

MARKING SCHEME PP1

1. A1 $\longrightarrow$ 18
 A2 $\longrightarrow$ 20
 A3 $\longrightarrow$ 22

$$\begin{aligned}
 \text{(ii) R.A.M} &= \frac{(36 \times 0.34) + (38 \times 0.06) + (99.6 \times 40)}{100} \\
 &= \frac{12.24 + 2.24 + 39.84}{100} \\
 &= \frac{3998}{100} \\
 &= 39.98
 \end{aligned}$$

- (iii) Used by mounteering/deep sea divers
 Use in hospital by patient with breath difficult
 Use in Welding i.e. arch welding when mixed with acetylene

2. (i) Oxidation- Loss of an electron
 (ii) Reduction- Gain of an electron

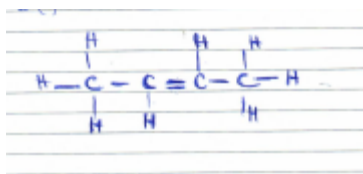
3. (a) Strong acid- Acid that dissociates completely when dissolved in water to yield many H^+ ions
 Concentrated-Acid which contains more moles in a solution of a litre
 (b) Temporary Hardness
 Permanent hardness

4. (a) Q only
 60-55=5g

5. (a) $2NaHCO_{3(s)} \xrightarrow{\text{heat}} Na_2CO_{3(s)} + CO_{2(g)} + H_2O_{(l)}$
 (b) Mass of $NaHCO_3$ decomposed = 44g
 $44g \text{ of } CO_2 \longrightarrow 2 \times 84 \text{ of } NaHCO_3$
 $0.93 \longrightarrow ?$

$$\begin{aligned}
 &\frac{0.93 \times 2 \times 84}{44} \\
 &= 3.55g \\
 &\% \text{ of } NaHCO_3 = \frac{1.49 \times 100}{5.04} \\
 &= 29.56
 \end{aligned}$$

6. (a) 2-Chlorobutane



(b)

(c) Alkene

7. (a) energy change that occurs when acid reacts with a base

(b) H of NaOH 0.1=5.625 KJ

1 mole ?

→

$$= 5.625 \times 1$$

$$0.0$$

$$= 56.25 \text{ KJ/mole}$$

8. (a) under the same conditions of temperature and pressure the rate of diffusion of a gas is inversely proportional to the square root.

(b)

proportionality

$$(b) \frac{r_1}{r_2} = \sqrt{\frac{M_2}{M_1}} \Rightarrow \frac{180}{240} = \sqrt{\frac{16}{M_2}} \checkmark$$

$$\frac{9}{16} = \frac{18}{M_2} \checkmark \Rightarrow M_2 = \frac{18 \times 16}{9} \checkmark$$

$$= 32 \checkmark$$

9. $\text{Ca}(\text{NO}_3)_2$ R.F.M = $40 + (14 \times 2) + (16 \times 6)$

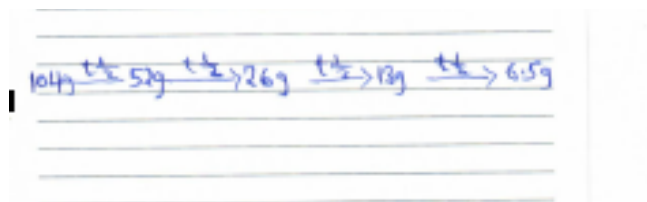
$$= 104$$

$$\% \text{ of N} = \frac{28}{104} \times 100$$

$$= 26.92\%$$

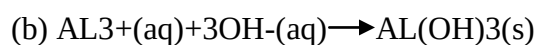
10. (a) Nuclear fission-splitting of a heavy nuclide when bombarded by a fast moving neutron; while

Nuclear fusion- combination of light nuclei when collided at high speed and a heavier nuclide is formed

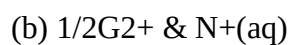


(b)

11. (a) Ammonium chloride/ NH_4Cl



12. (a) G has the highest +ve E value



(c) $E = +1.36 - 2.92$

$= +4.28 \text{ Volts}$

13. Fe	S	O	H ₂ O
<u>20.2</u>	<u>11.5</u>	<u>23.0</u>	<u>45.3</u>
56	32	16	18
<u>0.3607</u>	<u>0.36</u>	<u>1.44</u>	<u>2.52</u>
0.36	0.36	0.36	0.36
1	1	4	7

(ii) $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$

14. (a) Monoclinic and Rhombic Sulphur

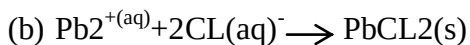
(b) reaction of water and SO_3 is highly exothermic and the solution boils forming droplets which are dangerous and condense slowly

15. Candle goes off

Carbon (iv) oxide produced turns lime water white ppt between CO_2 and lime water

16. (a) anion $\rightarrow \text{NO}_3^{-}$

Cation $\rightarrow \text{Pb}^{2+}$



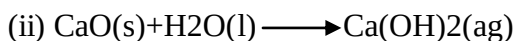
17. Add Water to the mixture and stir to dissolve NaCl, filter off the PbSO_4 as residue. Heat the filtrate to dryness to obtain Sodium Chloride Crystals

18. (a) When the air-hole is open

(b) It is hotter than the luminous flame

It does produce soot

19. (i) Fractional crystallization



20. (a) Heat from burning mg splits SO_2 to O_2 and S and O_2 produced support burning of magnesium

(b) KBr solution turns from colourless to red/brown,

21. (a) Aluminium Oxide

(b) Oxygen produced at anode reacts with graphite to form CO_2 leading to depletion

22. (a) Turns more Yellow/Orange fade// yellow colour intensifies

(b) NaOH remove H^+ shifting equilibrium to right// forming formation of H^+

23. (a) (i) B,D and E

(ii) C

(b) (i) 2,8,6

(ii) 2,8,3

24. Bond breaking = $413 + 193$

$$= 606\text{KJ}$$

Bond Formation = $280 + 365$ H for reaction = $606 - 645$

$$= 645\text{KJ}$$

$$= -39\text{KJ}$$

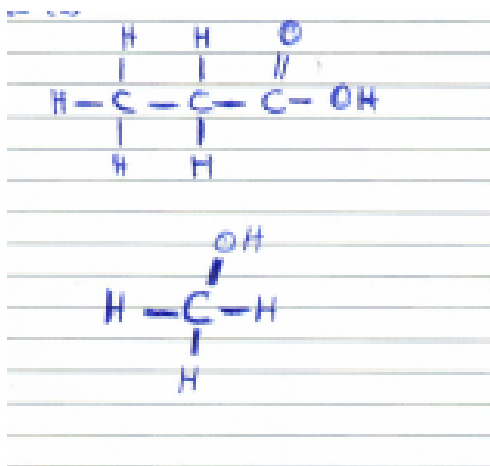
25. (a) Esters

(b) Propanoic acid

Methanol

26. (a) Halogens

(b) (i) Atomic radius of F is smaller than that of Element G. This is due to increase in number of electrons hence the energy level increases down the group F to G



(ii) I has a smaller atomic radius than D this is due to great nuclear charge in element I result to attraction of its electrons

27. (i) Conc. H_2SO_4

(ii) No. H_2 is less dense than air

(iii) Colourless

Odourless

Less denser than air

28. Put Na_2CO_3 salt into water and stir to form a solution. Put $\text{Pb}(\text{NO}_3)_2$ in water and stir to form a solution.. React equal portions of the two solutions and PbCO_3 will precipitate out at the bottom. Filter the mixture to obtain lead (ii) carbonate as residue. Wash it with distilled water and dry it between two filter paper to dry.

29. R- since it is an acid and Al_2O_3 is a base