

Candidate's Examination Number _____

SMZ

ZANZIBAR EXAMINATIONS COUNCIL

FORM THREE ENTRANCE EXAMINATION

043

CHEMISTRY

TIME: 2.30 HOURS

TUESDAY 9TH NOVEMBER, 2021 A.M

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. Write your examination number on each page.
4. All answers must be written in the space provided under each question.
5. Use blue or black pen in writing. The diagrams must be drawn in pencil.
6. Cellular phones and unauthorized materials are not allowed in the examination room.
7. The following constants may be used
C =12, O= 16, H =1, Na =23, Ca =40

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

This paper consists of 12 printed pages.

SECTION A: (30 Marks)

Answer ALL questions in this section.

1. Choose the correct answer and write its letter in the table below.
 - i. Combination of hydrogen and chlorine gives
 - A. Hydrochloric acid
 - B. Water
 - C. Alcohol
 - D. Oil
 - ii. The positively charged particles of an atom is
 - A. Electrons
 - B. Protons
 - C. Neutrons
 - D. Ions
 - iii. An ionic bond is formed when
 - A. Two metallic elements react together
 - B. Two non-metallic elements react together
 - C. Both the combining atoms need to share electrons
 - D. Metallic element combines with non-metallic element
 - iv. The suitable apparatus to measure the mass of sodium hydroxide pellets in a laboratory is
 - A. Electronic balance
 - B. Measuring balance
 - C. Spring balance
 - D. Tap balance
 - v. The windows in the laboratory are kept open during practical for
 - A. Escaping during emergency
 - B. Proper ventilation
 - C. Entering the laboratory
 - D. Viewing outside
 - vi. A good fuel should have
 - A. An average ignition point
 - B. Highest ignition point
 - C. Lowest ignition point
 - D. No ignition point
 - vii. It is a universal solvent
 - A. Diesel
 - B. Petrol
 - C. Kerosene
 - D. Water
 - viii. Which of the following is the naturally source of heat?
 - A. Kerosene stove
 - B. Sun
 - C. Gas stove
 - D. Bunsen burner

- ix. The formula for calculating maximum number of electrons held within energy level is given by $2n^2$. The electrons in the second energy level is
 A. 18 B. 8 C. 2 D. 4
- ix. The process of coating iron or steel with zinc, a metal that does not rust is
 A. Painting B. Galvanization C. Oiling D. Tin plating

ANSWERS

i	ii	iii	iv	v	vi	vii	viii	ix	x

2. Match the sentence in **LIST A** with the correct response in **LIST B** as they are used in the periodic table. Write the letter of the correct answer in the table below.

LIST A	LIST B
i. Have electronic configuration of 2:8:1	A. Calcium
ii. They react with metals to form salts	B. Inert gases
iii. Ability of an atom to attract electrons	C. Transition elements
iv. The regular periodic changes of elements due to their atomic number	D. Potassium
v. Elements which are found in the last group of periodic table	E. Periodic law
vi. The alkali metals in the periodic table	F. Halogens
vii. The properties of an elements change according to their atomic number	G. Electro negativity
viii. Alkaline Earth metals in the periodic table	H. Sodium
ix. Have both metallic and non-metallic characteristics	I. Group II elements
x. They act as a catalyst in reactions and also form colored compounds	J. Periodicity
	K. Metalloid
	L. Group I elements

ANSWERS

i	ii	iii	iv	v	vi	vii	viii	ix	x

3. Fill in the blanks, one word for each space.
- i. A fuel gas derived from decomposing biological waste is _____ while organic matter in living plant material is _____.
 - ii. Physical changes affect the physical properties of substances, such as _____ and _____.
 - iii. In the process of filtration, the solid remained is _____ while the liquid collected is the _____.
 - iv. The possible explanation to the question asked is _____ while a summary of the result of experiment and statement is _____.
 - v. Signs of chocking include difficult in _____ and _____.

SECTION B: (50 Marks)

Answer ALL questions in this section.

4. a. List four (4) negative effects of global warming.

- b. i. Define non-renewable sources of energy.

- ii. List two (2) classes of fuel according to their occurrence.

- c. Why fossil fuels are not preferred to be used as a source of fuel?

5. a. What is atomic number?

- b. State the number of atoms present in each of the following formula:

i. 7HNO_3 _____

ii. 20PbSO_4 _____

- c. Element X has atomic number 11 and mass number 23. From the given information writes

- i. Electronic configuration of element X

- ii. Number of periods of element X in the periodic table

- iii. State whether the element X, is metal or non-metal

6. a. Why radical cannot exist on its own?

- b. Complete the table below, the first one is given as an example.

Number	Name of radical	formula	Valency (+ or -)
i.	Dichromate	Cr_2O_7	-2
ii.	Ammonium		
iii.	Nitrate		

- c. Complete the table below, the first one is given as an example.

Number	Common name	Chemical name	Formula
i.	Soda ash	Sodium Carbonate	Na_2CO_3
ii.	Common salt		
iii.	Marble		

7. a. Define the following terms

- i. Heat

- ii. Flame

- iii. Luminous flame

- b. Explain why non-luminous flame is suitable for cooking?

- c. Draw and label parts of non-luminous flame

8. a. i. Define water cycle.

- ii. Water has high surface tension. What does this mean?

- iii. Why treated water is the best for use in the laboratory and medical facilities?

- iv. List two (2) chemical properties of water.

- b. Explain briefly the following terms as they are used in water cycle.

- i. Condensation

- ii. Precipitation

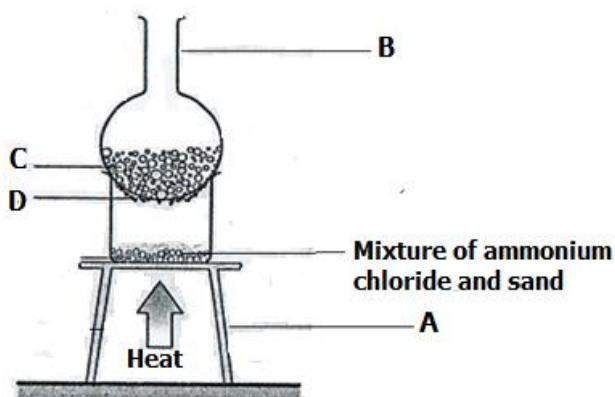
- iii. Collection

SECTION C: (20 Marks)

Answer ANY TWO (2) questions from this section.

Question 9 is COMPULSORY, answer either (9a) or (9b)

9. a. Study the figure below carefully and then answer the following questions.



- i. What is the aim of this experiment?

- ii. Label apparatus A, B and substance C and D.

Apparatus **A** _____

Apparatus **B** _____

Substance **C** _____

Substance **D** _____

- iii. Write the function of substance C in apparatus B.

- iv. Write the substance which can be used in this experiment instead of ammonium chloride.

- v. Why this experiment is carried out in fume chamber?

9. b. Air is the mixture of different gases. Below are materials that are used to test different gases in air.

- Anhydrous copper (II) sulphate
- Lime water
- Copper turnings

From the above information answer the following questions

- i. Which component of air causes anhydrous copper (II) sulphate to turn blue? _____
- ii. What would you observe when carbon dioxide passed through lime water? _____
- iii. Which gas causes copper turning to turn black when heated in the presence of air?

- iv. Write balanced chemical equation when carbon dioxide reacts with lime water.

- v. List four (4) noble gases.

10. a. Explain briefly on the Thomson plum pudding model of atom.

b. Write three (3) properties of neutrons.

i. _____

ii. _____

iii. _____

c. Give a brief explanation on the electron arrangement according to Neils Bohr.

11. a. With the aid of equation explain what happen when:

i. Magnesium ribbon burn in air.

ii. Zinc granules dissolved in dilute sulphuric acid.

b. Water is neither acidic nor basic, it is neutral. What does this mean?

- c. Explain briefly painting as the method of preventing rust.

- d. Why carbon dioxide is used in fire extinguisher?
