# TRIAL ONE EVALUATION TEST 2019

# CHEMISTRY PAPER 2 MARKING SCHEME

1. a) B√ ½ and E ½
b) D√ ½

c) F √ ½ has smallest atomic radius hence electrons are strongly attracted by

 positive nucleus √ ½

d) D and G //J and G//D and C//K and G *(Any one above award 1mk for both)*

e) B and C //I and C//E and C *(Any one above award 1 mk for both)*

f)

 

1 mk for showing all charges
1 mk for drawing and labeling the atoms

g) Number of neutrons is not equal to the number of protons.
h) K has stronger metallic bonds √ 1 since it has smaller atomic size √ l hence

 more energy is needed to break them.
i) - Add water to the mixture and stir√ ½

* Sulphate of K dissolves while lead (II) sulphate does not √ ½
* Filter √ ½ , lead (II) sulphate as the residue while sulphate of K is the filtrate √ ½
* Evaporate the filtrate to dryness √ ½ to obtain solid sulphate of K√ ½

1. a) Carbon (iv) oxide, sulphur (iv) oxide, dust particles Any two 1 mk each

b) To increase surface area√1

c) Reduces wastage √1

d) Temperature of 450 – 5000 C

e) - As a fertilizer

- Manufacture of nitrogenous fertilizers

- Softening water

- Manufacture nitric (v) acid

- Remove stains in laundry

- Manufacture of hydrazine used as rocket fuel

f. (i) Platinum – rhodium /Platinum (ii) 4NH3(g) +5O3(g) 4NO(g) + 6 H2O(g)

(iii) NO reacts with oxygen to form NO2 which dissolves in moisture forming HNO3 which falls as acid rain.// NO3- in water bodies encourages rapid growth of algae leading in a reduction in oxygen content in water. This causes death of aquatic life.

g. (i) Heat is not required 🗸1 (ii)There would be no change in both red and blue litmus papers. Dry chlorine does not have acidic property and does not bleach. (iii) Freshly prepared chlorine water has chloric (i) acid) and therefore bleaches. But when exposed to sunlight chloric (i) acid decomposes into hydrochloric acid and oxygen gas is released

(iv) - heat - the acid must be concentrated

1. a) S1

P1

C1

b) i) Zn(s) + 2HCl(aq) Zncl2(aq) + H2(g)

* 1. Extinguishes a burning splint with a ‘pop’ sound🗸1
	2. To ensure that all the zinc granules reacted🗸1
1. i) Correct value read from graph🗸1

ii) At 180th minute🗸1

1. i) To the right of the curve in (a) 🗸1

ii) To the left of the curve in (a) 🗸1

 e) Zn(s) + 2HCl (aq) Zncl2(aq) + H2(q) ✓ ½

 1 1

 65 g of zinc product 24 litres

 ∴ 13g ” ” x

 X=$\frac{13 X 24}{65}$

 = 4.8 liters

 H H H

1. Q C3H6// CH2CHCH3 🗸1 C=C---C----H🗸1

H H

 H H H H

 P C4H10//CH3CH2 CH2CH3 🗸1 H------ C------- C------- C------- C------- H

 H H H H

c) Ethanol 🗸 ½ and Conc. Sulphuric 🗸 ½ acid 1 mk acc. Correct formula of the compounds

ii) a) Carbon hydrogen Oxygen

 % 64.86 13.51 100 – 78.37 = 21.63

 RAM 12 1 16

 Moles $\frac{64.86}{12}$ = 5.405 $\frac{13.51}{1}$ = 13.51 $ \frac{21.63}{16}$ = 1.352

 Mole ratio $\frac{5.405}{1.352}$ = 4 $\frac{13.51}{1.352}$ = 10 $\frac{1.352}{1.352}$ = 1

 Empirical formula C4H10O

 Molecular formula (C4H10O)n

 N = $\frac{74}{74}$ = 1

 Molecular formula = C4H10O🗸 ½

1. Alcohols / Alkanols 🗸 1
2. (a) - Heating value

- Availability

- Cost

- Ease of storage

- Ease of transporting

 (b) (i) Heat produced = MC∆T

 Mass of water = 100 x 1 = 100g

 ∆T = 46.5 = 25 = 21.50C

 ∆H = $\frac{100}{1000}$ x 450 x 21.5

= 40.635kJ

 (ii) Molar heat = $\frac{40.635 x 46}{1.5} $= 1246.47kj/mol

 (c) C2H5OH(l) + 3O2(g) 2CO2(g) + 3H2O(l) ∆H = 1246.72kJ/mol

 (d) - Heat lost to the surrounding

 - Heat absorbed by the apparatus

 - Experimental errors when reading thermometer

1. a) i) To remove carbon (iv) oxide

 ii) To dry the air/remove water vapour

b) i) Colour changes from red brown to black

 ii) 80 – 63.2 = 16.8 cm3

c) Nitrogen

1. a) L - Dilute hydrochloric acid🗸 ½

 S - Iron (II) Sulphide🗸 ½

b)

Anhydrous calcium chloride  Dry hydrogen sulphide gas c) Fes(s) + 2HCl(aq) FeCl2(aq) + H2S(g)

Anhydrous CaCl2

🗸 ½

 d) i) H2S turns wet blue litmus paper red 🗸 ½ but has

No effect on red litmus. 🗸 1

 ii) A white precipitate is formed🗸 1

 e) i) Frasch process

 ii) i) Super heated – To melt 🗸 ½ the sulphur deposits

 ii) To force a froath of molten sulphur and water to the surface🗸 ½

 f) 2NH3(g) + H2SO4(aq) (NH4)2SO4(aq) 🗸 ½

 98g 132g

 132 (NH4)2SO4 ≡ 98

125.2 ≡ $\frac{98 x 125.2}{132}$

= 95.95tons