

**Revised August 2006**

## AP WORKED ANSWERS

**1997, 7**

**Points 2, 2, 2, 2**

(a) One gas becomes two gases → greater disorder → Positive  $\Delta S$ .

(b)  $\Delta G = \Delta H - T\Delta S$

Since  $\Delta S$  is positive as T increases the term  $T\Delta S$  also increases. This means a larger term is being subtracted from a fixed  $\Delta H$  so  $\Delta G$  decreases.

(c) No change in the partial pressure of  $\text{Cl}_2$ . Helium is an inert gas and as such it does not form part of the equilibrium expression. Therefore the equilibrium position is not changed.

(d) The moles of  $\text{Cl}_2$  will decrease. The decrease in volume leads to an increase in pressure, so the reaction shifts to the left because there are less moles of gas on the left (less pressure).