Candidate's Examination Number_____

THE REVOLUTIONARY GOVERNMENT OF ZANZIBAR

ZANZIBAR EXAMINATIONS COUNCIL

FORM THREE ENTERANCE EXAMINATION

CCBHGE

216 CHEMISTRY

TIME: 2:30 HOURS WEDNESDAY 23TH OCTOBER, 2024 A.M

INSTRUCTIONS TO THE CANDIDATE

1. **This paper consists of THREE (3) sections A, B and C.**
2. **Answer ALL questions in section A and B, and TWO (2) questions in section C. Question (9) is compulsory.**
3. **Write your Examination Number on each page.**
4. **All answers must be written in space provided.**
5. **Use a blue or black pen in writing. Diagrams must be in pencil.**
6. **Cellular phones and unauthorized materials are not allowed in the examination room.**
7. **The following constants may be used**

   C =12, O= 16, H =1, Na =23, Ca =40, N = 14

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	**MARKS**	**SIGNATURE**
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9a.		
9b.		
10.		
11.		
TOTAL		
CHECKER'S SIGNATURE		

2132462

This paper consists of 13 printed pages

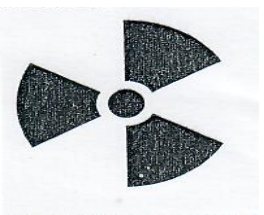
Candidate's Examination Number_____

SECTION A: (30 Marks)

Answer ALL questions in this section.

1. Choose the correct answer from the given alternatives and write its letter in the table below.

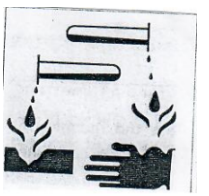
i. Which symbol is used to represent a substance that may corrode surface?



A.

B.

C.



D.

ii. Which one of the following is a physical property of water?

A. It has freezing point of $0^{o}C$

B. It reacts with sodium to form hydroxide

C. It is nether acidic nor basic

D. It reacts with metals to form metal oxides

iii. One of the following groups are products of chemistry

A. Fertilizer, weed killers and pesticides

B. Machine, fertilizer and animals

C. Motor, energy and agriculture

D. Sand, animals and cement

iv. The first step in scientific procedures is

A. Collection of data and analysis B. Draw a conclusion

C. Interpretation of data D. Problem identification

v. In the formation of ions, the atom that gains electron become

A. Negatively charged B. Neutral charged

C. Nil charged D. Positively charged

vi. Which apparatus is suitable to measure the mass of sodium hydroxide pallets in a laboratory?

A. Electronic balance

B. Measuring balance

C. Spring balance

D. Tap balance

vii. Which one of the following element can react with water to form alkaline solution?

A. Aluminium

B. Carbon

C. Potassium

D. Sulphur

viii. What is the correct use of test tube rack?

A. Cleaning test tubes

B. Heat chemicals in test tubes

C. Holding and supporting test tubes

D. Store solutions

ix. Which one among the following is a correct pair of noble gases?

A. Argon and magnesium B. Helium and argon

C. Helium and sodium D. Sodium and magnesium

x. Which of the following substance is a universal solvent?

A. Diesel B. Kerosene

C. Petrol D. Water

ANSWERS

i	ii	iii	iv	v	vi	vii	viii	ix	x

2. Match the statements in **LIST A** with their correct terms in **LIST B** as they are used in compounds and mixtures. Write the letter of the correct answer in the table below.

LIST A	LIST B
i. Method of separation of heterogeneous mixture of a solid and a liquid	A. Chromatography
ii. Mixture of liquids that do not dissolve each other	B. Decantation
iii. Mixture that has different composition, appearance and properties	C. Deposition
iv. Is the process whereby a gas change directly into solid	D. Distillation
v. Mixture that has uniform composition appearance and properties	E. Elmulsions
vi. Solution that can dissolve no more solute at a given temperature	F. Heterogeneous
vii. Component of solution that dissolves other substances	G. Homogenous
viii. Is the process whereby a solid changes state directly into gas	H. Saturated
ix. Is a heterogeneous mixture of a liquid and fine particles of solid in which solid does not dissolve	I. Solvent
x. Solutions that still can dissolve more solute at a given temperature	J. Sublimation
	K. Suspensions
	L. Unsaturated

ANSWERS

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

3. Read the sentences below and fill the blank spaces. Use one word for each space.

   i. The loss of blood is called _____ and always occurs from a visible _____

   ii. A fuel gas derived from decomposing of biological waste is _____, while organic matter in living plant material is _____

   iii. Joining together of metal pieces by heating their surfaces is called _____ and in this process _____ flame is suitable.

   iv. Hydrogen is _____ than air and reacts with _____ to produce water.

   v. The change which is reversible is called _____ change and it does not affect the _____ of the substance.

SECTION B: (50 Marks)

Answer ALL questions in this section.

4. a. i. What is atom?

_____

_____

_____

ii. Give a reason why protons and neutrons are called nucleons.

_____

_____

_____

_____

_____

_____

b. Outline three (3) properties of electrons.

_____

_____

_____

_____

c. An atom A_n has mass number of 42 and its atomic number is 20.

Calculate the following

i. Number of neutrons

_____

_____

_____

ii. Number of electrons

_____

_____

_____

5. a. What is fuel?

_____

_____

_____

b. Mention three (3) characteristics of good fuel.

_____

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_____

_____

_____

_____

_____

_____

c i. Briefly explain geothermal energy.

_____

_____

_____

ii. Write three (3) ways in which solar energy can be trapped.

_____

_____

_____

_____

6. a. i. Mention two (2) uses of water in economic activities.

_____

_____

_____

_____

ii. Write the aim of water treatment.

_____

_____

_____

b. Explain briefly the following terms as they are used in water cycle.

i. Condensation

_____

_____

_____

_____

ii. Precipitation

_____

_____

_____

iii. Collection

_____

_____

_____

7. a. Define the term radical.

_____

_____

_____

b. Write the names of the following radicals.

i. NO_3^- _____

ii. OH^- _____

iii. CL^- _____

c. Calculate the oxidation state of underlined elements in the following radicals.

i. $\underline{Cr}O_4^{-2}$

_____

_____

_____

_____

_____

ii. $\underline{S}O_4^{-2}$

_____

_____

_____

_____

_____

8. a. Define the following terms.

i. A covalent bond

_____

_____

_____

ii. Molecule

_____

_____

_____

_____

b. Complete the following table

S/n	Name of compound	Chemical formulae of compound
i.	Iron (iii) Sulphate	
ii.	Magnesium Carbonate	

c. List down two (2) properties of electrovalent compounds.

_____

_____

_____

_____

SECTION C: (20 Marks)

Answer TWO (2) questions from this section.

Question 9 is COMPULSORY, answer either (9a) or (9b)

9. a. Form two students of Mtakuja Secondary School performed an experiment to investigate components of air by using lime water and white anhydrous copper (II) sulphate. After experiment they observe the following.
   - After few days lime water in the watch glass turns to milky.
   - White anhydrous copper (II) sulphate in the watch glass turns to blue.

   Questions

   i. Identify the component of air that causes anhydrous copper (II) sulphate to turn blue.

   _____

   ii. Identify the gas in air that causes lime water to turn milky.

   _____

   iii. Write balanced chemical equation when the gas you have identify in (ii) above react with lime water.

   _____

   iv. Write four (4) materials that they can use to determine the presence and proportion of oxygen in air.

   _____

   _____

   _____

   _____

   _____

   _____

9. b. The table below shows some apparatus used in Chemistry laboratory. Complete the table.

S/n	Apparatus	Made up of	Uses
1.	Mortar and pestle		
2.	Beaker		
3.	Thermometer		
4.	Pipette		
5.	Crucible		

10. a. With the aid of equation explain what happen when

i. Magnesium ribbon burn in air.

_____

_____

_____

_____

_____

_____

ii. Iron dissolved in dilute sulphuric acid.

_____

_____

_____

_____

_____

b. Explain briefly the process of galvanization.

_____

_____

_____

c. Outline two (2) types of portable fire extinguishers.

_____

_____

11. a. Define empirical formula.

_____

_____

_____

_____

b. A compound was analyzed and found to contain 24g of carbon, 4g of hydrogen and 32g of oxygen. Calculate

i. Its empirical formula

_____

_____

_____

_____

_____

_____

_____

_____

_____

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_____

_____

ii. Its molecular formula, if its relative molecular mass is 60.
