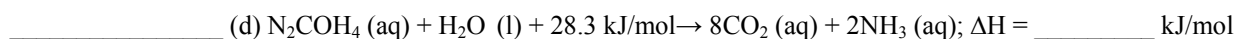
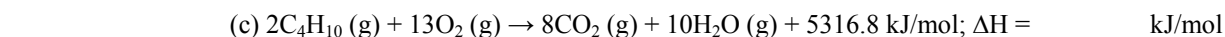
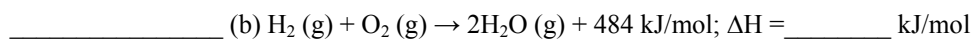
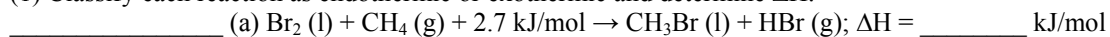
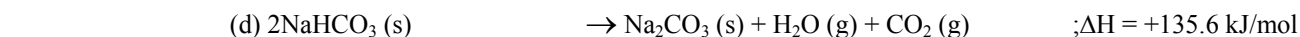
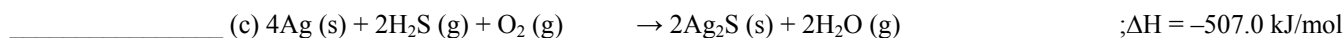
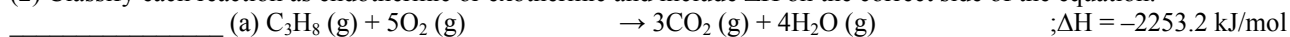


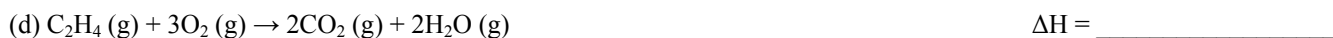
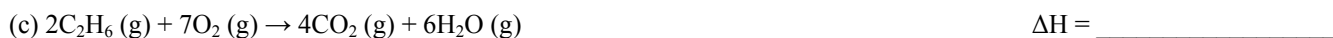
Heats of Reaction

Name: _____

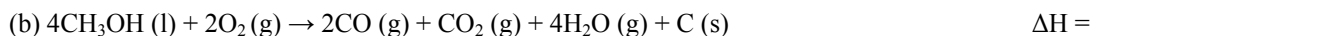
Period: _____

(1) Classify each reaction as endothermic or exothermic and determine ΔH .(2) Classify each reaction as endothermic or exothermic and include ΔH on the correct side of the equation.

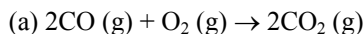
(3) Use the bond energies to calculate the heat of the reaction.



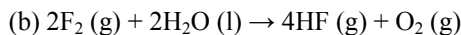
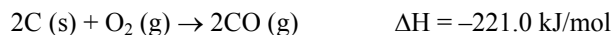
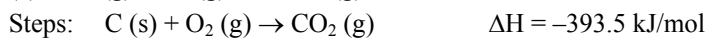
(4) Use the heats of formation to calculate the heat of the reaction.



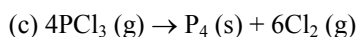
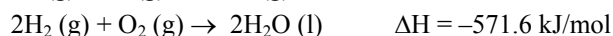
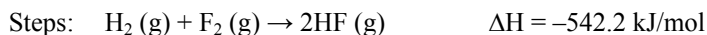
(5) Use the steps provided to calculate the overall heat of the reaction.



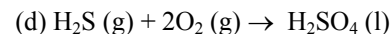
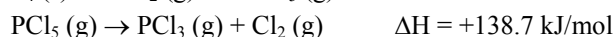
$\Delta\text{H} =$ _____



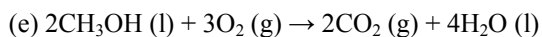
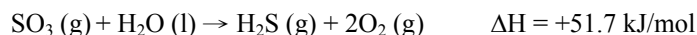
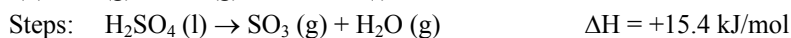
$\Delta\text{H} =$ _____



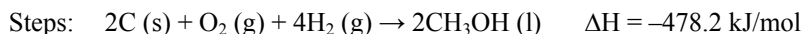
$\Delta\text{H} =$ _____



$\Delta\text{H} =$ _____



$\Delta\text{H} =$ _____



Answers:

(1) (a) Endo; $\Delta\text{H} = +2.7 \text{ kJ/mol}$

(b) Exo; $\Delta\text{H} = -484 \text{ kJ/mol}$

(c) Exo; $\Delta\text{H} = -5316.8 \text{ kJ/mol}$

(d) Endo; $\Delta\text{H} = +28.3 \text{ kJ/mol}$

(3) (a) -68 kJ/mol

(b) $+93 \text{ kJ/mol}$

(c) -2870 kJ/mol

(d) -1316 kJ/mol

(e) -1272 kJ/mol

(4) (a) $+746.4 \text{ kJ/mol}$

(b) -626.1 kJ/mol

(c) -107.5 kJ/mol

(d) -907.6 kJ/mol

(e) $+71.8 \text{ kJ/mol}$

(5) (a) -566.0 kJ/mol

(b) -512.8 kJ/mol

(c) $+1355.2 \text{ kJ/mol}$

(d) -58.8 kJ/mol

(e) -1452.0 kJ/mol

(2) (a) Exo; $\text{C}_3\text{H}_8 \text{(g)} + 5\text{O}_2 \text{(g)} \rightarrow 3\text{CO}_2 \text{(g)} + 4\text{H}_2\text{O (g)} + 2253.2 \text{ kJ/mol}$

(b) Endo; $2\text{Na (s)} + \text{Cl}_2 \text{(g)} \rightarrow 2\text{NaCl (s)} \quad 821.8 \text{ kJ/mol}$

(c) Exo; $4\text{Ag (s)} + 2\text{H}_2\text{S (g)} + \text{O}_2 \text{(g)} \rightarrow 2\text{Ag}_2\text{S (s)} + 2\text{H}_2\text{O (g)} + 507.0 \text{ kJ/mol}$

(d) Endo; $2\text{NaHCO}_3 \text{(s)} + 135.6 \text{ kJ/mol} \rightarrow \text{Na}_2\text{CO}_3 \text{(s)} + \text{H}_2\text{O (g)} + \text{CO}_2 \text{(g)}$