Heating + Cooling Curves etc.

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4. Determine the mass of steam produced by the heating of 500 mL of water starting at 20 °C by the thorough combustion of 5.0 g of benzene ($C_6H_6(l)$). Try pg 799 & 307 for relevant values. Do not use Hess' Law

6. Calculate the amount of heat energy required to convert 355 g of ice at -25 °C to steam at 250 °C. The following data should be of assistance:

5

Molar Heat of Fusion (melting) of Ice: 6.02 kJ/mol @ 0 °C
Molar Heat of Vaporization of water: 40.6 kJ/mol @ 100 °C
Specific Heat Capacity of Ice: 4.69 J/g°C
Specific Heat Capacity of Water: 4.184 J/g°C
Specific Heat Capacity of Steam: 3.43 J/g°C
Answer: 1291 kJ (Note: this answer is the sum of five different calculations)

4. Determine the final temperature if 70.594 kJ of heat is added to 125 g of ice at 0°C. Useful information can be found in your text on page 307 and of course page 799.

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5. Calculate the amount of heat energy required to convert 355 g of ice at -25 °C to steam at 250 °C. The following data should be of assistance:

10

Molar Heat of Fusion (melting) of Ice: 6.02 kJ/mol @ 0 °C
Molar Heat of Vaporization of water: 40.6 kJ/mol @ 100 °C
Specific Heat Capacity of Ice: 4.69 J/g°C
Specific Heat Capacity of Water: 4.184 J/g°C
Specific Heat Capacity of Steam: 3.43 J/g°C
Answer: 1291 kJ