Chapter 6 - Lecture Worksheet 2 - Enthalpy of Reaction

From Exam 1 Spring 06

14. In the lab it is fairly easy to obtain heats of combustion. Use this information and information from the other two reactions to determine the heat of formation of glucose (Reaction D).

(If you are running out of time you may just show the calculation and answer for this question. No detailed work necessary)

(A.)
$$C_6H_{12}O_6(s) + 6O_2(g)$$
 -----> $6CO_2(g) + 6H_2O(l)$ $\Delta H^0 = -2808 \text{ kJ}$

(B.)
$$C(s) + O_2(g)$$
 ----> $CO_2(g)$ $\Delta H^0 = -394 \text{ kJ}$

(C.) 2 H₂O(l) ----> O₂(g) + 2 H₂(g)
$$\Delta H^{o} = 572 \text{ kJ}$$

(D.)
$$6C(s) + 3O_2(g) + 6H_2(g)$$
 -----> $C_6H_{12}O_6(s)$ $\Delta H^0 = ?$

$$(1) -1016 \text{ kJ}$$
 $(2) 1272 \text{ kJ}$ $(3) -1272 \text{ kJ}$ $(4) -3456 \text{ kJ}$ $(5) 3456 \text{ kJ}$ $(6) 3774 \text{ kJ}$ $(7) -1016 \text{ kJ}$

Define: Standard Formation Reaction:

Write the standard formation reaction for H₂SO₄(1)

Which of the following represent standard formation reactions?

- (1) $2 C(s) + 3 H_2(g) + 1/2 O_2(g) \longrightarrow C_2H_5OH(l)$
- (2) $CaO(s) + CO_2(g) \rightarrow CaCO_3(s)$
- (3) $Pb^{+2}(aq) + CO_3^{-2}(aq) \longrightarrow Pb CO_3 (s)$
- (4) $C_2H_5OH \rightarrow 2 C(s) + 3 H_2(g) + \frac{1}{2} O_2(g)$
- (5) $2 \text{ Fe(s)} + 3/2 \text{ O}_2(g) \longrightarrow \text{Fe}_2\text{O}_3(s)$
- (6) 1 and 2
- (7) 1, 2, 3, and 5
- (8) 1, 3, and 5
- (9) 1 and 5
- (0) All of the reactions, 1-5 represent standard formation reactions.