

THE UNITED REPUBLIC OF TANZANIA

DODOMA REGION

FORM FOUR MOCK EXAMINATION

032/1

CHEMISTRY 1- MARKING SCHEME

Time: 2:30 Hours.

August, 2023

SECTION A

01.

I	II	III	IV	V	VI	VII	VIII	IX	X
B	C	C	A	A	B	C	B	C	D

@ 01 MARKS = TOTAL 10 MARKS

02.

I	II	III	IV	V	VI
H	G	C	D	B	A

@ 01 MARKS = TOTAL 06 MARKS

SECTION B

3. (a) (i) Produced when the air holes of a Bunsen burner are open (01 mark)

(ii) Because non luminous flame produce a hottest flame without soot (01 mark)

(iii) Air holes- Allow entrance air to the burner (01 mark)

Barrel/chimney- Allows pre-mixing of air and gas before combustion occurs at the top.

(01 mark)

(b) Hydrogen peroxide produces enough oxygen gas without the use of heat (02 marks)

(c) Because it will react forming rust. (01 mark)

(d) Resulting in the bottle to break, due to expansion of water after freezing. (02 marks)

4.

- Reservoirs (01 mark)
- Coagulation and flocculation (02 marks)
- Sedimentation (01 mark)
- Filtration (01 mark)
- Disinfection/chlorination (02 marks)
- Storage (01 mark)
- Supplies (01 mark)

5. (a) Boiling and melting points increase with the increase in their molecular

Masses.

(02 marks)

(b) – It react with carbonates producing salt, water and carbon dioxide



(01 mark)

-It react with alcohol to produce ester and water



(01 mark)

(c) Because each components has a different boiling points. (02 marks)

(d) (i) Organic compounds composed of carbon and hydrogen only.(01 mark)

(ii) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$ butane (01 mark)

CH_3CHCH_3 2-methyl propane (01mark)



6. (a) (i) Downward displacement of water or upward delivery. The gas being

less denser than air and slightly soluble in water (01 mark)

(b) (i) Electrolyte

Electrolyte should be of a metal (silver) to decorate the other metal
(Copper) (1.5 marks)

(ii) Anode electrode

Electrolyte should be of a metal (silver) to decorate the other metal
(Copper) (1.5 marks)

(iii) Cathode electrode

Electrolyte should be of a metal (copper) to be decorated by the
other metal (silver) (1.5 marks)

(c) at the anode; $2\text{Cl}^- \longrightarrow \text{Cl}_2 + 2\text{e}^-$ (001/2 mark)

At the cathode; $\text{Na}^+ + \text{e}^- \longrightarrow \text{Na}$ (001/2 mark)

1mol of electron = 1Faraday

1F = 23g Na

? = 2.0gNa

F = 0.087F (01 mark)

1F = 22.4dm³ (001/2 mark)

0.087F = ?dm³

Volume of chlorine = 0.974dm³ (01 mark)

7. (a) – Treating insects sting

- Treating indigestion

-Treating Sewage system

- Neutralizing soil P^H (any four points @) 01=04 marks)

(b) **Answer:**

(i) 2.91 g of HX in 250 cm³ is equivalent to 2.91 X 4 g = 11.64 g in 1 litre. Thus the concentration is

11.64 g l⁻¹

$$(ii) V_1 \times M_1 \times n_2 = V_2 \times M_2 \times n_1$$

$$22.5 \times M_1 \times 1 = 25 \times 0.108 \times 1$$

$$M_1 = 25 \times 0.108 \times 1 / (22.5 \times 1)$$

$$= 0.12 \text{ mol l}^{-1}$$

Concentration of HX solution = 0.12 mol l^{-1}

- (iii) 0.12 moles has a mass of 11.64 g
 1 mole has a mass of $11.64/0.12 \text{ g} = 97 \text{ g}$

The molar mass of HX is 97 g mol^{-1} (05marks)

8. (a) (i) Nitrogen gas (01 mark)
 (ii) $\text{NaOH}_{(aq)} + \text{CO}_{2(g)} \longrightarrow \text{NaHCO}_{3(aq)}$ (01mark)
 $2\text{Cu}_{(s)} + \text{O}_{2(g)} \longrightarrow 2\text{CuO}_{(g)}$ (01 mark)
 (iii) – Manufacture of fertilizer (001/2 mark)
 – Manufacture of ammonia (001/2 mark)

- (b) (i)-Copper react with oxygen (air) at very high temperature producing copper (ii) oxide (01 mark)
 -Copper does not react vigorously with oxygen at low temperature (room temperature) (01 mark)
 (ii) – Concentration
 - Roasting
 - Smelting
 - Conversion
 - Refining of copper (03 marks)

09 (a) The effect of the following to the environment:

(i) ACIDIC RAIN

- Acidic rain increases soil acidity which makes the soil unfit for cultivation to some crops.
- Acid in soil destroys forest and vegetation
- It can lead to the death of some aquatic living organisms. **02 mark**

(ii) ARTIFICIAL FERTILIZERS

- Fertilizers discourage the activities of micro – organisms in the soil.
 - They encourage rapid growth of fungi and algae in water which compete in oxygen with aquatic animals.
 - Fertilizers can be drained to water bodies to make water unsafe for use.
- 02 marks**

(iii) PLASTIC CONTAINERS

- When plastic containers are in soil cannot be decomposed so they make the soil unfavorable for crops. **02 marks**

(b) (i) Importance of Ozone layer is to prevent penetration of the harmful radiation to reach the earth's surface. **01 mark**

(ii) The increase of carbon dioxide gas in the atmosphere results into large increase of the earth's surface temperature due to the formation of the layer (blanket) of carbon dioxide above the earth's surface. **01 mark**

(iii) Control measures to prevent ozone layer are:

- Proper handling of waste gases
- Planting trees which will utilize CO₂ gas
- Reducing the number of industries. **03 mark**

(c) **GREEN HOUSE EFFECT:**

(i) Is the condition on the earth's surface which is characterized by rapid increase in temperature than expected **02 marks**

OR

Is the process by which the emission of radiation by the atmosphere warms a plant's surface

(ii) Examples of gases which cause green house effects are:

- Carbon dioxide
- Water vapour
- Nitrous oxide
- Methane
- Chlorofluorocarbon (CFCs)

02 marks

10. Introduction

(1.5 marks)

- Re use
- Recycle
- Reducing
- Composting
- Incineration
- Dumping

(any six points @) = 12 marks

Conclusion

(1.5 marks)

11. (a) Addition of organic manure in the farm is important than fertilizers in the following ways. For introduction **(01 mark)**

- Organic manure improve physical properties of the soil
- It increases cationic exchange capacity in the soil.
- It is non – toxic and hence increase plant nutrients
- Encourage microbial activities
- Reduces soil erosion

(04 marks @ 01)

-Introduction

(01 mark)

(c) Soil Fertility differs from soil productivity in the following facts;

- Presence of pests and diseases can hinder the productivity.
- Soil P^H
- Water holding capacity
- Soil depth
- Soil drainage

@01 mark = 05 marks