Question \#78037, Chemistry / General Chemistry

Dear expert, please provide an answer to the question below within 12 hours
What is the $\Delta \mathrm{Ho}$ of the equation $4 \mathrm{NH} 3(\mathrm{~g})+5 \mathrm{O} 2(\mathrm{~g}) \rightarrow 4 \mathrm{NO}(\mathrm{g})+6 \mathrm{H} 2 \mathrm{O}(\mathrm{g})$ ? Given: $\Delta \mathrm{Hfo} \mathrm{NH3}=-45.9 \mathrm{~kJ} / \mathrm{mol}, \Delta \mathrm{Hfo} \mathrm{NO}=90.3 \mathrm{~kJ} / \mathrm{mol}, \Delta \mathrm{Hfo} \mathrm{H} 2 \mathrm{O}=-242 \mathrm{~kJ} / \mathrm{mol}$
A. $\Delta \mathrm{Ho}=90.7 \mathrm{~kJ}$
B. $\Delta \mathrm{Ho}=-90.7 \mathrm{~kJ}$
C. $\Delta \mathrm{Ho}=907 \mathrm{~kJ}$
D. $\Delta \mathrm{Ho}=-907 \mathrm{~kJ}$
E. None of the Above

## Solution

| -45.9kJ/mole |  | $90.3 \mathrm{~kJ} / \mathrm{mole}$ |  |  | -242kJ/mole |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 4NH3 (g) | + | 502 (g) | $\rightarrow$ | 4NO (g) | + | 6H2O (g) |
| 4moles |  |  |  | 4 moles |  | 6 moles |
| -183.6kJ |  |  |  | 361.2 kJ |  | -1452kJ |
| $\Delta H o=\Sigma(\Delta H f o \mathrm{NO}, \Delta \mathrm{Hfo} \mathrm{H2O})-\Delta \mathrm{Hfo} \mathrm{H} 2 \mathrm{O}$ |  |  |  |  |  |  |
| $\Delta H o=361.2-1452-(-183.6)=-907 k J$ |  |  |  |  |  |  |

## Answer: D

## Answer provided by AssignmentExpert.com

