Standard Enthalpy Changes

Pre-lesson assignment- textbook page 124-126

Define the following terms

- Standard pressure
- Standard temperature
- Standard concentration
- Standard state
- Standard enthalpy change of reaction
- Standard enthalpy change of formation
- Standard enthalpy change of combustion
- Standard enthalpy change of neutralisation

Make notes on enthalpy changes

Use the following questions as guidance

1. Apply the correct definition to these examples – one each - $\Delta_f H^\ominus$ $\Delta_c H^\ominus$ $\Delta_r H^\ominus$ or $\Delta_{neut} H^\ominus$
    a. $2Ca_{(s)} + O_{2(g)} \rightarrow 2CaO_{(s)}$ $\Delta_? H^\ominus$ = -1270 kJ mol^{-1}
    b. $Ca_{(s)} + ½\ O_{2(g)} \rightarrow CaO_{(s)}$ $\Delta_? H^\ominus$= -635 kJ mol^{-1}
    c. $CH_{4(g)} + 2O_{2(g)} \rightarrow CO_{2(g)} + H_2O_{(l)}$ $\Delta_? H^\ominus$ = -890 kJ mol^{-1}
    d. $HNO_{3(aq)} + NaOH_{(aq)} \rightarrow H_2O_{(l)} + NaNO_{3(aq)}$ $\Delta_? H^\ominus$ = -57 kJ mol^{-1}
2. Spot the mistake and correct the equation
    a. $2CO_{(g)} + O_{2(g)} \rightarrow 2CO_{2(g)}$ $\Delta_f H^\ominus$ = -566 kJ mol^{-1}
    b. $2CH_{4(g)} + O_{2(g)} \rightarrow 2CO_{(g)} + 4H_{2(g)}$ $\Delta_c H^\ominus$ = -71 kJ mol^{-1}
    c. $H_2SO_{4(aq)} + 2NaOH_{(aq)} \rightarrow 2H_2O_{(l)} + Na_2SO_{4(aq)}$ $\Delta_{neut} H^\ominus$ = -114 kJ mol^{-1}
    d. $H_{2(g)} + I_{2(g)} \rightarrow HI_{(aq)}$ $\Delta_r H^\ominus$ = -9 kJ mol^{-1}