043

SMZ

# ZANZIBAR EXAMINATIONS COUNCIL

## FORM THREE ENTRANCE EXAMINATION

## CHEMISTRY

TIME: 2:30 Hours

MONDAY 28TH NOVEMBER, 2016 AM

### INSTRUCTIONS TO CANDIDATES

1. This paper consists of THREE (3) sections A, B and C.
2. Answer ALL questions in Section A and B, and any TWO (2) questions in section C. Question (9) is compulsory.
3. All answers must be written in the space provided.
4. Write your examination number on each page.
5. Cellular phones are not allowed in the examination room.
6. The following constants may be helpful.

   H = 1, C = 12, Na = 23, O = 16

| FOR EXAMINER'S USE ONLY | | |
|---|---|---|
| QUESTION NUMBER | MARKS | SIGNATURE |
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |
| 6. | | |
| 7. | | |
| 8. | | |
| 9. | | |
| 10. | | |
| 11. | | |
| TOTAL | | |

This paper consists of 10 printed pages

## SECTION A: (30 Marks)

### Answer ALL questions

1. Choose the letter of the best answer and write it in the table below.

i. The oxidation number of Carbon in Sodium hydrogen carbonate is

A) +2 B) 0 C) +1 D) +4

ii. Which of the following represents an anion?

A) $NO_3^-$ B) $CO_2$ C) $NH_4^+$ D) $SO_2$

iii. The Nucleons are

A) Neutrons and Electrons C) Protons and Nuclides

B) Electrons and Protons D) Protons and Neutrons

iv. Pure water is

A) Acidic B) Neutral C) Basic D) Amphoteric

v. The symbols of the elements Iron, Zinc and Calcium are

A) Ir , Zn ,Ca B) Fe, Zi, Ka C) Fe, Zn , Ca D) Ir, Zn,Ka

vi. The valency of $NO_3$ in the compound $Al(NO_3)_3$ is

A) 1 B) 3 C) 9 D) 6

vii. The formula of Calcium hydrogen carbonate is

A) $CaHCO_3$ B) $Ca_2HCO_3$ C) $Ca(HCO_3)_2$ D) $CaH_2CO_3$

viii. The valency of an element with atomic number eleven (11) is

A) 2 B) 3 C) 0 D) 1

ix. The electronic configuration 2:8:2 represents that of the element

A) Potassium B) Magnesium C) Calcium D) Lithium

x. When oxygen reacts with Sulphur it will form

A) Basic oxide B) Neutral oxide

C) Amphoteric oxide D) Acidic oxide

Write the answers in this table

| i | ii | iii | iv | v | vi | vii | viii | ix | x |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

2. Match the items in **List A** with the response in **List B**. Write the letter of the correct answer in the table below

| List A | | List B |
|---|---|---|
| i. | Coal, charcoal, oil and gas. | A Class E fire |
| ii. | It supports combustion. | B Flame |
| iii. | Fire associated with electrical equipment. | C Rusting |
| iv. | A chemical change occuring in iron or steel. | D Fire triangle |
| v. | Oxygen, heat and fuel. | E Fuels |
| vi. | Fire involving flammable liquids | F Sand and asbestos |
| vii. | Coating of iron and steel with zinc. | G Class B fire |
| viii. | Monoammonium Phoshate with a Nitrogen carrier. | H Luminous flame |
| ix. | A team which put off fire when it is out of control. | I Painting |
| x. | It uses Oxygen when burning but it produces soot. | J Class A,B and C fires |
| | | K Fire squad |
| | | L Galvanizing |
| | | M Fire extinguisher |
| | | N Non-luminous flame |
| | | O Oxygen |

Write the answers in this table

| i | ii | iii | iv | v | vi | vii | viii | ix | x |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

3. Fill in the blanks. One word for each space.

i. A homogeneous mixture of _____in the atmosphere is _____.

ii. The highest percentage of Nitrogen in the atmosphere is_____% by volume and that of Carbon dioxide is_____% by volume.

iii. White anhydrous Copper (II) Sulphate is used to test the presence of _____, which when present it turns anhydrous Copper (II) Sulphate to _____hydrated.

iv. Oxygen reacts with non-metals to form _____ oxide and when it reacts with metals it forms _____ oxide.

v. The noble gases present in air include Helium, Krypton, Argon, _____and _____.

Candidate's Examination Number _____

## SECTION B: (50 Marks)

### Answer ALL questions

4. a) Define the following terms

i. First Aid _____

_____

ii. First Aid Kit _____

_____

iii. Name any four (4) items that can be found in the First Aid Kit

_____

_____

b) i. Identify the situations that may require First Aid.

Vomitting Suffocating Crying Bleeding Choking Laughing
Scratching Sleeping Burning Walking Fainting Smiling

_____

_____

ii. Select any one (1) of the above situations in (b i.). Give the meaning.

_____

_____

_____

5. a) Differentiate between mass number and atomic number

_____

_____

_____

b) You are given an element with the symbol $^{12}_{6}\times$

i. State the number of electrons present _____

ii. State the number of protons present _____

iii. State the number of neutrons present _____

iv. Sketch the energy shell diagram of that element X.

v. Name the element X _____

vi. Is it a metal or non - metal _____

6. a) Give the meaning of

i. Compound _____

ii. Mixture _____

iii. Solute _____

b) Write down the methods that can be used to separate the following mixtures

i. Sand and water _____

ii. Iron filling and table salt _____

iii. Muddy water _____

iv. Salty water _____

c) Write one example in each of the following mixtures

i. Liquid - liquid mixture _____

ii. Solid - liquid mixture _____

iii. Solid - solid mixture _____

7. a) Define the following terms

i. A radical

ii. Oxidation number

b) Write the symbols of the following radicals

i. Hydroxyl _____ ii. Nitrate _____

iii. Sulphate _____ iv. Carbonate _____

c) By using the formula combine the metals Sodium , Calcium with the above radicals to form the compounds. Fill in the table below.

| Elements | Radicals | | | |
|---|---|---|---|---|
| | Hydroxyl | Nitrate | Sulphate | Carbonate |
| Sodium (Na) | | | | |
| | | | | |
| Calcium (Ca) | | | | |

8. a) Define the term i. Flame

ii. Heat

b) Draw and label the bunsen burner.

c) What type of flame will occur when the air holes of the Bunsen burner

i. Are fully opened _____

_____

ii. Are closed _____

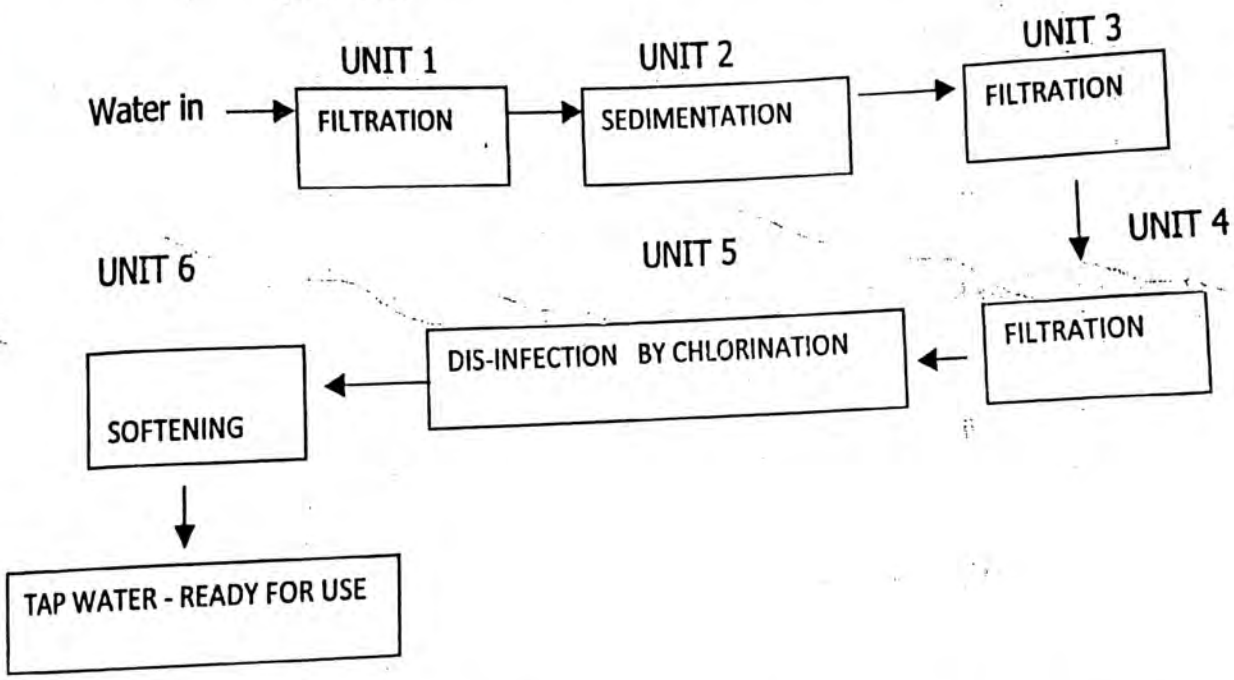
_____

## SECTION C: (20 Marks)

**Answer any TWO (2) questions**

**Question 9 is compulsory, answer either (9a) or (9b)**

9. a) Study the chart below which shows the water treatment, then answer the questions.




i. List two methods of separation of mixtures that are shown in the chart

_____ and _____

ii. Explain the meaning of the water treatment

_____

_____

_____

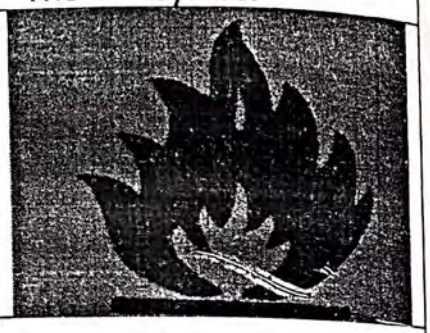
iii. Mention a common local method which is used for domestic water purification

iv. From the chart name the unit which shows water is treated with chemical

v. Name that chemical

vi. Write the symbol of that chemical

9. b) A student is asked to put labels on bottles. The labels should contain warning sign and symbols. Fill in the table below. The first one is done as an example.

| | The bottles containing | Warning sign | The Symbol |
|---|---|---|---|
| 1. | Spirit | Flammable |  |
| 2. | Conc. Sulphuric acid | | |
| 3. | Petrol | | |
| 4. | Mercury | | |

a) Define the term energy.

b) Identify with examples three (3) categories of fuels

c) "The use of charcoal and fire wood has greater environmental effects" Advise the villagers in your community on

i. Disadvantage of deforestation.

ii. Use of alternative sources of fuel

iii. The preventive measures taken for environmental conservation.

11. a) Define the term

i. Isotope_____

_____

ii. Name the two (2) isotopes of chlorine

_____

b) Write any three (3) assumptions of Dalton's Atomic theory.

_____

_____

_____

_____

c) List three (3) properties of the neutron

_____

_____

_____

_____

d) From $N=2n^2$

Find the maximum number of electrons (N), when n = 2, and n = 3.

_____

_____

_____

_____

_____

_____

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