Candidate's No...……

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION AND VOCATIONAL TRAINING

FORM TWO SECONDARY EDUCATION EXAMINATIONS, 2006

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 for each question.
3. Write your examination number on the top right hand corner of every page.
4. All writing must be in black or blue pen except for 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 and O = 16, Mg = 24, S = 32

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 09 printed pages.

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SECTION A (10 Marks)

This section consists of ten 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 for each question.

(i) One of the following apparatuses is used to measure a fixed volume of liquids. ☐

A. Pipette
B. Burette
C. Measuring Cylinders
D. Beaker

(ii) Coloured substances can be separated through the process called: ☐

A. Filtration
B. Chromatography
C. Distillation
D. Sublimation

(iii) Which of the following equations is a neutralization reaction? ☐

A. $Zn + Cl_2 \rightarrow ZnCl_2$
B. $Fe + S \rightarrow FeS$
C. $H^+ + OH \rightarrow H_2O$
D. $CaCO_3 \rightarrow CaO + CO_2$

(iv) Moving across the period in the periodic table: ☐

A. Electronegativity decreases
B. Electronegativity increases
C. Metallic property increases
D. Electropositivity increases

(v) A solution of pH 1.5 is best described as: ☐

A. Weak acid
B. Strong base
C. Weak base
D. Strong acid

(vi) A sample of chlorine gas was found to contain 75% of the isotope $^{35}Cl_{17}$ and 25% of isotope $^{37}Cl_{17}$. Which of the expressions below is used to calculate the Relative Atomic Mass of chlorine?

A. $\frac{(35 \times 75) + (37 \times 25)}{100}$

B. $\frac{(35 \times 25) + (37 \times 75)}{100}$

C. $\frac{(75 \times 25) + (37 \times 35)}{100}$

D. $\frac{35 + 37}{2}$

(vii) Which of the following group of substances represents flammable liquids.

A. Petrol, pesticides, hydrogen
B. Petrol, sulphuric acid, methylated spirit
C. Methylated spirit, petrol, kerosene
D. Kerosene, diesel, hot water

(viii) If element M of Group I elements combines with element X of group VI, the formula of the compound formed is:

A. X_2M_6
B. MX_2
C. MX_6
D. M_2X

(ix) Acids change colour of the litmus paper from:

A. Blue to yellow
B. Red to blue
C. Red to pink
D. Blue to red

(x) The untreated and treated water differ in that:

A. Untreated water contains dirt while the treated contains dissolved chemicals.
B. Treated water forms lather with soap while the untreated forms scum.
C. Untreated water is safe for swimming while the treated can corrode the skin.
D. Treated water is safe for swimming while the untreated can be harmful to health.

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.

NO	LIST A	LIST B
(i)	…… Absorbs moisture and becomes wet	A. Oxidation
(ii)	…… A bond is formed by electron sharing	B. Oiling and alloying
(iii)	…… Prevents the rusting of iron	C. Electrovalent
(iv)	…… Luminous flame	D. Reduction
(v)	…… Addition of hydrogen or removal of oxygen from a substance	E. Hard water
(vi)	…… Ionizes completely	F. Allotropy
(vii)	…… Presence of Calcium Carbonate and Magnesium Sulphate in water	G. Covalent
(viii)	…… A tendency for one element to exist in more than one form	H. Carbon dioxide
(ix)	…… Burns in air	I. Hygroscopic
(x)	…… Is used in extinguishing fire	J. Hydrogen
		K. Isotopy
		L. Oxygen
		M. Forms soot
		N. Deliquescent
		O. Strong acid

SECTION C (70 Marks)

3. (a) Mention three things which are necessary in starting a fire.

(i) ……

(ii) ……

(iii) ……

(b) (i) Explain what will happen if a mixture of sand and Ammonium Chloride is heated in a flask.

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(ii) What process will you use to separate a mixture of compound N which boils at 70ºC and a compound P which boils at 75ºC?

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4. (a) Define with one example:

(i) Element ……..

……

……

(ii) Compound……..

……

……

(b) Compare Physical change and Chemical change

	PHYSICAL CHANGE		CHEMICAL CHANGE
(i)	…… ……	(i)	…… ……
(ii)	…… ……	(ii)	…… ……
(iii)	…… ……	(iii)	…… ……
(iv)	…… ……	(iv)	…… ……

(c) Write down the names of the compounds in the following symbols:

(i) $NaHCO_3$ ……

(ii) H_2O_2 ……

5. (a) Define:

(i) Acid ……...

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……

(i) Base ……...

……

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(i) Salt …….

……

……

(b) Against each of the uses of salts below, write down one example of salt that applies:

(i) Fertilizer ……

(ii) Medicine ……

(iii) Softening water ……..

(iv) Fire extinguishing ……..

(c) Complete the reactions below giving the name(s) of the main product(s)

(i) Metals + Acid →

(ii) Alkalines + Water →

(iii) Carbonates + Acid →

6. (a) Define empirical formula

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……

……

(b) A certain compound contains 20% by mass of Mg, 26.5% of Sulphur and Y% of Oxygen.

(i) Find the value of Y

(ii) The Empirical Formula is ……

7. (a) Give one property that distinguishes Permanent hardness of water from Temporary hardness of water.

(i) Permanent hardness …….

……

……

(ii) Temporary hardness …….

……

……

(b) Mention two disadvantages of hard water:

(i) ……

(ii) ……

8. Write a balanced chemical equation for the following:

(i) Combination of Iron and Sulphur

……

(ii) Decomposition of Calcium Carbonate

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(iii) Combination of Ammonia and Sulphuric Acid

……

(iv) Combination of Potassium and Water

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9. (a) Why are there laboratory rules? Give two reasons.

(i) ……

……

……

……

(ii) ……

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(b) Suppose your laboratory does not have any water, mention two possible dangers of using it.

(i) ……

……

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(ii) ……

……

……

10. (a) Draw a labelled diagram for the preparation of hydrogen gas using dilute hydrochloric acid and zinc.

(b) Give four properties of hydrogen.

(i) ……

(ii) ……

(iii) ……

(iv) ……