Candidate 's Number.....

043

SMZ

ZANZIBAR EXAMINATION COUNCIL

FORM THREE ENTRANCE EXAMINATION

CHEMISTRY

TIME: 2:30 HOURS Monday 14 September, 2015

INSTRUCTIONS TO CANDIDATES

1. This paper consists of THREE sections A, B and C.
2. Answer ALL questions in Section A and B, and any TWO questions in section C. Question (9) is compulsory.
3. All answers must be written in the space provided under each question.
4. Write your examination number on each page
5. The following constants may be helpful
   Na = 23, Cl = 35.5 K = 39, 0 = 16
6. Cellular phones are not allowed in examination room.

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 14 PRINTED PAGES

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SECTION A (30 Marks)

Answer ALL questions in this section.

1. Choose the letter of the best answer and write it on the space provided.

i) Most of the group I elements in periodic table are stored under(C)

A: Petrol B: Spirit
C: Water D: Kerosene oil

ii) The elements Helium, Neon and Argon are known as (C)

A: Alkali metals B: Rare earth
C: Inert gases D: Halogens

iii) You can hold the burette upright by using ( )

A: Tripod stand B: Retort Stand
C: Trough D: Rack

iv) A solid part remaining on the filter paper after filtration is called (C)

A: Distillate B: Evaporation
C: Residue D: Filtration

v) Pure water boils at (C)

A: 50°C B: 70°C C: 100°C D: 80°C

vi) $Fe + S \longrightarrow Fes$
This reaction is an example of ( )

A: Double decomposition B: Combination (synthesis)
C: Displacement D: Neutralization

vii) Which of the following is not component of air ( )

A: Carbon dioxide B: Hydrogen
C : Nitrogen D : Noble gas

viii) The element with atomic number 11, will have a valency of ( )

A: 1 B: 3 C: 2 D: 6

ix) Two immiscible liquids can be separated by ( )

A: Fractional distillation B: Decantation
C: Filtration D: Separating funnel

x) One of the gas is tested by using lime water ( )

A: Sulphur dioxide B: Carbon dioxide
C : Nitrogen D : Chlorine

2. Match the sentences from **LIST A** with the correct words in **LIST B.** Write the correct letter in the space provided.

LIST A

i) Applied in different fields ( )
ii) Fabrics, clothes, dyes ( )
iii) Fume chamber ( )
iv) Rekindles a glowing splint ( )
v) It produces both luminous and non-luminous flame ( )
vi) Substances can be heated to very high temperature using ( )
vii) Usually used with filter funnel ( )
viii) A sudden loss of consciousness ( )
ix) It takes the shape of the container ( )
x) There is formation of new substances ( )

LIST B

A:	Harmful gases	B:	Crucible	C:	Fainting
D:	Textile	E:	Chemical change	F:	Chemistry
G:	Bleeding	H:	Separating funnel	I:	Bunsen burner
J:	Liquid	K:	Filter paper	L:	Oxygen
M:	Physical change	N:	Bulb		

3. You are required to fill in the blank spaces. One word for each space.

i) The periodic table classify elements into _____ and _____

ii) The only liquid metal is _____

iii) A _____ solution is one that can dissolve no more _____ at a given _____

iv) A _____ is a substance that _____ up a _____ reaction but remains chemically unchanged

v) Hydrogen is the _____ gas and the most abundant element in the universe.

SECTION B: 50 (Marks)

Answer ALL questions in this section

4. a) Find the oxidation state of chlorine in the compound $KClO_3$

b) A certain compound contains 39.3% Sodium and 60.7% Chlorine. Calculate its

i) Empirical Formula

ii) Molecular formula if its Relative molecular mass is 58.5

iii) Name the compound.

iv) Write the common name of the compound

v) Predict the type of bonding formed between Sodium and chlorine

vi) Show its formation

5. a) Write the names of each of the following compounds

i) $(NH_4)_2 SO_4$ - _____

ii) Na_2O - _____

iii) $ZnCl_2$ _____

iv) Al_2O_3 - _____

v) KNO_3 - _____

b) Write the formula of each of the following compounds

i) Copper (II) hydroxide _____

ii) Calcium nitrate _____

vii) Calcium hydrogen Sulphate _____

viii) Sodium bicarbonate _____

ix) Carbon disulphide _____

6. a) Predict the methods that you would use to separate the following substances.

i) The coloured pigments used in inks _____

ii) Ammonium chloride and sodium chloride _____

iii) Petrol and water _____

iv) Iron and Sulphur _____

b) Illustrate (with diagram) the process of separating alcohol and water

c) i) Write the name of the process _____

ii) Give the reasons for choosing the process_____

_____

_____

_____

7. a) List two (2) methods of purifying water.

i)_____

ii)_____

b) Describe the importance of water treatment

_____

_____

_____

c) State four importance of water

i)_____

ii)_____

iii)_____

iv)_____

8. a) Select the characteristics of non luminous flame. Put the tick to the correct one

i) Blue in colour _____

ii) Produces soot_____

iii) Produces more heat _____

vi) Suitable for cooking_____

v) Used in the flame test _____

vi) Yellow in colour _____

vii) Burns quietly _____

viii) Easily brightens a room_____

b) Draw a source of flame showing non- luminous zone, and on it show the outer zone , middle zone and inner zone

SECTION C (20 Marks)

Answer ANY TWO (2) questions from this section

Questions 9 is **COMPULSORY.** It has two items (9a) and (9b). Answer either (9a) or (9b).

9. a) You are provided with three pieces of iron, which has rusting on them

i) Identify the necessary conditions for rusting of iron to occur

_____

_____

_____

ii) List three methods that can be used to prevent iron from rusting.

_____

iii) Predict the mass of iron when it gets rust, does it increase or decrease?

iv) Is rusting a chemical change or physical change?

v) Write the reasons for your choice

vi) If the new pieces of iron are placed in a test tube which contains anhydrous calcium chloride and the test tube is then closed with cotton wool. Explain what will happen to the pieces of iron?

vii) State the function of

Anhydrous calcium chloride

Cotton wool

9b) While he was in a laboratory Zahrani prepared a gas M. He took Zinc granules and dilute Sulphuric acid. He collected that gas over water. From this information answer the questions.

i) The gas M prepared by Zahrani was

ii) The gas is tested by

iii) List all the apparatus he used in the preparation of the gas M

_____

_____

_____

iv) Write any two uses of the gas M.

_____

_____

v) Complete the equation

Zinc + dil Sulphuric acid ⟶ _____

vi) Transform the word equation (above) into symbols and balance it

_____

_____

10. a) You are given the following symbols

$^{6}_{3}Li$, $^{23}_{11}Na$, $^{24}_{12}Mg$, $^{16}_{8}0$, $^{39}_{19}K$, $^{19}_{9}F$

Complete the table below through the given informations

ATOM	MASS NUMBER	NO. OF ELECTRONS	NO. OF NEUTRONS	NO. OF PROTONS
Li	6			3
Na	23	11		
Mg	24		12	
O	16			8
K	39	19		
F	19		9	

b) Classify the above atoms into metals and non – metals

Metals	Non-Metals

c) Write the electronic configurations of atoms

i) Li : _____

ii) F: _____

d) i) Show the representation of the nucleus of the Oxygen atom

ii) Predict the bond formed when:

two atoms of oxygen combine, show it

Sodium and oxygen combine, show it

11. a) Outline the importance of chemistry in our daily life activities. Use the following sub-heading as guidelines

Introduction:

Agriculture:

Medicine

Food and beverage

Transport and communications