

**THE PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
ILEMELA MUNICIPAL COUNCIL**



**FORM FOUR MID-TERM JOINT EXAMINATION MARCH, 2024
CHEMISTRY 1**

TIME: 3 HOUR

MARCH 2024

INSTRUCTIONS:

1. *This paper consists of sections A, B and C with a total of eleven (11) questions.*
2. *Answer ALL questions in sections A, B and any two questions from section C.*
3. *Non-programmable calculators maybe used in this exam.*
4. *The following constants maybe used;*
 - *Molar gas volume = 22.4dm³*
 - *1 litre = 1 dm³ = 1000cm³*
 - *Avogadro's number = 6.02 x 10²³*
 - *R.A.M { Ag = 108, Cu = 64, O = 16, H = 1, S = 34, Pb = 207, N = 14 }*

SECTION A: (16 MARKS)

Answer All questions

1. Choose the most correct answer among the given alternatives and write its letter in the table of answers beside the item number.
 - i) What type of chemical reaction takes place in the equation below?
$$Fe_{aq}^{3+} + e^{-} \longrightarrow Fe_{(aq)}^{2+}$$
 - A. Reduction
 - B. Oxidation
 - C. Redox
 - D. Ionic
 - E. Double decomposition
 - ii) Janet dropped egg shell in a beaker containing dilute hydrochloric acid, effervescence occurred. Name the gas produced.
 - A. Nitrogen
 - B. Carbon monoxide
 - C. Carbon (IV) oxide
 - D. Nitrogen (IV) oxide

E. Sulphur (IV) oxide

- iii) What mass of pure sulphuric acid is found in 400cm^3 of its 0.1M aqueous solution?
- A. 9.8g
 - B. 4.9g
 - C. 98g
 - D. 3.92g
 - E. 2.45g
- iv) What is the sequence of water purification using commercial filter?
- A. Gravel, sand, charcoal, cloth and beaker
 - B. Gravel, gravel, charcoal, cloth, and beaker
 - C. Sand, gravel, charcoal, cloth, and beaker
 - D. Sand, charcoal, gravel, beaker and cloth
 - E. Gravel, beaker, charcoal, sand and cloth
- v) In a laboratory, Joyce found four beaker containing different solutions. She added phenolphthalein indicator to them and one turned pink. Which solution could be the one turned pink?
- A. Orange juice
 - B. Distilled water
 - C. Condensed milk
 - D. Caustic soda
 - E. Hydrochloric acid
- vi) Carbon (IV) oxide gas contains oxygen but it is used to extinguish fire. Why?
- A. Because it is wet
 - B. Because it is less dense than air
 - C. Because it burns at high temperature
 - D. Because it is not inhaled
 - E. Because it is denser than air
- vii) Which metal whose nitrate does not produce metal oxide?
- A. Calcium
 - B. Copper
 - C. Sodium
 - D. Zinc
 - E. Lead
- viii) Lowering soil acidity by adding quicklime;
- A. Neutralization
 - B. Basicity
 - C. Alkalinity
 - D. Dilution
 - E. Liming

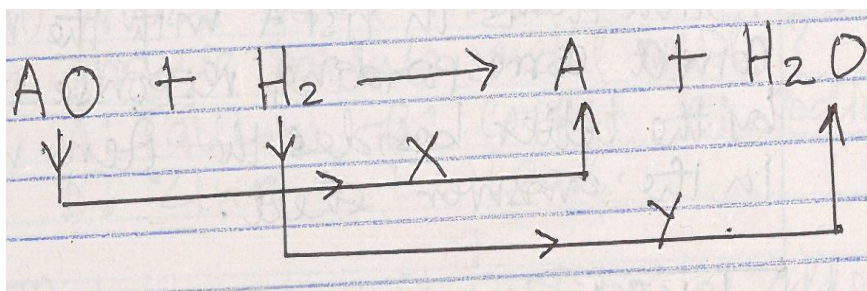
- ix) The existence of an element in more than one physical form in the same physical state;
 A. Polymerization
 B. Isotopy
 C. Isomerism
 D. Polymorphism
 E. Amphoteric
- x) Which of the following statements is true about a catalyst?
 A. Are used on industry to reduce energy cost
 B. Are used up during a reaction
 C. Increases the activation energy during a reaction
 D. Transition metals are not used as a catalyst
 E. Used to form products of a reaction

2. Match items in list A with the most correct corresponding response in list B by the letter beside the item number in the answer sheet.

LIST A		LIST B	
i)	Bleaching agent	A.	Ammonia
ii)	Pungent choking smell gas	B.	Chloride
iii)	The alkaline gas	C.	Sulphur (IV) oxide
iv)	Oily liquid	D.	Carbon (II) oxide
v)	Exists above 96°C	E.	Rhombic
vi)	Neutral gas	F.	Monoclinic
		G.	Hydrogen chloride
		H.	Oleum
		I.	Sulphuric acid

SECTION B: (54 MARKS)
Answer all questions.

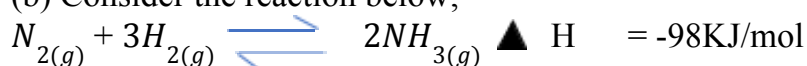
3. (a) John, a farmer from Kagera ploughed virgin and fertile land but failed to get good harvest. State any four factors that might have contributed to poor harvest.
 (b) Study the following chart carefully and answer the questions which follow;



Name _____

- i) Process X
- ii) Process Y
- iii) Reducing agent
- iv) Oxidizing agent
- v) Type of the reaction

4. (a) Give three differences between exothermic and endothermic reactions.
(b) Consider the reaction below;



Explain the effect on the reaction and how the equilibrium position will change when;

- i) Pressure of the system is increased
 - ii) Reaction takes place in the kiln
 - iii) Some hydrogen gas is removed from the reaction.
5. (a) The table below shows some sub-atomic particles of some atoms.

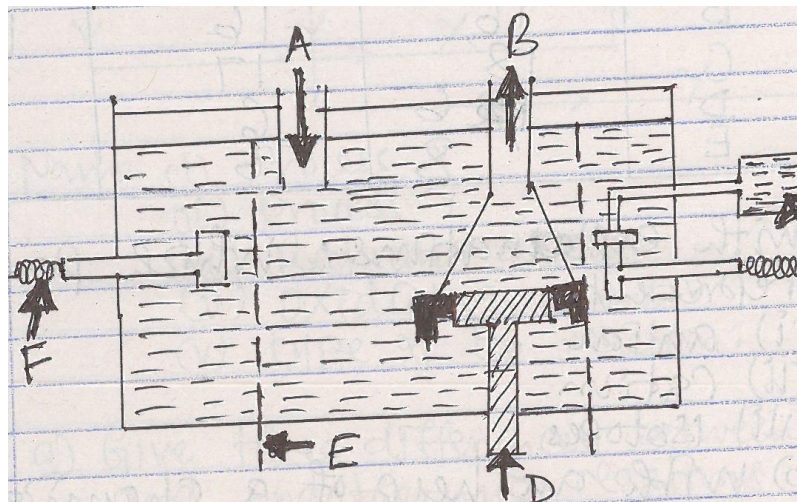
Particles	Neutrons	Protons	Electrons
A	12	11	10
B	16	16	16
C	18	17	18
D	6	6	6
E	8	6	6

With explanations; which particle represents

- i) Anion
- ii) Cation
- iii) Isotopes

(b) With an help of a chemical equation, what would you observe when hydrogen sulphide gas is passed through a gas jar of Sulphur (IV) oxide gas.

6. (a) Explain the meaning of molar volume of a gas
(b) If 0.5g of hydrogen gas is exploded in air, what is the mass of water formed?
(c) 112dm³ of oxygen gas was collected at s.t.p when a sample of lead nitrate was completely decomposed by heat. Calculate the volume of nitrogen dioxide gas produced.
7. Study the diagram below and use it to answer the questions that follow:



- a) Name parts marked A, B, C, D, E and F.
 - b) Identify the apparatus
 - c) Name the chief ore in the process
 - d) What is the function of E
 - e) Write the reaction at the;
 - i) Anode
 - ii) Cathode
8. (a) Explain the following facts;
- i) Molten sodium chloride is a conductor while solid sodium chloride is not a conductor.
 - ii) Graphite is a conductor while diamond is not a conductor but all are carbon.
- (b) A current of 12.5A was passed for 48 minutes through electrolytic cells of silver solution, copper solution and sulphuric acid. Calculate;
- i) the volume of hydrogen gas liberated
 - ii) Mass of silver deposited
 - iii) Mass of copper deposited.

SECTION C: 30 MARKS
Answer ANY two (2) questions

9. (a) Define the following terms;
- i) Mulching
 - ii) Soil fertility
 - iii) Soil nutrients
 - iv) Leaching
- (b) Using inorganic chemical fertilizer in soil is not as important as using organic compounds/manure in soil. Support this statement using five points.

10. (a) In river Mara, it has been discovered that a lot of fishes found dead and floating on water. As a chemist, explain any four factors which might have caused the death of fishes in river Mara.

(b) (i) What is global warming?

(ii) Give any four gases and their sources that cause global warming.

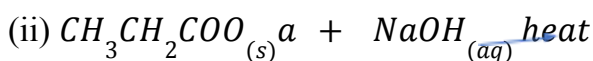
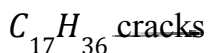
11. (a) Define the following terms;

i) Homologous series

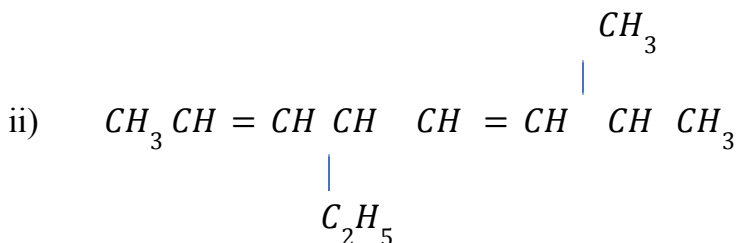
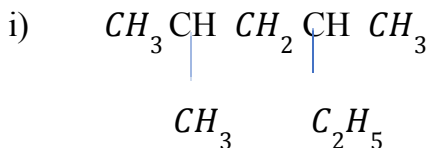
ii) Isomerism

iii) Cracking of hydrocarbon

(b) (i) Complete the equation below



(c) Name the following hydrocarbons;



(d) Draw the following hydrocarbons;

i) 3, 5 – diethyl – 6 – methyl nonane

ii) 3 – methyl – non – 5, 7 – diene.

(e) Draw and name any two positional and one branched isomers of the third member of alkene.

