Topic _____ Date _____

GROUP 2

Thermal Stability – Group 2 Nitrates & Carbonates

→ ionic radius of cation increases down group; cation becomes larger.

→ charge density of cation decreases.

→ polarising effect on neighbouring carbonate/nitrate anion decreases

→ less polarisation ⇒ less covalent character, more ionic character

→ thus more energy required to break bond.

Solubility – Group 2 Hydroxides & Sulfates

→ down group, $\Delta H_{latt}^{\ominus}$ and $\Delta H_{hyd}^{\ominus}$ decrease / become less exothermic

→ for hydroxides (relatively small ions)

- $\Delta H_{latt}^{\ominus}$ falls faster than $\Delta H_{hyd}^{\ominus}$
- $\Delta H_{sol}^{\ominus}$ gets more exothermic down group (solubility ↑)

→ for sulfates (relatively large ions)

- $\Delta H_{latt}^{\ominus}$ falls slower than $\Delta H_{hyd}^{\ominus}$
- $\Delta H_{sol}^{\ominus}$ gets more endothermic down group (solubility ↓)