



**EXCEL JOINT MOCK FOR SECONDARY SCHOOLS-JUBA EXAMINES
CANDIDATES FOR CERTIFICATE OF SECONDARY EDUCATION (CSE)**

32024

MOCK EXAMINATION, AUGUST 2024.

DATE:___/AUGUST/2024

SUBJECT: CHEMISTRY

TIME: 3HOURS

INDEX:

SCHOOL CODE:

SECTION:

SIGN:

INSTRUCTIONS:

Read the instructions carefully before answering any question

1. This paper consists of three sections A, B and C
2. Section A and B are compulsory and choose only 6 questions in Section C.
3. All answers must be written in the spaces provided within the question paper
4. Answers to all questions must be written in ink (Blue or Black)
5. No any supplementary paper will be given apart from the one you have
6. Unnecessary crossing of answers may lead to loss of marks
7. Hint: (Take $F=96500C$, $C= 4.2j\ g^{-1}\ k^{-1}$, $H = 1$, $C = 12$, $S = 32$, $O = 16$, $Cu = 64$, $Na = 23$

FOR EXAMINERS USE ONLY

Sections	A	B	C	Total
Grading	20	20	60	100
Marks Obtained	A	B	C	Total
Section Scores				
Marked by				Sign----- -

Section A. (40 marks)

Answer all questions in this section by circling the letter of correct Alternative

1. The chief ore for the extraction of Sodium is
A. Brine
B. Chile Saltpeter
C. Trona
D. Rock Salt
2. The particles found inside the nucleus of an atom are
A. Electrons and protons
B. Neutrons and electron
C. Protons and orbit
D. Neutrons and protons
3. A process that refers to addition of oxygen or loose of electrons is called....
A. Oxidizing agent
B. Reducing agent
C. Reduction
D. Oxidization
4. The structural formula of propyne is.....
A. $\text{CH}_3 - \text{CH}_3$
B. $\text{CH}_3 - \text{CH} = \text{CH}_3$
C. $\text{CH}_3 - \text{CH}_2 - \text{CH}_3$
D. $\text{CH} \equiv \text{C} - \text{CH}_3$
5. The unknown element ${}_{20}\text{X}$ is in period number....
A. 1
B. 4
C. 3
D. 2
6. Which of the following compound is an ore of aluminum?
A. Malachite
B. Galena
C. Magnetite
D. Bauxite
7. The organic compound with structural formula $\text{CH}_3 - \text{CH}_2 - \text{COOH}$ is called
A. Ethanol
B. Butanoic acid
C. Propanol-2
D. Propanoic acid

8. The number of moles contained in 10.6 gm of sodium carbonate formula Na_2CO_3 are ...
- A. 0.01
 - B. 1.06
 - C. 0.16
 - D. 0.10
9. Which metal ion reacts with ammonia solution to form a blue precipitate?
- A. Mg^{2+}
 - B. Na^+
 - C. Ca^{2+}
 - D. Cu^{2+}
10. An aqueous solution has pH of 12, it will change the color of the indicator litmus Paper to
- A. Red
 - B. Yellow
 - C. Pink
 - D. Blue
11. A substance that burns and release heat energy is called.....
- A. Combustion
 - B. Electricity
 - C. Oxygen
 - D. Fuel
12. Which of the following alcohol is not a primary alcohol?
- A. $\text{CH}_3 - \text{CH}_2\text{OH}$
 - B. $\text{CH}_3 - \text{CH}_2 - \text{CH}_2\text{OH}$
 - C. $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2\text{OH}$
 - D. $\text{CH}_3 - \text{CH}(\text{OH}) - \text{CH}_2 - \text{CH}_3$
13. During the electrolysis of molten sodium chloride, the solution ion Na^+ is attracted to the ...
- A. Battery
 - B. Solution
 - C. Anode
 - D. Cathode
14. The enthalpy changes in converting reactants to products is the same regardless of the route taken as long as the initial and final conditions are kept constant. This is an assertion of
- A. Gay Lussac's Law
 - B. Avogadro's law

- C. Le' Chatellier's principle
D. Hess's law
15. 4.0 gm of Sodium hydroxide, NaOH was dissolved in 500 cm³ of water. The molarity of NaOH in this solution is equal to
- A. $\frac{4}{40} \times \frac{500}{1000}$
- B. $\frac{40}{4} \times \frac{500}{1000}$
- C. $\frac{500}{40} \times \frac{1000}{4}$
- D. $\frac{4}{40} \times \frac{1000}{500}$
16. The amount of energy absorbed or liberated when one mole of an acid reacts with a base is termed as
- A. Enthalpy of combustion
B. Enthalpy of combustion
C. Enthalpy of reaction
D. Enthalpy of neutralization
E. Enthalpy of hydration
17. For colliding particles to bring about a chemical reaction, they require maximum amount of energy. Collision which leads to occurrence of reactions are said to be
- A. Catalyzed processes
B. Non-fruitful collisions
C. Ineffective collisions
D. Fruitful collisions
18. Which of the following is an important factor at the industrial level?
- A. Temperature
B. Catalyst
C. Surface area of reactants
D. pressure
19. one of the following is not an important use of Aluminium metal
- A. Making Aeroplane parts, buses, tankers and furniture
B. Making Utensils, Sauce pans and spoons

- C. Used in thermite process to produce manganese and making overhead electric cables
 - D. Used in nuclear reactors and on roads in countries experiencing snow falls
20. Which of the following is used by medical practitioners and legal authorities for criminal investigation and finger prints?
- A. Nuclear Magnetic Resonance (NMR)
 - B. Ultra violet Spectroscopy
 - C. Infrared spectroscopy
 - D. Paper Chromatography

Section B: Short essay questions (10 Marks)

Part One

Answer the following questions in brief:

1. Define the following (10 marks)

i. Electrolyte

(1 mark)

ii. Half – Cell

(1 mark)

iii. Electrolysis

(1 mark)

iv. Isomerism

(1 mark)

v. Polymerization

(1 mark)

2. a). What do you understand by the term hydrocarbons

(1 mark)

b). Write the general formula of the following homologous series

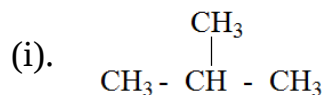
(i). Alkanes

(1 mark)

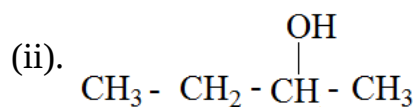
(ii). Alkynes

(1 mark)

c). Give the systematic names (IUPAC) for the following organic compounds



(1 mark)



(1 mark)

Part Two: Answer the following questions briefly: (10 marks)

1. Using mathematical expression, what is meant by the term Rate of reaction?
(2 marks)

- (ii). Give only two factors which affects the rate of reaction (2 marks)

- i. _____
ii. _____

2. a) State the two main allotropes of carbon (2 marks)

(i). _____

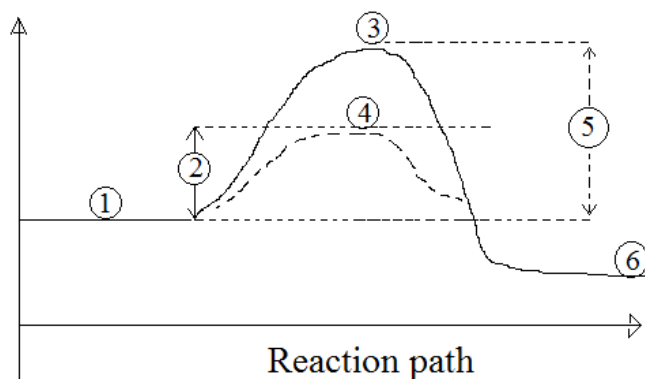
(ii). _____

b) A salt is a substance produced when hydrogen ions of an acid are completely or partially displaced by a metal. It's therefore clear that most salts derive their names from acids where they were formed. List four classes of such salts (4 marks)

Section C: 60 Marks

Attempt only 6 Questions of your choice in this section, all questions carry equal marks.

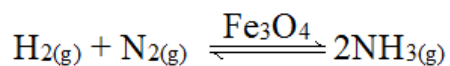
1. i). the graph below shows the reaction path of the reaction $A \longrightarrow B$: study the two curves and label the parts indicated by the number inside the table.



Name the variables labeled with numbers below (5 marks)

Numbers	Label representing
1	
2	
3	
4	
5	

(ii). Ammonia gas is produced by the reaction of dry hydrogen and nitrogen in a closed container according to the reaction:



What are the the conditions which will result in the production of more NH_3 ?

(5 marks)

2. (a). Calculate the oxidation number of the atoms underlined (6 marks)

(ii). $\text{H}_2\underline{\text{C}}\text{O}_3$

(ii). H_2SO_4

(iii). HOCl

(b). An aqueous solution of Copper (II) Sulphate CuSO_4 is blue in colour, during its electrolysis carbon (graphite) electrodes are used.

Write the equation for the reaction which take place at the:

(i). Cathode:

_____ (2 marks)

(ii). Anode:

_____ (2 marks)

3. (a). A current intensity of 9.65 Amperes was passed for thirty minutes through a solution of Copper (II) Sulphate. Given $\text{Cu} = 63.5$, $1 \text{ faraday} = 96500$

(i). Calculate the quantity of charge in coulombs

 _____(3 marks)

(ii). Calculate the mass of copper deposited at the cathode. (1 Faraday = 96500 Coulomb)
 (3 marks)

(b). State the difference between group and period as used in the periodic table

 _____(4 marks)

3. Study the part of the periodic table below. The atomic numbers of the first eighteen elements are indicated. The letters Q, R, S, T, U, V, W, X do not represent the actual elements. Use these letters to answer the question below.

S ¹							2
T ³	U ⁴	5	6	V ⁷	8	Q ⁹	X ¹⁰
W ¹¹	12	13	14	15	16	R ¹⁷	18

- a. Write the letter of the element which:
- (i). is a noble or inert gas
 _____(2 marks)
- (ii). Has the highest atomic number
 _____(2 marks)

- b. Write the name of the family (group) represented by the elements
 (i). S, T, W _____ (2 marks)
 (ii). Q, R _____ (2 marks)
 c. What is the type of chemical bond formed when W combined with R
 _____ (2 marks)

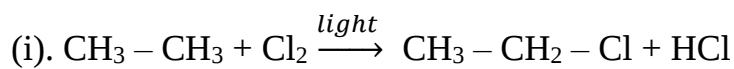
5. (a). Write the functional group of the following:

(i). Alkanoic acids

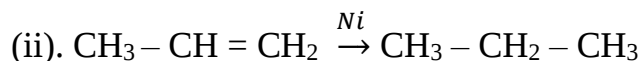
_____ (2 ½ marks)

(ii). Alkanols _____ (2 ½ marks)

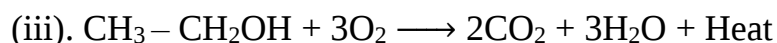
(b). What do you call the type of organic reaction below?



_____ (1 mark)

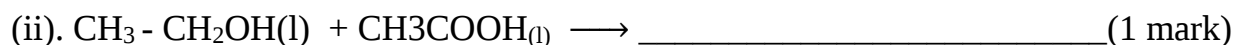
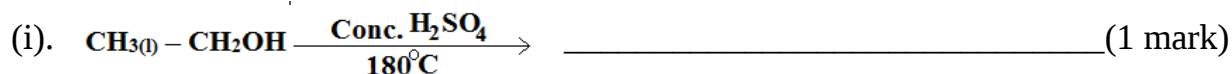


_____ (1 mark)



_____ (1 mark)

(c). Complete the following chemical equations



6. (a). Carbon (IV) oxide is an acidic oxide

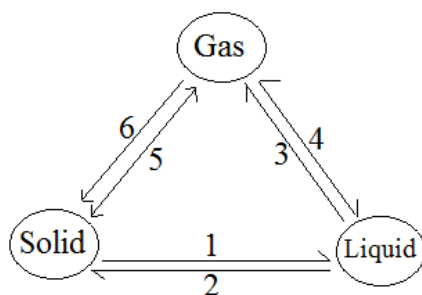
(i). What is meant by the term acidic oxide?

(2 marks)

(ii). Write chemical equation to show the reaction of Carbon (IV) Oxide with lime water when it bubbled into it

(2 marks)

(b). A substance change from solid to liquid then to gas as shown in the diagram below. Name the changes represented by the numbers (6 marks)



Number	Name of the change
1	
2	
3	
4	
5	
6	

7. (a). state each of the following laws

(i). Boyle's law

(2 marks)

(ii). Charle's law

(2 marks)

(b). A certain mass of oxygen occupies 400cm^3 at 25°C and 760 mm/Hg . Calculate the volume of oxygen when the temperature and pressure are lowered to 0°C and 740 mm/Hg at a constant temperature

(6 marks)

8. (a). Nitric acid and ammonia are useful chemicals. Write two uses of each of them

(i). Nitric acid

(4 marks)

(ii). Ammonia

(4 marks)

(b). Calculate the percentage of Nitrogen in nitric acid ($\text{H}=1$, $\text{N}=14$, $\text{O}=16$)

(2 marks)

9. (a). Write True for correct expression and False for incorrect expressions

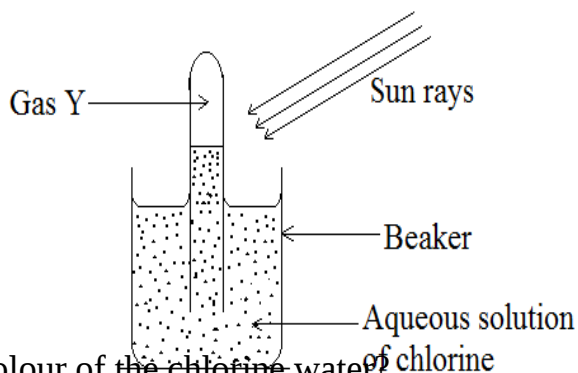
(i). Chlorine gas is poisonous _____ (1 mark)

(ii). Sodium chlorate is a fertilizer _____ (1 mark)

(iii). Chlorine gas is a strong reducing agent _____ (1 mark)

(b). if chlorine gas is bubbled into water, it forms a saturated solution of chlorine water.

This solution when exposed to sun light for two days some changes take place as shown in the diagram below. Study this diagram carefully and answer the questions that follow:



(i). What is the original colour of the chlorine water?

_____ (1 mark)

(ii). Write the name and the colour of the gas Y

_____ (2)

(iii). Show by an equation, the reaction of chlorine with water to form a mixture of two acids.

_____ (2 marks)

(iv). Explain why the solution of chlorine water changes to colourless after sometimes.

_____ (2 marks)

10. (a). Briefly, state the difference between each of the following terms

(5 marks)

(5 marks)

[illegible]

a) State the reasons for

i) Addition of calcium chloride into the electrolyte

_____(4 marks)

ii) Use of Steel diaphragm in the cell

_____(2 marks)

b) Write a chemical equation for the reactions that occur at

i) Anode

_____(2 marks)

ii) Cathode

_____(2 marks)

THE END@EXCEL 2024