

## Chemistry 2720 Fall 2005 Quiz 2

Name: \_\_\_\_\_

Marks for this quiz: 14.

Lead carbonate is almost completely insoluble in water. Lead is therefore often removed from water by precipitation with carbonate. Suppose that we mix 200 mL of a solution containing 0.04 mol/L lead acetate with 500 mL of 0.5 mol/L sodium carbonate solution. Does the temperature increase or decrease, and by how much? The specific heat capacity of water is  $4.184 \text{ J K}^{-1} \text{ g}^{-1}$ . Assume that the density of water is  $1 \text{ g/cm}^3$ .

Species	$\Delta H_f^\circ$ (kJ/mol)	$\Delta G_f^\circ$ (kJ/mol)	$C_P$ ( $\text{J K}^{-1} \text{ mol}^{-1}$ )
$\text{CO}_3^{2-}(\text{aq})$	-675.23	-527.90	
$\text{Pb}^{2+}(\text{aq})$	0.92	-24.24	
$\text{PbCO}_3(\text{s})$	-699.1	-625.5	87.40