Hess's Law, extra Exercises

Using Hess's law, and the bank of given equations below (you have to decide which equations to use), determine the enthalpies of these three target equations.  You might need to use a known equation more than once. Pay special attention to the states of water in each equation!!

Target Equations:
a) $N_{2(g)} + O_{2(g)} \rightarrow 2NO_{(g)}$
b) $4C_{(s)} + 5H_{2(g)} \rightarrow C_4H_{10(g)}$
c) $6C_{(s)} + 8H_{2(g)} + O_{2(g)} \rightarrow 2C_3H_7OH_{(l)}$


Bank of known equations:
| | |
|---|---|
| $K_1$ $C_{(s)} + O_{2(g)} \rightarrow CO_{2(g)}$ | $\Delta H$= -393.5 kJ |
| $K_2$ $C_3H_7OH_{(l)} + 9/2O_{2(g)} \rightarrow 3CO_{2(g)} + 4H_2O_{(l)}$ | $\Delta H$= -2008 kJ |
| $K_3$ $C_4H_{10(g)} + 13/2O_{2(g)} \rightarrow 4CO_{2(g)} + 5H_2O_{(g)}$ | $\Delta H$= -2657 kJ |
| $K_4$ $1/2N_{2(g)} + O_{2(g)} \rightarrow NO_{2(g)}$ | $\Delta H$= +34 kJ |
| $K_5$ $H_2O_{(l)} \rightarrow H_{2(g)} + 1/2O_{2(g)}$ | $\Delta H$= +286 kJ |
| $K_6$ $2H_{2(g)} + O_{2(g)} \rightarrow 2H_2O_{(g)}$ | $\Delta H$= -483.6 kJ |
| $K_7$ $NO_{2(g)} \rightarrow NO_{(g)} + 1/2O_{2(g)}$ | $\Delta H$= +56 kJ |