**CHEMISTRY**

Form 4

Paper 1

**MARKING SCHEME**

1. [a] Bolyles law states that volume of a given mass of a gas inversely proportional to its pressure

at constant temperature

[b] P1V1=P2V2

560 x 850 = V2

 640

V2=743.75 cm3

2. [a] Magnesium oxide

[b] Mg[s] + N2O[S] MgO + N2[g]

3. [a] -Manufacture of fizzy drink

 -Used as a refrigerant

[any one correct]

[b] Marble chips [solid calcium carbonate and dilute hydrochloric acid (Any correct 2)

4 [a] Salty condition

 Acidic condition

[b] -Addition of minerals to the soil

 -decomposition of iron waste

5. 38g 56g of water

 ? 100g of water

 35x 100

 56

 = 67.85g/100g of water

6. Molten sodium chloride has mobile ions while solid sodium chloride does not have mobile ions

7 [a]



[b] Addition polymerization

[c] [48] n = 25620

 48 48

N=533.75 units

8.

[580 X1]+420X4 +[396]1 [446]1 + [420 X5]+[438]1

580+1680 +396 446+2100+438

+ 2656 -2984

 +2656 $-$2984

 =$-$328kJmol-1

9 [a] Dynamic equilibrium is attained when the rate of the forward reaction is equal to that of the

reverse reaction

[b] [i] The intensity of the yellow colour in the equilibrium mixture increased .

Additional of NaOH reduces the concentration ofH+ ions hence equilibrium shifts to the left

[ii] the intensity of the yellow colour in the equilibrium mixture decreases.

Additional of HCL increased the concentration of H+ ions hence equilibrium shifts to the right

10. [a] Cu2+[aq] + 2e- Cu[s]

[b] Q= It

 =1.5x150x60

 =13,500C

2moles of electrons are depositing 1 mole of Cu metal

1 mole of electrons=96500C

2 moles of electrons =

193000C deposited 64g of copper

13500

$$ \frac{13500 ×64}{193000}$$

 4.476g

11. [a] Half life of a radioactive isotope is the time taken for a given or number of nuclides to decay

to half its original mass or number

[b] Alpha particle

 Beta particles

[c] the number of half life $\frac{12}{\begin{array}{c}3\\\end{array}}$ =4

[1 /2 ]4x288=18g

12. $E^{θ}$= E RHS $-$ E LHS

 $ =-$ 1.64 $-$ + 0.44

 $ =-$2.08V

The reaction will not take place because the e.m.f is negative

13 [a] Ethyne

[b] Calcium carbide and water

[c] Alkynes

14 [a] Rhombic sulphur

 Monoclinic sulphur

[b] {i} Red brown gas of fumes were observed

 {ii} S[s] + 6HNO3[aq] H2SO4[aq] +6NO2[g]+2H2O

15 [a] Acts as a bleaching agent

[b] 2Ca[OH]2[aq]+Cl2[g] CaCl2[aq] +Ca(OCl)2{aq} +2H[g]

16. [a] Ester

 [b] propanol and methanoic acid

[C] Concentrated sulphuric {IV}acid catalyst

 Warming

17.



18. Mass of carbon

$ =\frac{12}{44}$ x 29.3

Mass of H $=\frac{2}{18}$ x11.7= 7.99

 =7.99

Mass of O2

20 –[7.99+1.3] =10.71

Element C H O

Mass of the element 7.99 1.30 10.71

R.A.M 12 1 16

Divide by R.A.M 7.99 1.30 10.71

 12 1 16

Divide by smallest value $\frac{0.6658 }{0.6658} \frac{1.3}{0.6658} \frac{0.6693}{0.6658}$

 1 1.95 1.005

Mole ratio 1 2 1

 E.F CH2O

19. [a] White precipitate was formed

[b] Pb2[q] + 2Cl [aq] PbCl2[s]

20 [a] hydrogen

[b] Electrolysis of brine

 Cracking of larger alkanes

[c] Finely divided iron

 Plantinum catalyst

[d] Manufacture of nitrogen fertilizer

 Used as a refrigerant

 Softening of water

21 [a] Upward delivery

[b] gas x is denser than gas y

[c] Hydrogen, ammonia,methane

22.x+4 x 36x x +40+4=37.25 x [x + 4]

36x + 160 = 37.25x +149

36x – 37,25x=149 – 160

-1.25x=+11

-1.25 =1.25

X=8.8

23. A liquid is boiled when constant boiling point is maintained the liquid is pure

24.

 $\frac{ Time in T}{Time in R}=\frac{\sqrt{Density T}}{\sqrt{Density R}}$

 $\frac{ 48 sec}{70 sec}=\frac{\sqrt{0.16}}{\sqrt{Density R}}$

 $\left(\frac{ 48 sec}{70 sec}\right)^{2}=\left(\frac{\sqrt{0.16}}{\sqrt{Density R}}\right)^{2}$

 $\frac{ 2304}{4900}=\frac{0.16}{Density of R}$

 $Density of R=0.3402 g/cm^{3}$

25. {a}E

 {b} A

 {c} C