Candidate's Assessment Number: _____

TANZANIA HEADS OF ISLAMIC SCHOOLS COUNCIL

FORM TWO INTER ISLAMIC MOCK EXAMINATION

CHEMISTRY

032

TIME: 2:30 HOURS **Thursday, 25th July 2024 p.m.**

Instructions

1. This paper consists of sections A, B and C with a total of ten (10) questions.
2. Answer all questions in all sections.
3. Section A carries **fifteen (15)** marks, section B carries **seventy (70)** marks and section C carries **fifteen (15**) marks.
4. All writings must be in blue or black ink except drawings which must be in pencil.
5. All communication devices, calculators and any unauthorized materials are not allowed in the examination room.
6. Write your **Examination Number** at the top right corner of every page.
7. Where necessary the following constants may be used.

   Atomic masses; H=1, C=12, N=14, O=16, K=39, Cl=35.5, Ca=40, Cu=63.5

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

Candidate's Assessment Number: _____

SECTION A (15 Marks)

Answer **all** questions in this section

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

(i) Nawanda went to the laboratory to perform a certain experiment. During experiment she used a spatula for scooping substances. What is the possible type of substance making that apparatus scoop?
A. Powdery and gases
B. Crystalline chemicals and powdery
C. Crystalline chemicals and liquids
D. Powdery and liquids

(ii) A girl dissolved a small amount of sodium chloride in the evaporating dish containing water to form a solution then heated. What name is given to a sodium chloride in the solution?
A. Solute
B. Solvent
C. Solution
D. Suspension

(iii) Mfumbulwa placed element P in period 2 and group II in the periodic table. Which of these electronic configurations belongs to element P?
A. 2:5
B. 2:8:3
C. 2:8:8:2
D. 2:3

(iv) A student reacted magnesium with oxygen in order to form magnesium oxide. What happens to magnesium during the formation of magnesium oxide?
A. Magnesium gains protons
B. Magnesium loses protons
C. Magnesium loses electrons
D. Magnesium gains electrons

(v) Chemistry discovered atom Y with atomic number of 30 just like that of atom X, but these atoms have different mass numbers and they are of the same element. What is the best name for the two atoms?
A. Isotopes
B. Isotopy
C. Isotones
D. Isobars

(vi) Mr. Majanga experiences difficulty in breathing when using elevator of his house. What was exactly happening to his lungs?
A. Do not exhale enough oxygen
B. Do not inhale enough carbondioxide
C. Do not inhale enough oxygen
D. Do not exhale enough carbondioxide

(vii) Trashes collected from all dustbins in a school were put into a special furnace where they produce energy in the form of light and noticeable heat when lit. What is the process taking place inside the furnace?
A. Decomposition
B. Combustion
C. Disposing
D. Rotting

(viii) Mabala was prescribed to use a medicine whose container had a label written "**shake well before use**" as the best for him. In which kind of mixture is the medicine categorized to?
A. Solution
B. Emulsion
C. Suspension
D. Filtrate

(ix) Kibanji was ironing her uniforms, suddenly her mother called and she went to listen without switching off the socket. Upon coming back she found out that iron had exploded and the fire started to spread. Classify the type of fire caused by Kibanji.
A. Class C
B. Class D
C. Class E
D. Class F

(x) Lulela is facing a problem of fetching water at his village because all available water sources are full of mud. His friend advised him to assemble a simple water filter. Which of the components outlined below should not be included by Lulela in assembling the device?
A. Cloth
B. Alum
C. Charcoal
D. Gravel

ANSWERS:

(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)

2. Match the methods of preventing rusting in LIST A with the corresponding descriptions in LIST B by writing the letter of the correct response below the item number in the table provided.

LIST A	**LIST B**
(i) Painting	A. A more reactive metal than iron is attached to the protected material and will be consumed in favour of it.
(ii) Galvanization	B. A substance in form of grains and it absorbs moisture
(iii) Sacrificial anode	C. The process of coating iron materials or steel with zinc
(iv) Plating	D. The coating of substances such as metals with a special pigment
(v) Silica gel	E. Involves coating iron with oil.
	F. The process of spraying iron with carbon dioxide gas
	G. The coating of material with tin.

ANSWERS:

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

SECTION B (70 Marks)

Answer **all** questions in this section

3. (a) You have been appointed in a village meeting as an expert of Chemistry to explain to villagers four (4) applications of Chemistry in our daily life on the following fields:
   (i) Agriculture
   _____
   _____
   (ii) Transportation
   _____
   _____
   (iii) Medicine and pharmacy
   _____
   _____
   (iv) Construction materials industry
   _____
   _____

   (b) A student was asked to mention four professional careers he/she may attain through studying Chemistry subject. What correct answers can we get from her/him?
   (i) _____
   (ii) _____
   (iii) _____
   (iv) _____

4. (a)A teacher planned with his students to perform an experiment at 8:00 pm. Students reminded the teacher that the laboratory has no source of electricity so how can the experiment be conducted without light? The teacher told them we shall use the Bunsen burner to get light.
   (i) What type of flame will be suitable during their experiment?
   _____
   (ii) Why is the flame named in (i) above suitable for that purpose? Give two reasons.
   _____
   _____
   (iii)Draw a well labelled diagram of the flame named in (i) above.

   (b)Scientists believe that the use of chemical symbols is more significant than using common names of elements. Give two reasons to support this statement
   (i)_____
   _____
   (ii)_____
   _____

5. (a)Madam Aisha took 1kg of maize to a mortar and pestle for grinding it, after few hours she succeeded to get 1kg of maize flour from those grains.
   (i) Comment on the change occurred on the maize grains, as it was a physical change or chemical change.
   _____
   (ii) Give four reasons to support your answer in (i) above
   (i) _____
   (ii) _____
   (iii) _____
   (iv) _____

(b)Four beakers/bottles were found in the laboratory containing the following components: Bottle A contains a mixture of spirit and water, Bottle B contains a mixture of Iodine and sand, Bottle C contains a mixture of dyes and Bottle D contains muddy water. Which methods can you use to help a laboratory technician to separate these components accordingly?

In bottle A _____

In bottle B _____

In bottle C _____

In bottle D _____

6. (a)Form four (4) students confused the uses of the gas that supports combustion (ignites) with the one which burns with a Pop sound.

As a form two (2) student give the name of the gas that burns with a pop sound, then correct this confusion by giving them four uses of the gas which burns with a pop sound;

- Name of the gas

  _____

- Uses of the gas:

  (i) _____

  (ii) _____

  (iii) _____

  (iv) _____

(b)Mr. Majula went to the laboratory and found a substance T kept in a beaker, he also observed that the substance T boils at 100^{o}C and freezes at 0^{o}C at standard pressure.

(i) Outline three (3) chemical properties of substance T.

_____

_____

_____

_____

(ii) How is the substance T used in manufacturing industries? Give two (2) uses;

_____

_____

_____

_____

7. (a)Give the meaning of the following terms:

(i) Fuel

_____

_____

_____

(ii) Efficiency of a fuel

_____

_____

(b)You have been given the following; Biogas, petroleum, solar energy, wind energy, charcoal, natural gas. Help your young brother to classify them as renewable or non-renewable energy sources.

Renewable	**Non-renewable**

(c) Suppose your mother told you to buy a good/proper fuel for normal domestic uses. Which four (4) factors you may consider to implement your mother's order?

(i) _____

(ii) _____

(iii) _____

(iv) _____

8. (a) Scientists have modified the ideas put forward by John Dalton concerning the structure of an atom. List any four (4) ideas suggested by those scientists so as to amend Dalton's atomic theory.

(i) _____

(ii)_____

(iii)_____

(iv)_____

(b)Many elements that occurs naturally display isotopy. Suppose an isotope of Cadmium (symbol Cd) has an atomic number of 48 and a mass number of 112.

(i) Find the number of protons in Cadmium

_____

_____

_____

(ii) How many electrons does it have?

_____

_____

_____

(iii)Determine the number of neutrons in it

_____

_____

_____

(iv) Write its nuclide notation

_____

_____

_____

(v) Draw the structure of an atom to represent the nucleus of the Cadmium atom:

_____

_____

_____

9. Assume your Chemistry teacher has given you unknown elements T and Q having atomic numbers of 12 and 17 respectively.

(i) Show how the chemical formula is formed by the combination of elements T and Q, then write the formula of the compound formed.

_____

_____

_____

_____

_____

_____

_____

_____

(ii) Mention the type of bond formed by the combination of elements T and Q.

_____

_____

_____

(iii) State three characteristics of the compounds formed by the type of bond named in (ii) above.

_____

_____

_____

_____

(iv) Using dots and crosses, show how the named type of bond is formed between T and Q.

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SECTION C (15 Marks)
Answer question **ten (10)**

10. (a) There is a close relationship between valency and oxidation state, however they are not the same. How can you distinguish them? Give two differences

(i) _____

_____

_____

(ii) _____

_____

_____

(b) Determine the oxidation state of the underlined elements in the following species;

(i) $\underline{S}O_4^{2-}$

_____

_____

_____

_____

(ii) $\underline{Ca}O$

_____

_____

_____

_____

(iii) $Fe\underline{Cl}_3$

_____

_____

_____

_____

_____

_____

_____

(iv) $\underline{Cu}SO_4$

_____

_____

_____

_____

(c) (i) Briefly differentiate the term molecular formula from empirical formula

(ii) Jumanne found a bottle which contains a substance consisting of Carbon, Hydrogen and Oxygen. If the empirical formula of that substance is $C_2H_4O_2$ and its vapour density is 90, find its molecular formula.