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: 2022**

Instructions

1. This paper consists of sections A, B and C with a total of **ten (10)** questions.
2. Answer **all** 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. Cellular phones 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 ASSESSORS' USE ONLY		
QUESTION NUMBER	**SCORE**	**ASSESSOR'S INITIALS**
1		
2		
3		
4		
5		
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7		
8		
9		
10		
TOTAL		
CHECKER'S INITIALS		

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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 the given alternatives and write its letter in the box provided.

(i) Identify the set of chemistry products which are used for domestic cleanliness.

A Tooth paste, oils, detergents and deodorants.
B Soap, deodorants, tooth paste and fuel.
C Detergents, soap, tooth paste and deodorants.
D Drugs, tooth paste, soap and oils.

(ii) During practical work a measuring cylinder was used to prepare oxygen by decomposing hydrogen peroxide. What is the function of the cylinder in this experiment?

A To measure volume
B To measure weight
C To measure width
D To measure volume length

(iii) Your friends were arguing about the scientific procedure that follows after data interpretation. Which stage will you suggest to your friends?

A Observation.
B Hypothesis.
C Conclusion.
D Experimentation.

(iv) The teacher was demonstrating an experiment by dissolving sodium chloride in water until the solute was not dissolving any more. What type of solution formed at the end of the experiment?

A Saturated
B Unsaturated
C Super saturated
D Suspension

(v) A large percent of air is composed of

A nitrogen
B noble gases
C carbon dioxide
D oxygen

(vi) John and Asha were debating about the processes that are involved during simple distillation. What processes will you recommend to them?

A Filtration and decantation
B Condensation and decantation
C Evaporation and filtration
D Evaporation and condensation

(vii) Form Two student discovered that it is impossible to light fire in a vacuum due to the absence of a certain gas. What comment can you give to the student?

A Nitrogen is missing
B Oxygen is missing
C Carbon dioxide is missing
D Hydrogen is missing

(viii) Atomic structures of all elements consist of electrons, protons and neutrons **except** that of:

A Hydrogen B Nitrogen
C Oxygen D Carbon

(ix) When referring to the modern Periodic Table, the transition elements are found between:

A group I and II B group I and III
C group II and III D group III and IV

(x) Given that, element "M" with electronic configuration of 2:8:3 combines with element "G" with electronic configuration of 2:6 to form a compound; What is the chemical formula of the compound formed.

A G_3M_2 B M_2G_3
C G_2M_3 D M_3G_2

2. Match the mixtures in **List A** with the corresponding methods of separation in **List B** by writing the letter of the correct answer below the item number in the table provided.

List A		List B	
(i)	Chlorophyll from leaves	A	Simple distillation
(ii)	Sulphur and iron fillings	B	Magnetization
(iii)	Sand and ammonium chloride	C	Chromatography
(iv)	Pure water from muddy water	D	Solvent extraction
(v)	Salt from the sea water	E	Evaporation
		F	Sublimation
		G	Filtration

Answers

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

SECTION B (70 Marks)

Answer **all** questions in this section.

3. (a) A chemist heated a mixture of ammonium chloride and sand in a test tube. After 5 minutes, only sand remained in the test tube. Explain the observation that made by a chemist.

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(b) A gardener became sick and decided to rush to hospital. After checkup, the doctor prescribed medicines and instructed the gardener to shake the medicines well before use. What does the instruction imply basing on the type of the mixture? Give reason to support your answer.

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(c) Differentiate mixture from compound by giving five points.

S/N	Mixture	Compound
(i)		
(ii)		
(iii)		
(iv)		
(v)		

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4. (a) Give reasons to support each of the following statements.

(i) Helium is used in filling balloons instead of hydrogen gas despite the fact that hydrogen is a lighter gas than helium.

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(ii) When air bubbles pass through lime -water, lime water turns milky.

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(iii) The iron and steel of bridges, ships and pipelines are protected from rusting by joining to a reactive metal such as magnesium.

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(b) Briefly explain two processes which add carbon dioxide to the air.

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5. (a) Differentiate empirical formula from molecular formula.

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(ii) Rusting will not occur when anhydrous copper(II) sulphate is placed on top of a dry cotton wool in the test tube containing nails and left for 4 days.

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(iii) Carbon dioxide is used as fire extinguisher.

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(b) A Form Two student dipped a clean iron rod into a cold distilled water in a test tube and left it for 2 days.

(i) State what will happen to the iron rod after 2 days.

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(ii) Explain the observation if the iron rod is replaced by a painted nail in the same test tube and left there for 2 days.

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(iii) Explain the observation if cold distilled water will be replaced by a mixture of hot water and oil.

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7. The laboratory technician planned to conduct an experiment for the preparation of gas **Y**. The following set of apparatuses was used: Flat-bottomed flask, thistle funnel, delivery tube, beehive shelf and gas jars. Also pieces of zinc metal and dilute hydrochloric acid were used.

(a) Identify gas **Y**.

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(b) What apparatus is missing in the set provided?

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(c) Draw a well labeled diagram for the preparation of gas **Y** in the laboratory.

(d) Write the word equation for the laboratory preparation of gas **Y**.

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8. Suppose that you have been appointed by the Chemistry teacher to prepare a morning speech titled "Classification of fuels based on their efficiency." Elaborate how you would prepare your presentation basing on the following concepts:

(a) Pyrometric effect of burning

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(b) Heat Value

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(c) Ignition Point

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(d) Velocity of burning

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(e) Affordability

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9. (a) (i) Using Dalton atomic theory, explain the fact that calcium sulphate from Tanzania and that found in Kenya has the same percentage by mass of calcium, sulphur and oxygen.

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(ii) Why isotopes of the same element have similar chemical properties?

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(iii) Matter is made up of tiny indivisible particle called atoms. With reason, support or oppose this statement.

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(b) An isotope of strontium (Sr) has mass number 87 and atomic number 38.

(i) Write its nuclide notation.

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(ii) How many neutrons does it have?

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(iii) How many protons does it have?

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(iv) How many electrons does it have?

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SECTION C (15 Marks)

Answer question **ten (10)**.

10. (a) Construct a diagram to show the arrangement of the outer electrons in each of the following molecules:

(i) Chlorine

(ii) Ammonia

(iii) Carbon dioxide

(b) What type of bond exists in the molecules in part (a)?

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(c) Identify four properties of the molecules in part (a).

(i) .....

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(ii) .....

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(iii) .....

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(iv) .....

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