TERM TWO

CHEM P2 FORM 3

MARKING SCHEMES

a) 1.(a) Alkali metals

b) (i) GR_2 OR CO_2

c) (ii) covalent bond

d) Z – It has 4 energy levels hence its outermost electron is weakly held by the nucleus hence has greater tendency to lose electrons.

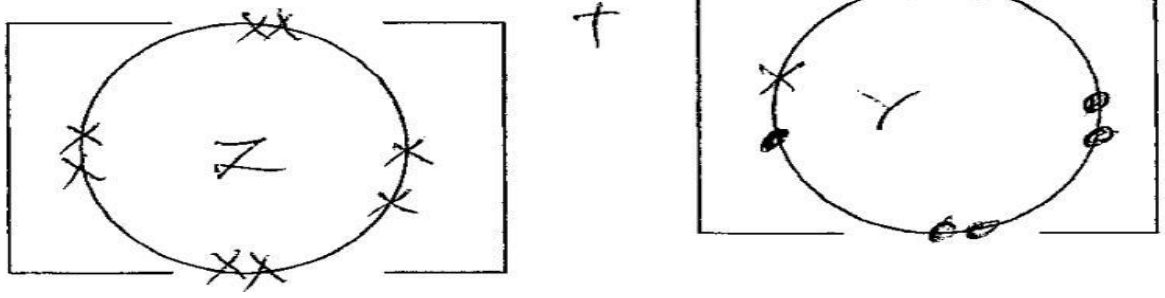
e) T_2O

f) T_2O_2

g) It is below P

h) Ionic radius of W is greater that of S. W has an energy 3 level while S has 2 energy levels.

i)



2.

a) $Mg_{(s)} + 2HCl \longrightarrow MgCl_{2(aq)} + H2(g)$

b) Scale -1

c) Plotting – 1
Curve – 1

d)

(i) 150 $\pm$ 2cm3

(ii) 30cm3

e) $Mg_{(s)} + 2Hcl_{(aq)} \longrightarrow MgCl_{2(aq)} + H2(g)$

Mole ratio 1:2

If 24,000cm3 = 1 mole

Therefore 300cm3 = $\frac{300 \times 1}{24,000}$

= 0.0125 mole

Moles = $\frac{\text{mass}}{\text{Rmm}}$

Rmm = $\frac{0.3}{0.0125}$

= 24g

3.

a)

(i) Fractional distillation of liquid air

(ii) Natural gas

By product of crocking of long chain alkanes

b)

- Carbon (iv) oxide
- Sulphur (iv) oxide
- Dust particles

c) Temp – 500oC

Pressure – 200 atmospheres

d) The compression enhances faster reaction between $N_{2\,(g)}$ and $H2_{(g)}$ hence increases high yield of Ammonia.

e) Iron to reduce wastage

f)

- As a fertilizer
- As a refrigerant
- Softening hard water
- Removal of greasy stains
- Manufacture of hydrazine used in rocket fuels

g) The black CuO turns to a red brown is related to Cu(s) by ammonia

h) $\frac{P1V1}{T_1} = \frac{P_2V_2}{T_2}$

$V_2 = \frac{250 \times 200 \times 273}{293 \times 300}$

$= 155.29cm3$

1.

a) A salt is a substance found when the Hydrogen ion of an acid is replaced directly or indirectly by a metal or ammonia ion.

b)

(i) Deliquescent self – is one which absorbs water for the atmosphere to form a solution.
Hydroscopic salt – is one which absorbs water from the atmosphere but does not form solution.

(ii) Used as a drying agent.

c)

(i) Oxygen gas O_2(g0

(ii) Thermal decomposition

d) Add water to the mixture, Nacl dissolves while CuO does not. Filter and heat the filtrate to dryness then cool the Nacl crystals.

e)

(i) $Pb_2+(aq) + SO_4^{2-}{}_{(aq)} \longrightarrow PbSO_{4(s)}$

(ii) $Pb(NO_3)_2 + Na2SO_4 \longrightarrow PbSO_4 + 2NaNO_3$

Moles of Pb: $\frac{3.4}{207} = 0.016425$

Mole Ratio Pb: $PbSO_4$

1:1

Therefore moles of $PbSO_4 = 0.16425$

Hence mass = 0.16425 x 303

(Rmm = 207 + 207 + 32 + 64 = 303)

Therefore mass = 4.9768g

2.

a)

(i) 2methylbustance

(ii) Pent -2 –ene

(iii) Propyne

b)

(i) Cn H_2n+2

(ii) Alkanes

(iii) C_2H_6 = 12 x2 + 6 x1 =30

(iv) C_2 H_6

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        H   H
        I   I
    H – C – C – H
        I   I
        H   H
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c)

(i) Hydrogen chloride gas

(ii) Hydrogen gas

(iii) Soda lime (sodium hydroxide)

(iv) $2C_2H_2$ (g) + $5O_2$(g) ⟶ $4CO_2$ +$2H_2O$(l)

(v) Polymerization

d) C_xH_y +$\underline{3}O_2$(g) ⟶ $1CO_2$(g) + 1 H_2O(l)

Mass 5028g 2.16g

Moles $\frac{5.28}{44}$ = 0.12 $\frac{2.16}{18}$ = 0.12

Mola Ratio = 1:1

Hence C_xH_y ⟶ C_1H_2 therefore EF ⟶ CH_2

3.

a) (a) 2Pb(NO_3)3(s) ⟶ 2PbO(s) + 4 No2(g)

b)

(i) Oxygen gas

(ii) Dinitrogen tetra oxide

c) Nitrogen (IV) Oxide is easily liquefied

d)

- H is red brown in colour
- Has a pungent, irritating smell
- It is denser than air
- Is soluble in water
- Is easily liquefied to form yellow N2O4
- Is poisonous

e)

(i) Burning Nitrogen Magnesium alit of heat which makes NO2 to dissociate to NO and O2 (g) which supports burning.

(ii) 4mg(s) + $2NO_2$(g) ⟶ $4mgO(s) + N_2(g)$

f) It should be prepared in a fume chamber or open space.
This is because NO_2 (g) is poisonous.

g) Pb(NO3)2(aq) +2Nacl(aq) Pbcl2(s) + 2 NaNO3(aq)

Mole ratio 1;2

Moles = $\frac{8.34}{278}$

Therefore mass = 0.06 x58.5 = 3.51

4. A)

a) Period 4

b) B^{3+} - 2.8 D^- - 2.8.8

c) D

d) C

e) D – Its melting point is – 101ºC therefore at room temperature (25ºC) it has already melted into a liquid.