Chemistry H.W

1) D
2) D
3) C
4) D
5) D
6) B
7) oxi) +1

(a)(ii) chlorate (1) ion

~~(a)(iii)~~

(b) $Cl_2(g) + H_2O(l) \rightarrow HCl(aq) + HClO$

$HClO \rightarrow H^+ + ClO^-$

its a disproportion reaction because same element is oxidised and reduced.

(c) it changed, to balance the equation.

8)(i) oxidation: Loss of electrons

reduction: gaining of $\bar{e}$.

(ii) oxidising agent: ~~$2Br^- \rightarrow Br_2$~~ $Cl_2 \rightarrow 2Cl^-$

Reducing agent: $2Br^- \rightarrow Br_2$

(b) $2Cl^-_{(aq)} + 2H_2O_{(l)} \rightarrow Cl_{2(aq)} + 2OH^-_{(aq)} + H_{2(g)}$

(9) (a) MgO

Mg_3N_2

(b) $Ca_{(s)} + 2H_2O_{(l)} \rightarrow Ca(OH)_{2(aq)} + H_2$

(ii) greater ~~for~~ radius, so less charge density, so less forces of attraction between nucleus and cloud of $\bar{e}$, so more reactive.

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1) (a) MgO
Mg_3N_2

) $Ca(s) + 2H_2O(l) \rightarrow Ca(OH)_2(aq) + 3H_2$
(ii) greater ~~ion~~ radius, so less charge density, so less forces of attraction between nucleus and cloud of $\bar{e}$, so more reactive.

(iii) as we go down the group the solubility increases because size of cation increases, forces of attraction decreases, Lattice energy decreases.

(c) size of cation increases, so P.P decreases, so less distortion, so higher thermal stability.

(d) $2Li(NO_3) \xrightarrow{\Delta} Li_2O + 2NO_2 + \frac{1}{2}O_2$

10) (a) (i) $2NaCl_{(s)} + H_2SO_{4(aq)} \rightarrow 2HCl_{(g)} + Na_2SO_4$

~~$NaBr_{(aq)} + H_2SO_{4(l)} \rightarrow HBr_{(g)} + Na_2SO_{4(aq)}$~~

~~$Br_2 + H_2S$~~

$2NaBr_{(aq)} + H_2SO_{4(l)} \rightarrow 2HBr_{(g)} + \frac{1}{2}Br_{2(g)} + Na_2SO_4$

(ii) H_2SO_4 can't oxidise Cl^- to Cl_2, But H_2SO_4 can oxidise Br^- to Br_2 Because its a strong reducing agent

(iii) Because HCl when it reacts with ammonia it produces a white cloud

(b) (i) $HBr_{(g)} + H_2O_{(l)} \rightarrow HBr_{(aq)}$

(ii) turns Red

(c) add $AgNO_3$ with gental warming → Cl^- → white ppt
I^- → yellow ppt

11) Radium → solid
At → solid

(b) astatine is less reactive than iodine, Because astatine has more shells and shieldings, so ~~great~~ less forces of attraction between nucleus and cloud of e^-, so less energy to attract e^-.

Five Apple

(c) $At + H_2 \rightarrow$ no reaction

(d) $2Ra + 3Cl_2 \rightarrow 2RaCl_3$

(e) D

12) $Ca(OH)_2$ is a product from this reaction

$$CaO + H_2O \rightarrow Ca(OH)_2$$

(i)

(i) Calcium hydroxide

(ii) $Ca(OH)_{2(aq)} + CO_{2(g)} \rightarrow CaCO_{3(s)} + H_2O$ (l)

(b) $2Ca + O_2 \rightarrow 2CaO$

$2Ca(NO_3)_2 \xrightarrow{\Delta} 2CaO + 4NO_2 + O_2$

(ii) ↓ down the group size of cation increases, polarising power decreases, distortion decreases, thermal stability increases