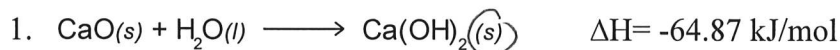


AP Chemistry  
Determining Entropy and Spontaneity

Name \_\_\_\_\_

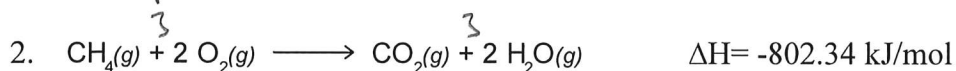
For each of the following reactions, determine if the entropy is positive or negative. Then, based on the given  $\Delta H$ , determine the spontaneity of the reaction (Spontaneous at all temperatures, Nonspontaneous at all temperatures, or Spontaneous at \_\_\_\_\_ temperatures)



$$\Delta G = \Delta H - T\Delta S$$

- - (-)

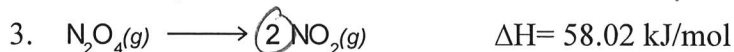
Spontaneous @ low temps



$$\Delta G = \Delta H - T\Delta S$$

= - - (negligible)  $\rightarrow$   $\text{CO}_2$  and  $\text{H}_2\text{O}$  are larger and have more microstates, so  $\Delta S$  is a little +

Spontaneous @ all temps



$$\Delta G = \Delta H - T\Delta S$$

+ - (+)

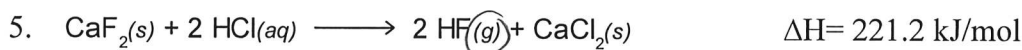
Spontaneous @ high temps



$$\Delta G = \Delta H - T\Delta S$$

= - - (+)

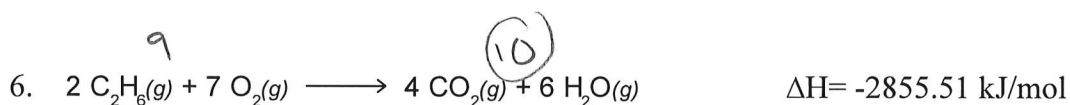
Spontaneous @ all temps



$$\Delta G = \Delta H - T\Delta S$$

+ - (+)

Spontaneous @ high temps



$$\Delta G = \Delta H - T \Delta S$$

$$= - - (+)$$

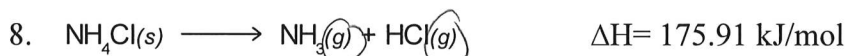
Spontaneous @ all temps



$$\Delta G = \Delta H - T \Delta S$$

$$= + - (-)$$

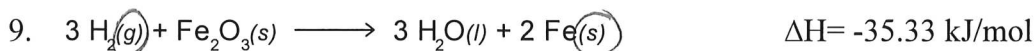
Nonspontaneous @ all temps



$$\Delta G = \Delta H - T \Delta S$$

$$+ - (+)$$

Spontaneous @ high temps



$$\Delta G = \Delta H - T \Delta S$$

$$- - (-)$$

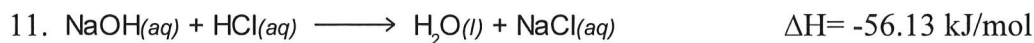
Spontaneous @ low temps



$$\Delta G = \Delta H - T \Delta S$$

$$= - - (-)$$

spontaneous @ low temps



$$\Delta G = \Delta H - T \Delta S$$

$$= - - (-)$$

spontaneous @ low temps