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**PAPER 1**

**MARKING SCHEME 2020 FORM 4 TERM 1ENTRY EXAMS**

1. a.
2. Fractionating column; allow water vapour to condense into liquid and flow back to the flask before boiling point of water is reached. √1mk
3. Glass beads; - increase the surface area for condensation of water to take place. √1
4. - Distillation of liquid Air in the manufacture of nitrogen and oxygen √1mk or

- Distillation of crude oil.

2.

1. R = 2.8.8.2 √ ½ mk

 S = 2 .6 √ ½ mk

1. RO √1mk

 SCl2√1mk

1. Moles of oxygen gas. = $\frac{0.83}{32}$

 = 0.02594 √1mk

 Moles of 2NaNO3 : O2

 2 : 1

 Moles of NaNO3 = 2 x 0.02594.

 = 0.05188 moles √ ½ mk

 Mass of NaNO3 = 85 x 0.05188

 = 4.4098g √ ½ mk

Percentage ofNaNO3 =$ \frac{4.098}{5.35}X\frac{4.098}{5.35}100$4.098/5.35X4.098/5.35100 = 82.45%

1. A = Non Luminous √1mk
2. When the air hole is closed. √1mk
3. Double decomposition (precipitation ) √1mk
4. Ag+(aq) + Cl-(aq) AgCl(s) √1mk
5. Empirical formula

Compounds present : CuSO4 : nH2O

Mass present 3.2 1.8

R.F.M 160.5 18√1mk

No of moles $\frac{3.2}{160.5}$ $\frac{1.8}{18}$√ ½ mk

 0.02 : 0.1

Mole ratio $\frac{0.02}{0.02}$ : $\frac{0.1}{0.02}$√ ½ mk

 1 : 5

 E.F. CuSO4 .5H2O √1mk

1. a) Variety B

 b)5.5-6.5 Soil Ph or 5.0-7.5

C)Add lime water which is basic for the soil PH to be neutral√1mk √1mk

H

H

H

H

X

X

X

+ √1mk

 √1mk

1. (a) The volume of a fixed mass of a gas is inversely proportional to the square root of the density.

(b) $\frac{250}{279}$ = $\sqrt{\frac{32}{mx}}$

 250 x Jmx = 277 x $\sqrt{32}$

$\sqrt{mx}$= $\frac{277 x 532}{250}$

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Mx = $\left(\frac{277 x \sqrt{32}}{250}\right)$

Mx = 39.29

c) Carbon (iv) oxide √1mk and water √1mk

d) Carbon √1mk and hydrogen √1mk

1. a) delocalized electrons

b) mobile ions

11. I mole of a gas occupy - 22.4dm3 at s.t.p

? - 11.2dm3√1mk

$\frac{11.2 x 1}{22.4}$ = 0.5mol √1mk

ii) 22.4dm3 → 64g/l

11.2dm3 → ?

$\frac{11.2 x 64}{22.4 }=32g $√1mk

$12. $. reversing chemical change √1mk

1. Physical change √1mk
2. Permanent chemical change √1mk

13 I. CO2(s) + C(s) → CO(g)

 II. 2CO(g) + O2(g) → CO(g)

14.

1. Iron (II) sulphide √1mk
2. Fe(s)  + S(s) → FeS √1mk
3. A gas with rotten egg smell is produced √1mk

 A pale green solution is formed

15. R.A.M = $\frac{ 54 x 6+ 56 x 92 + 57 x 2}{100}$√1mk

= $\frac{324 + 5152 + 114}{100}$√1mk

= $\frac{5590}{100}$

= $55.9$.9mk

16. RSTQ √1mk increasing reactivity √1mk

17. Ammonia gas does not burn in air. Thus it did not ignite. √1mk

b) i) The gas ignites with green – yellow flame √1mk

ii)4NH3(g) + 3O2(g)  → 2N2(g) + 6H2O(g) √1mk

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1. a) Manganese (IV) oxide √1mk
	* + 1. Water √1mk
2. Oxy – hydrogen √1mk very hot flames for cutting of metal

Oxy – acetylene

19.

1. X – green copper (II) carbonate changes to black copper (ii) oxide. √1mk

 Y – The colorless solution of limewater turns to a white ppt. √1mk

heat

1. CuCO3(s) →  CuO(s) + CO2(g) √1mk

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1. By use of universal indicator solution √1mk and compairing the colour obtained with the PH scale.
2. Basicity - 2 √1mk

 3 √1mk

21. a) Protons 18 √1mk neutrons 22√1mk

1. X : 2,8,8 √1mk

22. i) Yellow colour of chlorine turns to colourless√1mk and a black solid is formed at the bottom of the solution.

ii) 2KI (aq) + Cl2(g) → 2KCl(aq) + I2(g)

 Chlorine is the oxidizing agent √1mk because its oxidation number changes form 0 to -1

23. i) Sublimation √1mk

 ii) Oxidation √1mk

1. Dehydration √1mk

24. i) U ,T ,S ,R ,Q ,P √1mk

 Decreasing atomic size

 ii) Both P and Q need to loose √1mk electrons to become stable, therefore they cannot react to form a compound.

25. a) A yellow deposit of sulphur is observed and a white powder of MgO formed.

 b) 2Mg(s)  + SO2(g) → 2MgO(s) + S(s) √1mk

 c) Oxidising agent/property

26. a) A method used to separate coloured pigments. √1mk

 ii) In food industry to identify contaminants in food and drinks. √1mk

1. In sports to identify illegal substances e.g steroids in urine or blood samples. √1mk

27. i) X – Covalent bond √1mk

 Y – Hydrogen bond √1mk

28. Fe(s)  + CuSO4(aq) → FeSO4(aq + Cu(s)

 1mol 1mol

 Moles of iron used = $\frac{3.36}{56}$

 = 0.06moles √1mk

 Mole ratio of reaction

 Fe : Cu

 1 : 1√1

Moles of Cu produced is 0.06.

 Thus mass of copper deposited

 = 0.06 x 63.5

 = 3.81g√1