Chemistry marking guide term II 2025-2026
MUHANGA DISTRICT

SECTION A: Attempt all questions (55 marks)

Q1. i) a ½ ii) b ½ iii) c ½ iv) d ½
v) a ½ vi) d ½ vii) a ½ viii) b ½

Q2. a) Decantation ½
b) Homogeneous mixture ½
c) Filtration ½
d) Magnetic Separation ½

Q3. a) False(F) ½ b) True(T) ½ c) True(T) ½
d) False(F) ½

Q4. a)

property	Diamond	Graphite
electrical conductivity	poor ½	Good ½
Hardness	Hard ½	Soft ½

b) iii ½

Q5. i) True(T) ½ iii) False(F) ½
ii) False(F) ½ iv) True(T) ½

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Q6. a) ii beaker B ✓½

b) iii beaker C ✓½

c) i beaker A ✓½

d) i glucose ✓½

Q7. a) oxygen (O_2) ✓½

b) Because it dilutes oxygen, preventing rapid combustion and making conditions stable for life ✓½

(Accept any other correct answer please)

c) i) 3 protons ✓½

ii) 3 electrons ✓½

iii) 4 neutrons ✓½

Q8. a) ⟶ iii) Corrosive ✓½

b) ⟶ ii) Flammable ✓½

c) ⟶ i) Toxic ✓½

Q9. i) ⟶ $NaOH_{(aq)}$ ✓½

ii) ⟶ + $HCl_{(g)}$ ✓½

iii) ⟶ + $H_{2(g)}$ ✓½

iv) ⟶ $CaCl_{2(aq)}$ ✓½

Q10. a) iii decomposition ½

b) ii precipitation ½

c) iv exothermic ½

Q11. a) A Melting ½

B freezing/solidification ½

F Deposition ½

b) C Cooling ½

D Heating ½

c) Iodine, Ammonium chloride, CO_2 ½

Q12. X → 12 Y → 16

a) X belong to group II ½

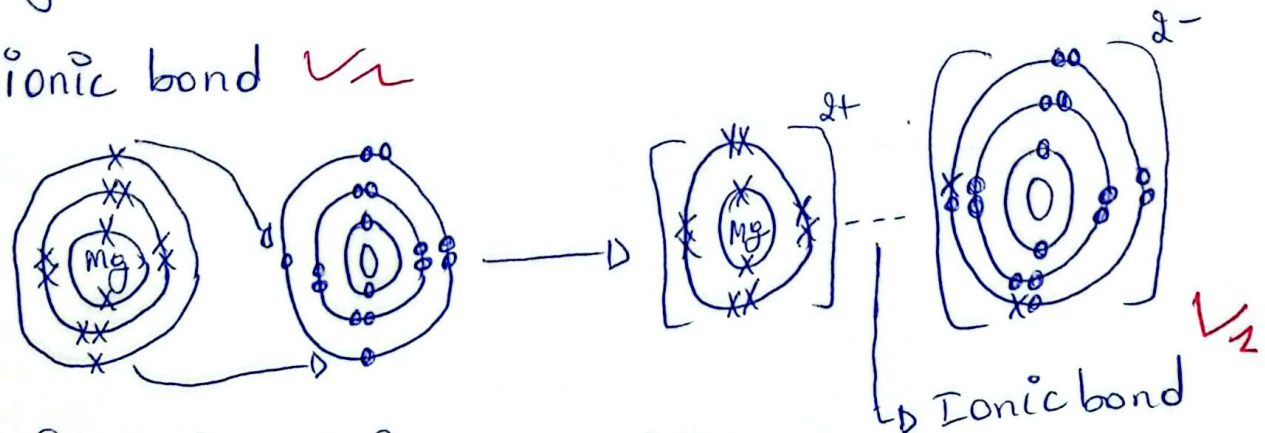
Y belong to group VI ½

b) X is metal ½

Y is non-metal ½

c) ionic bond ½

d)



½

Ionic bond

The formula of the compound is MgO or XY.

QN3.

SECTION B: Four (4) questions, Attempt any 3 questions of your choice.

Q13. a) X: $CaCO_3$ => Calcium Carbonate ✓½
Y: H_2CO_3 => Carbonic acid ✓½
Z: CO => Carbon monoxide ✓½
W: Mg => Magnesium ✓½

b) Three physical properties of Carbon dioxide
- CO_2 is Colorless and odorless gas ✓½
- CO_2 is denser than air ✓½
- CO_2 is slightly soluble in water ✓½

(Accept any other correct answer)

Three uses of Carbon dioxide
- CO_2 is used in photosynthesis ✓½
- CO_2 is used in fire extinguishers ✓½
- CO_2 is put in bread during the baking process ✓½

(Accept any other correct answer)

c) Reagent: lime water (calcium hydroxide) $Ca(OH)_{2(aq)}$ ✓½

Observation: lime water turns milky or white precipitate of calcium Carbonate is formed ✓½

Equation: $Ca(OH)_{2(aq)} + CO_{2(g)} \rightarrow CaCO_{3(s)} + H_2O_{(l)}$ ✓½

d) * Two ways in which carbon dioxide is removed from the atmosphere:
- photosynthesis in plants ✓½
- Dissolving CO_2 in the oceans, seas and lakes. ✓½

* Two ways in which carbon is supplied to the atmosphere.:
- Respiration of animals and plants ✓½
- Decay of dead plants and animals ✓½

(Accept any other correct answer)

Q14. a) $S_{(s)} + O_{2(g)} \longrightarrow SO_{2(g)}$ ✓2

b) $2SO_{2(g)} + O_{2(g)} \longrightarrow 2SO_{3(g)}$ ✓2

c) Formula: V_2O_5 ✓1
Name: Vanadium pentoxide ✓1

d) It is because sulphur trioxide dissolves in water, producing a large amount of heat which changes sulphuric acid to sulphuric acid mist. ✓2
(Accept any other corred answer)

e) - To manufacture of fertilizers such as ammonium sulphate ✓1
- cleaning metal sulfaces ✓1
(Accept any other correct answer)

Q15. a) - Nature of solute ✓1

- Temperature ✓1

b) i) 98 ✓1

ii) NaCl ✓1

iii) $NaNO_3$ ✓1

iv) 30° ✓1

c) Given: solubility = 40

weight of solute = 80g

Asked: Amount of water (weight of solvent) = ?

Formula and Calculation

$$\text{Solubility} = \frac{\text{weight of solute (in g)} \times 100}{\text{weight of solvent (in g)}}$$

$$\text{Then, weight of solvent} = \frac{\text{weight of solute} \times 100}{\text{solubility}} \quad ✓0.5$$

$$= \frac{80g \times 100}{40} \quad ✓0.5$$

$$= 200\,g \quad ✓1$$

d) Given

weight of solute = 14g

weight of solvent = 10g

Asked

solubility of sugar = ?

Formula and Calculation

$$\text{Solubility} = \frac{\text{weight of solute} \times 100}{\text{weight of solvent}}$$ 1/2

$$= \frac{7 \times 100}{5}$$ 1/2

$$= 140$$ 1/2

Q16. a) Methyl orange 1/2 ⟶ yellow 1/2

b) $V = 25\ ml = 0.025\ l = dm^3$ 1/2

$M = 0.1\ mol/l$

$M = \frac{n}{V}$, $\Rightarrow n = MXV$

$= 0.1\ mol/l \times 0.025\ l$ 1/2

$= 0.0025\ mol$ of Na_2CO_3 1/2

c) 1 mol of HCl ⟶ 0.0025 mol Na_2CO_3 1/2

2 mol of HCl ⟶ 2×0.0025

$= 0.005\ mol$ of HCl 1/2

d) $M(HCl) = \frac{n}{V}$

$V = 27.50\ ml$

$= 0.0275\ l$ 1/2

$M = \frac{0.005\ mol}{0.0275\ l}$ 1/2

$= 0.18\ mol/l$ 1/2

e) $M = \frac{m}{Mm \times V}$ $\Rightarrow$ $m = M \times Mm \times V$ ✓✓

$= 0.1\ mol/l \times 106\ g/mol \times 0.025l$ ✓✓

$= 0.265g$ ✓✓

SECTION C: One (1) Compulsory questions. /15mks

a) $MnO_{2(s)} + 4HCl_{(g)} \longrightarrow MnCl_{2(aq)} + 2H_2O_{(l)} + Cl_{2(g)}$

(4 marks for balanced, 2 for unbalanced)

b) * Water is used for removing unreacted Hydrogen chloride fumes ✓✓

* Concentrated H_2SO_4 is for drying chlorine gas ✓✓

c) iii) $Cl_{2(g)} + Fe_{(s)} \longrightarrow$ No reaction ✓✓

iv) $FeCl_{3(s)} \Rightarrow$ Iron(III) chloride ✓✓

d) i) Reagent: Iron II sulphate

observation:

equation:

ii) Reagent: potassium iodide solution (colourless)

observation: when chlorine is bubbling through the solution, it turns from colourless to brown. ✓✓

Equation: $2KI_{(aq)} + Cl_{2(g)} \longrightarrow 2KCl_{(aq)} + I_{2(g)}$

Ionic equation: ~~$2K^+_{(aq)}$~~ $+ 2I^-_{(aq)} + Cl_{2(g)} \longrightarrow$ ~~$2K^+_{(aq)}$~~ $+ 2Cl^-_{(aq)} + I_{2(g)}$

$2I^-_{(aq)} + Cl_{2(g)} \longrightarrow 2Cl^-_{(aq)} + I_{2(g)}$ ✓½

e) $Cl_{2(g)} + H_2O_{(l)} \longrightarrow HCl_{(aq)} + HOCl_{(aq)}$

Hydrochloric acid — Hypochlorous acid. ✓3

– END –