**MINCKS GROUP OF SCHOOLS**

**CHEMISTRY PAPER 1**

**TERM 2 SEPTEMBER 2022**

 **Marking Scheme**

1(a) When air hole is completely/fully closed.

If filly/completely mentioned If not mentioned penalize fully

No state penalize ½

Not balanced penalize fully

Water can be liquid or gas.

A diagram must be well labeled

Mention burnt and not burnt region

1Mrk

1Mrk

1mrk

1mrk

2mkrs

1mrk

1mrk

(b) C4H10 (g) + 4O2 (g) C(s) + 3CO(g) + 5H2O(l) **/**(g)

 Or

C4H10 (g) + 3O2(g)  C(s)+CO2(g) + 5H2O(l)/ (g)

(c)

Unburnt Region 1/2

Paper

Charmed region 1/2

 Or

 Slip a piece of paper across the middle point of

 the flame. Several times. Remove and observe ½

 The central part remains unburnt while other part

 burns. ½ Accept wooden splint

2(a) Metallic bond

(b) Group I (1mrk) Each action contains one

 electron in the outermost energy level (1mrk)

3 (a) (i) Alpha (a)

 (b) Betta (-Ie)

 (b) Cancer treatment

Any 1mrk

 - Detecting cracks in metals

 - Carbon dating of plants and animals

4(a) Black Precipitate

Penalize ½ if no symbol or if they are wrong

If not balanced penalize fully

(b) If initial and final colour is not mentioned penalize fully

Catalyzed must be below that of un catalyzed

1mrk

1mrk

1mrk

1mrk

1mrk

3mrks

½

½

1mrk

1mrk

 (b) Pb2+(aq)+ S2-(aq) Pbs(s)

5 (a) Anhydrous calcium chloride

 (b) Black CuO changes to brown solid

Any

1mrk

(c) Hydrogen reduces CuO to copper metal which is brown

 Colorless liquid forms on the cooler parts of the

 combustion tube.

Un catalyzed

6(a)

Catalyzed

A(g) + B(g)

Energy content

 ΔH AB(g)

Reaction path

(b) N2H4 + O2 (g) N2(g)+ 2H2 O(l)

 Bond Breaking Bond Formation

 4x 388 = 1552 1x944= 944

 1x163 4x464= 1856

 1x 496=496 \_\_\_\_\_

 \_\_\_\_\_ -2800 kJ

 +2211 kJ

ΔH = -589kJ

7(a) A - chlorine

 B – Hydrogen

(b) H2(g) + Cl2(g) 2HCl(g)

(c) To increase surface area for dissolution of hydrogen

 Chloride gas in water. No present sucking back.

8(a) S, Hydrogen, V, T

Mark consequentially.

Equation must be balanced if not penalize fully

Award ½ if state is not given/ missing

2mrk

1mrk

3mrks

1mrk

1mrk

1mrk

1mrk

11/2

1mrk

 (b) T(s) + V2+ (aq) V(s)+ T2+(aq)

9 Crush the tablet with mortex and pistle ½, add water stir

 To dissolve ½, add the universal indicator ½ , match the

 Color with that of *PH* chart ½, determine the *PH* 1mrk.

10 (a) Ca2+(aq) + 2e- Cu(s)

 (b) 63.5g of Cu (96500x2)C

 Thus 1.184g Cu = 1.184g x 193000

 63.5

 = 3598.66

 Quantity = It 3598.66

 2t = 3598.6

 2 = 1799. 3 Sec

 =30 sec

11(a) C(s) + H2 O(g)  CO(g) + H2(g)

(b) Reducing agent

2mrks

 Together with oxygen is used as fuel

12(a)

Red ½

Orange ½

Blue ½

 (b) Wash the blue spot in the chromatogram with plenty

 of water ½

1mrk

2mrks

½

½

½

½

1mrk

1mrk

1mrk

1mrk

1mrk

 Evaporate the water to obtain the dye ½

(c) Ethanol/ Propanol

13(a) Source of heat

 (b) The solid Pb Br2 melts to form Pb2+ and Br – ½

These mobile ions ½ conducts electric current ½Then

Bulb lights ½

14 Mass of KClo3 = 16.86 – 15.86 = 1g ½

 Mass of water = 26.86 – 16.86 = 10g ½

2

1g of KClO3 saturates 10g of water at 30oC ½

X(g) of K ClO3 saturates 60g of water at 300C = 60x1 = 6g ½

 10

Mas of saturated solution = 6+ 60

 = 66g

15(a) (i) 2, 2 – dimethyl propane

 (ii) Pent – 2 – yne

 (b) Add acidified KMnO4 solution to both separately

CH3C = CCH2 CH3 will change purple acidified KMnO4

Colourless.

CH3 (CH2)2 CH3 doesn’t ½

16 (a)



11P ½

2Mrks

1mk

1mrk

½

1mrk

½

1mrk

2mrks

1mrk

12N ½ 3 energy levels ½

11 electrons ½

(b)



17 (a) When gases react they do so in volumes which bears

Simple whole number ratio to one another and to the

Volume of products if gaseous when temperature and

pleasure remains constant 1mrk

(b) Cx Hy + O2(g) CO(g) + H2 O(g)

15 45 30 30

 15 15 15 15

 1 3 2 2

C Hy + 3O2 2CO2(g) + 2H2 O(g)

 Cx Hy = C2 H4 ½

18 (a) -92.4 = -46.2kJmol-1 *penalize ½ for missing sign or*

1mrk

2mrks

1mrk

1mrk

1Mrk

1mrk

1mrk

1mrk

2mrks

1mrk

 2 *wrong units*

(b(i) Lowers the yield ½ forward reaction is exothermic/

Backward reaction is endothermic ½

 *Penalize for backward reaction is favoured*

(ii) No effect ½ catalysts have no effect on the position of

Equilibrium. ½

19(i) 4Fe(s) + 3O2(g) + NH2 O 2Fe2 O3.NH2 O

 (ii) 6th day ½, volume of air remains constant ½

 (iii) % of oxygen gas = 2000 – 1600 x100 ½

1mrks

1mrks

1mrk

1mrk

1mrk

1mrk

1mrk

1mrk

2mrk

1mrk

2mks

3mrks

 2000

 =20% ½

20 (i) 2. 8. 3

 2. 8. 6

 (ii) P2Q3

21 (i) Ethyl propanoate

 (ii) Ester/ Alky/alkanoate

 (iii) H H

 H C C OH 1/2

 H H

 Ethanol ½

22 Gas m is lighter than air hence creating low pressure,

water will rise to occupy space left as gas m escapes to the

atmosphere. Gas N is denser than air so air enter the porus pot hence

 increasing the pressure hence pushing water down.1mrk

23 (a) Nitric acid is a strong oxidizing agent and attacks

rubber corks and rubber tubes.

 (b) Contain dissolved nitrogen (IV) oxide which reacts

from decomposition of nitric (V) acid

24 Heat copper metal in air to form copper (II) oxide, 1mrk,

React excess copper (II) oxide with dilute H2 SO4(aq) to obtain

copper (II) sulphate solution. 1mrk Heat the solution to

Saturation ½and allow it to cool to form copper (II) sulphate

Crystals ½

25 (a) Malleable material that can be hammered into sheets

while ductile is the material that can be drawn into wires

2mrks

2mrks

1mrk

1mrk

 (b) (i) Used in making of cooking utensils.

 (ii) Used to make overhead cables

26 SO2(g) + NO2(g) SO3(g) + NO(g)

 +4 +4 +6 +2

Oxidation number of sulphuric increases from +4 to +6 1mrk

Oxidation of number of nitrogen decreases 1mrk

(ii) Sulphur – dioxide/ SO2