writing its letter against the appropriate statement in the space provided.

LIST A	LIST B
(i) Gas used in balloons	A. Helium
(ii) Process of preventing rust with oil	B. Lubrication
(iii) Element with atomic number 14	C. Silicon
(iv) Apparatus for gas collection	D. Gas jar
(v) Gas that turns lime water cloudy	E. Carbon dioxide
(vi) Separates dyes in a mixture	F. Chromatography
(vii) Liquid used in thermometers	G. Mercury
(viii) Turns litmus paper blue	H. Base
(ix) Method to obtain pure sugar	I. Crystallization
(x) Element in group VI, period 3	J. Sulphur

Answers:

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

SECTION B (70 MARKS)

Answer ALL questions from this section. Each question carries 7 marks.

3. (a) What is a mixture?

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.....

(b) Mention three mixtures found in daily life.

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.....

(c) Write the names of the following processes of changing matter from one state to another:

(i) Liquid to gas: .....

(ii) Solid to liquid: .....

(iii) Gas to solid: .....

4. (a) Write the chemical symbols for the following:

(i) Sodium: .....

(ii) Oxygen: .....

(iii) Iron: .....

(iv) Chlorine: .....

(v) Potassium: .....

(b) Write the formulae for the following compounds:

(i) Magnesium chloride: .....

(ii) Sulphur dioxide: .....

(iii) Calcium carbonate: .....

(iv) Ammonia: .....

(v) Sodium hydroxide: .....

(c) Write balanced equations for the following chemical reactions:

(i) Aluminium + Oxygen → Aluminium oxide

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.....

(ii) Sodium carbonate + Hydrochloric acid → Sodium chloride + Water + Carbon dioxide

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(iii) Decomposition of ammonium chloride

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(iv) Copper + Sulphuric acid → Copper(II) sulphate + Hydrogen

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(v) Potassium hydroxide + Nitric acid → Potassium nitrate + Water

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5. (a) Define the term neutralization.

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(b) Name the colours of indicators when they are in acidic or alkaline solution.

INDICATOR	ACID SOLUTION	ALKALINE SOLUTION
(i) Methyl Orange	.....	.....
(ii) Litmus	.....	.....
(iii) Phenolphthalein	.....	.....

(c) Find the oxidation state or number of the following underlined elements:

(i) Ca: .....

(ii) NO_2 (N underlined): .....

(iii) H_2S (S underlined): .....

(iv) Na_2CO_3 (C underlined): .....

6. (a) Elements R and S in the Periodic Table have atomic numbers 6 and 7 respectively.

(i) Which element has a higher ionization energy?

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(ii) Of the two elements, which one has larger atoms?

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(iii) Which type of bond forms when element R combines with chlorine?

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(iv) Find the charge of atom R after the reaction in question (iii).

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(b) Mention four uses of water in daily life.

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(c) Define the following:

(i) Compound: .....

(ii) Suspension: .....

7. (a) Which method would you use to separate each of the following mixtures?

(i) Mud mixed with water: .....

(ii) Copper sulphate crystals mixed with sand: .....

(iii) Sulphur mixed with iron filings: .....

(iv) Kerosene mixed with water: .....

(b) Write three differences between an element and a compound.

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8. (a) Classify each of the following chemical equations as displacement, combination, neutralization, decomposition, or precipitation:

(i) $2Na(s) + Cl_2(g) \rightarrow 2NaCl(s)$: .....

(ii) $BaCl_2(aq) + Na_2SO_4(aq) \rightarrow BaSO_4(s) + 2NaCl(aq)$: .....

(iii) $H_2SO_4(aq) + 2NaOH(aq) \rightarrow Na_2SO_4(aq) + 2H_2O(l)$: .....

(iv) $Zn(s) + 2HCl(aq) \rightarrow ZnCl_2(aq) + H_2(g)$: .....

(v) $CaCO_3(s) \rightarrow CaO(s) + CO_2(g)$: .....

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

(i) Test tube: .....

(ii) Delivery tube: .....

(iii) Mortar and pestle: .....

(iv) Burette: .....

(v) Retort stand: .....

9. (a) Draw a well labelled diagram of preparation of hydrogen gas.

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(b) What is the test for hydrogen gas?

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(c) State any three uses of hydrogen.

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10. (a) Define the term combustion.

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(b) Write down three examples of combustible substances.

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(c) Explain why water is not used to extinguish oil fires.

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(d) What do you understand by the following chemical warning terms?

(i) Toxic: .....

(ii) Flammable: .....

(iii) Corrosive: .....

(iv) Harmful: .....