Student's Assessment Number.....

THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA
FORM TWO NATIONAL ASSESSMENT

032 **CHEMISTRY**

Time: 2:30 Hours **Year: 2024**

Instructions

1. This paper consists of sections A and B with a total of **ten (10)** questions.
2. Answer **all** the questions in the spaces provided.
3. Section A and C carry **fifteen (15)** marks each and section B carries **seventy (70)** marks.
4. All writing must be in **black** or **blue** ink **except** diagrams which must be in pencil.
5. Communication devices and any unauthorised materials are **not** allowed in the assessment room.
6. Write your **Assessment Number** at the top right corner of every page.
7. The following atomic masses may be used: H = 1, C = 12, O = 16.

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

(ix) How can contaminants be removed from water?

A Through purification
B Through sedimentation
C Through electrolysis
D Through decantation

(x) How many protons are there in a molecule of oxygen gas?

A 8
B 17
C 9
D 16

2. Match the elements in **List A** with the number of protons in **List B** by writing the correct response beside the corresponding item number in the table provided.

List A		List B	
(i)	Hydrogen	A	Six
(ii)	Helium	B	Five
(iii)	Carbon	C	Four
(iv)	Fluorine	D	Ten
(v)	Beryllium	E	Nine
		F	Zero
		G	Two

Answers

List A	(i)	(ii)	(iii)	(iv)	(v)
List B					

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SECTION A (15 Marks)

Answer **all** questions in this section.

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

(i) How are the different atoms which occupy the same group and period called?

A Isotopes B Isomers
C Monomers D Isobers

(ii) Which one of the following is **not** a suitable means of separating the components of air?

A Chemical means B Physical means
C Freezing method D Precipitation method

(iii) Which source of flame produces a non-luminous flame?

A Candle B Tin lamp
C Kerosene stove D Bunsen burner

(iv) How can water be changed from vapour to liquid state?

A By sublimation B By evaporation
C By melting D By condensation

(v) Why is water regarded as the universal solvent?

A Because it is found all over the world
B Because it contain hydrogen and oxygen elements
C Because most of substances dissolve in it
D Because it contains a variety of minerals

(vi) What is the total number of electrons in hypothetical ion Q^{2+} whose atomic number is 12?

A 12 B 14
C 10 D 24

(vii) Which one of the following is **not** a part of the Bunsen burner?

A Jet B Barrel
C Gas tap D Air hole

(viii) Which apparatus serves the function of stirring substances?

A Desiccator B Glass rod
C Spatula D Deflagrating spoon

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SECTION B (70 Marks)

Answer **all** questions in this section.

3. With the aid of a diagram, briefly describe the zones on luminous flame.

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4. (a) (i) Give three assumptions of Dalton's Atomic Theory.

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(ii) Write the nuclide notation of an arbitrary element X having atomic number Z and neutron number A.

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(b) A sample of chlorine gas was found to contain 75% of the isotope $^{35}_{17}Cl$ and 25% of isotope $^{37}_{17}Cl$. Calculate the relative atomic mass of chlorine.

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5. Study the following part of the Periodic Table and then answer the questions that follow.

I	II	III	IV	V	VI	VII	VIII

(a) Place the elements having proton number 1, 10, 14, 16 and 20 in the Periodic Table by using letters A, B, C, D and E respectively.

(b) Identify the element which:

(i) has the highest electronegativity.....

(ii) has a valency of four.....

(iii) is among the inert gases.....

(iv) belongs to alkaline earth metals' block.....

(v) burns in oxygen to form water.....

6. (a) Give reasons for the following safety measures towards fire accidents in the laboratory.

(i) It is advised to close all windows before leaving the laboratory after work.

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(ii) If a person is surrounded by smoke to the extent of not being able to access the exits, it is advised to lie flat on the floor while searching for the exit points.

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(b) Briefly explain three classes of fire by focusing on the nature of the burning materials and the recommended extinguishers.

(c) What will be observed in the following simple experiments?

(i) Red litmus paper is dipped into a flask containing dilute hydrochloric acid.

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(ii) A piece of white plain paper is placed above a luminous flame.

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(iii) A burning splint is lowered into a jar containing a mixture of hydrogen and oxygen gas.

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9. (a) Give two differences between covalent compounds and electrovalent compounds.

(i) .....

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(ii) .....

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7. Describe the fractional distillation process of a mixture of water and ethanol.

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8. (a) Give three laboratory rules.

(i) .....

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(ii) .....

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(iii) .....

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(b) Identify three fields in which Chemistry is applied.

(i) .....

(ii) .....

(iii) .....

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(b) A compound is composed of 52.2% carbon, 13% hydrogen and the rest being oxygen. Calculate the molecular formula of the compound if its molecular mass is 138.

SECTION C (15 Marks)

Answer question **ten (10)**.

10. (a) Give four chemical properties of hydrogen gas.

(i) .....

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(ii) .....

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(iii) .....

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(iv) .....

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(b) Draw a well labelled diagram of apparati set up for the laboratory preparation of hydrogen gas. Include all chemicals involved.