MUHANGA DISTRICT

CHEMISTRY THEORY

Date: 16/03/2026

Period: 8h30-11h30

END OF TERM II EXAMINATION , 2025-2026

MARKING GUIDE

SECTION A (70Marks)

1) i) D **(7 Marks)**

ii) A

iii) C

iv) B

v) C

vi) C

vii) C

2) i) D **(5 Marks)**

ii) D

iii) B

iv) A

v) C

3) i) B **(4 Marks)**

ii) C

iii) D

iv) A

4) i) B **(1 Mark)**

ii) 1-C ; 2-B ; 3-D ; 4-A **(4 Marks)**

5) i) C **(1 Mark)**

ii) A) Combustion reaction **(6 Marks)**

B) Combination reaction or Combustion reaction

C) Single displacement reaction

D) Precipitation reaction

E) Decomposition reaction

F) Neutralization reaction

iii) -release **(4 Marks)**

-absorb

-exothermic

-endothermic

6) i) 1-B ; 2-C ; 3-A **(3 Marks)**

ii) A) Biodegradable wastes **(2Marks)**

B) Non- biodegradable wastes

7) a) Covalent compound **(3Marks)**

b) Metal

c) Ionic compound

8) i) True **(5Marks)**

ii) False

iii) False

iv) True

v) False

9) i-B ; ii-C ; iii- A **(3Marks)**

10) i) Carbon dioxide **(5Marks)**

ii) Sulfate

iii) iron ions

iv) Salt and Water

v) Copper ions

11) i) D **(1Mark)**

ii) a) Avogadro's number **(5Marks)**

b) molar mass

c) 6.022×10^{23}

d) 22.4

e) 2

12) i) a) The solute is Sugar **(2Marks)**

b) The solvent is Water

ii) Solubility=$\frac{Weight\ of\ Solute\ (in\ gr)}{Weight\ of\ solvent(in\ gr)}\times 100$ **(3Marks)**

Weight of Solvent=$\frac{Weight\ of Solvent(in\ gr)}{Solubility}\ \times 100$

Weight of Solvent=$\frac{80g}{40}\ \times 100 = 200g$

The amount of water required is 200g.

13) A) Sodium is more reactive than Magnesium **(1Mark)** because the reactivity of metals decreases from left to right across a period **(1Mark)**.

B) Fluorine is more reactive than Chlorine **(1Mark)** because the reactivity of non- metals decreases on going down in a group of the periodic table **(1Mark).**

C) Potassium is more reactive than Sodium **(1Mark)** because the reactivity of metals increases on going down in a group of the periodic table **(1Mark).**

SECTION B

14) a) $Fe^{2+}_{(aq)}$ and $Fe^{3+}_{(aq)}$ **(2.5Marks)**

Reagent: $NaOH_{(aq)}$ or $NH_{3(aq)}$

Observation:

- For $Fe^{2+}_{(aq)}$: Green precipitate insoluble in excess.
- For $Fe^{3+}_{(aq)}$: Brown precipitate insoluble in excess.

b) $SO_4^{2-}{}_{(aq)}$ and $SO_3^{2-}{}_{(aq)}$ **(2.5Marks)**

Reagent: $Ba(NO_3)_{2(aq)}$ or $BaCl_{2(aq)}$ followed by $HCl_{(aq)}$

Observation:

- For $SO_4^{2-}{}_{(aq)}$: White precipitate insoluble in $HCl_{(aq)}$
- For $SO_3^{2-}{}_{(aq)}$: White precipitate soluble in $HCl_{(aq)}$

c) $I^-_{(aq)}$ and $Cl^-_{(aq)}$ **(2.5Marks)**

Reagent: $AgNO_{3(aq)}$ followed by $HNO_{3(aq)}$

Observation:

- For $I^-_{(aq))}$: Yellow precipitate
- For $Cl^-_{(aq)}$: White precipitate insoluble in $HNO_{3(aq)}$

d) $Ca^{2+}_{(aq)}$ and $Cu^{2+}_{(aq)}$ **(2.5Marks)**

Reagent: $NaOH_{(aq)}$

Observation:

- For $Ca^{2+}_{(aq)}$: White precipitate insoluble in excess
- For $Cu^{2+}_{(aq)}$: Blue precipitate insoluble in excess

Or

Reagent: $NH_{3(aq)}$

Observation:

- For $Ca^{2+}_{(aq)}$: No change (No precipitate formed)
- For $Cu^{2+}_{(aq)}$: Pale blue precipitate which dissolves in excess to form a deep blue solution.

15) i) c) 120 grams **(1Mark)**

ii) d) Potassium nitrate **(1Mark)**

iii) c) Sodium Sulphate **(1Mark)**

iv) a) Sodium nitrate **(1Mark)**

v) c) increases with increase of temperature **(1Mark)**

vi) a) False **(5Mark)**

b) False

c) True

d) True

e) False

16) a) i) Element Z: 2. 8. 2 **(2Marks)**

ii) Element L: 2. 8. 6

b) Element Z: Metal **(2Marks)**

Element L: Non-metal

c) i) metallic bond **(2Marks)**

ii) Covalent bond

d) Ionic bond **(1Mark)**

e) ZL or MgS **(1Mark)**

f) It is soluble in water **(2Marks)**

It has high melting point

It has high density

It has high boiling point

(Accept any 2 physical properties of ionic compounds).

17) a) Na_2O **(1Mark)**

b) $MgCl_2$ **(1Mark)**

c) Na_2SO_4 **(1Mark)**

d) $CaCl_2$ and H_2O **(2Marks)**

e) $CaSO_4$ **(1Mark)**

f) $ZnCl_2$ **(1Mark)**

g) NaCl and H_2O **(2Marks)**

h) NaOH **(1Mark)**

18) a) RFM of Na_2SO_4 = (23×2) + 32+(16× 2)=46+32+64=142 **(3Marks)**

% of Na=$\frac{(23\times2)\times100}{142}$=32.39%

b) Symbols of Elements : C H O

Percentage composition: 40 6.67 53.33

Number of moles : $\frac{40}{12}$=3.33 $\frac{6.67}{1}$=6.67 $\frac{53.33}{16}$=3.33

Number of atoms : $\frac{3.33}{3.33}$=1 $\frac{6.67}{3.33}$=2 $\frac{3.33}{3.33}$=1

Simplest atomic ratio : 1 2 1

Empirical formula is CH_2O **(4Marks)**

Molecular formula= $(CH_2O)_n$

RMM of CH_2O= 12+(1×2)+16=30

n=$\frac{180}{30}$=6

Molecular formula is $(CH_2O)_6$ OR $C_6H_{12}O_6$ **(3Marks)**