MARKING SCHEME
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1. - Making baking powder / treatment of acidity in the stomach
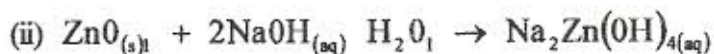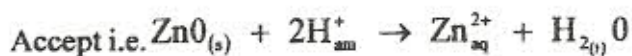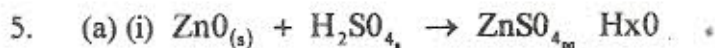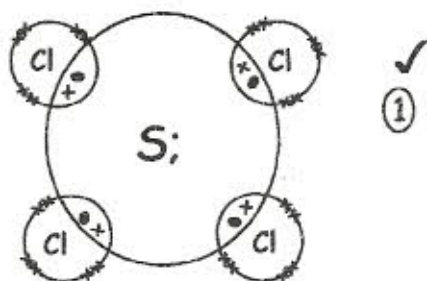   - Used Health salts/ laxatives / bee sting/ fire extinguisher/ in soft drinks.

2. (a) Cao is a basic while HCL is acidic $\Rightarrow$ They will therefore react.
      They will react to form salt and water.
   (b) Fused calcium chloride / concentrated sulphuric acid/ silice gel.

3. (a) Carbon dioxide or CO_2 carbon (iv) oxide
   (b) The water is temporarily burnt containing hydrogen carbonate. The hydrogen carbonate decomposes on heating to produce substance A.
   $$Mg(HCO_3)_2 \rightarrow Mg + 2CL_2 \ H_2O$$

4. (a)

   (b)

5. (a) (i) $ZnO_{(s)} + H_2SO_4 \rightarrow ZnSO_{4aq} \ HxO$

   Accept i.e. $ZnO_{(s)} + 2H^+_{aq} \rightarrow Zn^{2+}_{aq} + H_2O_{(l)}$

   (ii) $ZnO_{(s)} + 2NaOH_{(aq)} \ H_2O_l \rightarrow Na_2Zn(OH)_{4(aq)}$

   $ZnO_{(s)} + 2OH_{(aq)} + H_2O_{(l)} \rightarrow Zn(OH)^{2-}_{4(aq)}$

   or

   $ZnO_{(s)} + 2OH^-_{(aq)} \rightarrow ZnO^{2-}_{2(aq)} + H_2O_{(l)}$

   or

   $ZnO_{(s)} + 2NaOH_{(aq)} \rightarrow NaO_{2(aq)} + H_2O_{(l)}$
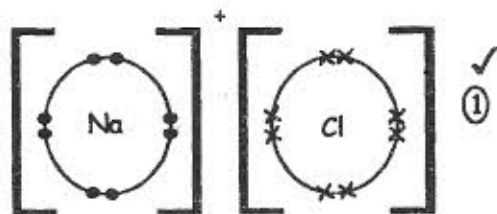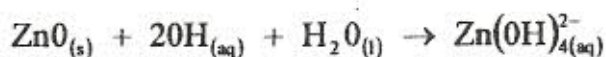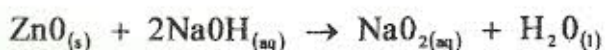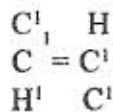
(b) Ampoterism

6. (a) C and E
    - they have same atomic number/protons
      or they are isotopes

    (b) (7-3) = 4

7. 1, 2 - dichloro ethane

$$C = C$$

with Cl, H on one carbon and H, Cl on the other

8. (a) $H_2S + 5 = 0$ $S = -2$

    (b) $+2 + 2s + -6 = 0$ $+2$
        $2s = 4$ $s = +2$

9. Mole of Hcl $\dfrac{20}{1000}$ 0.02

    Moles of $GCO_3 = \dfrac{0.02}{2} = 0.01$

    Molar mass of $GCO_s = \dfrac{1}{0.01} \, 100$

    RMM of $GCO_3 = 60 + G$

    $G + 60 = 100$
        $G = 40$

10. (a) Equilibrium has been established or backward Rxn = Rxn

11. (a) $6NaOH_{(aq)} + 3cl_{2g} \rightarrow Nacl_{(aq)}O_3 + 5Nacl_{(aq)} + 3H_2O_{(l)}$
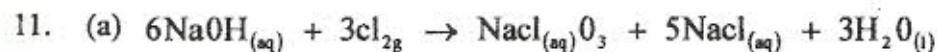
    (b) Weed killos, antiseptic for throat infectionm bleochigagant. Making heads of safety matches.

12. (a) To reduce PbO to Pb

    (b) To remove silica as slag

    (c) To reduce unreacted Pbs to Pb

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13. 1 mole of methane produce 890 KJ

Moles of methane $\dfrac{111.25}{890}$

0.125
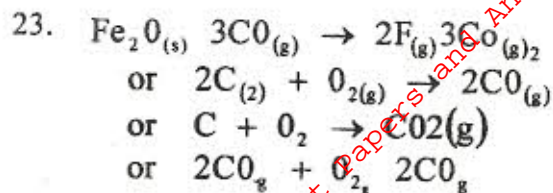
Volume of methane = 0.125×24
= 3 litres

14. 100 t_1 50 t_2 25 t_3 12.5

$3t_{\frac{1}{2}} = 15.6$

$t_{\frac{1}{2}} = \dfrac{15.6}{3} = 15.2$ years

15. Each atom in bonded to other carbon atom joining fused hexogenial layers. The layers are held together by weak vander weak faces / weak intermolecular. The layers can slick over each other easily.

16. First ionisation energy decreases with increase in atomic radius. When the atomic radius increases the outermost electron gets further from the nucleus less energy is thus required to remove it.

17. (a) Rxn must be carried out in a closed vessel/system.
    (b) Equilibrium shifts to the right or forward Rxn because CO_2 is removed from the system by KOH.

18. (a) No heating
    (b) The solid melted the ions become mobile/ freed delocolized.

19. (a) Latent heat of fussion / molar heat of fusion.
    (b) Negative particles are losing energy / ***

20. Acid M is stronger than acid L PRM ionises. Only while u realise pandles partially.
    - It produces more H^+ ions which react with the Mg turning.

21. (a) Nitric acid is more volable than concentrated H_2SO_4. Or Nitric acid has lower boiling point than concentrated H_2SO_4
    (b) $NaNO_3$
    (c) - Making ammonia fertilizer/nitrogenous
        - Making dye, making explosive, making synthetic fibres
        - Purification of metals (Gold)

22. (a) N - Sodium ethanate (CH_3COONa)/ sodium accetate)
        P - Methane (CH_4)
    (b) Substitution

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23. $Fe_2O_{(s)}$ $3CO_{(g)}$ $\rightarrow$ $2F_{(g)}$ $3Co_{(g)2}$

    or $2C_{(2)} + O_{2(g)} \rightarrow 2CO_{(g)}$

    or $C + O_2 \rightarrow CO2(g)$

    or $2CO_g + O_{2_s}$ $2CO_g$

24. (a) A yellow deposit

    H_2S was oxidised to sulphate while $S_0 2$ was reduced to sulphur.

    (b) Experiment should be done in fume cupboard or open air.

25. (a) $Cu(OH)2$ or   copper (ii) hydroxide)

    (b) $[CU(NH_3)_4]$ or   (Tekeaine copper II ions)

            or $CU(NH_3)_4 (OH)_2$

26.

Q it
= $0.82 \times 5 \times 60 \times 60$
= 14760 coloumbs

No of Faradays = $\dfrac{14760}{96}$
= 0.15

Mole of Z = $\dfrac{265}{52}$
= 0.05

Cloringen Z = $\dfrac{0.15}{0.05}$
= 3

27. (a) Reduction

    (b) Oxidation state of loaed in Pbo is reduced from +2 to zero (c)

      - Decrease in oxidation no of Pbo

      - Removal of oxygen from Pbo

    (c) Ammonio gas / hydrogen/ ethanol/methanol/butane/gas/ lab gas/ ethanol vapour/Bio - gas.

28. Mass due to C = $\dfrac{12}{44} \times 4.2$

               = 1.145

    Mass due to H = $\dfrac{2}{18} \times 71$

               = 0.1899

    Moles of C = $\dfrac{1.145}{12}$ = 0.1899

    Moles of H $\dfrac{0.1899}{1}$ 0.1899

    Mole ratio C:H = $\dfrac{0.1899}{0.095}$ = 2

    Empirical formula CH_2

    Or

    Moles of CO_2 : H_2O

    $\dfrac{4.2}{44}$ = 0.095 : $\dfrac{1.71}{18}$ 0.095

    $\dfrac{0.095}{0.095}$: $\dfrac{0.095}{0.095}$

    CH_2