ΧΗΜΙΚΗ ΙΣΟΡΡΟΠΙΑ - ΛΥΣΕΙΣ

① α) Αν $\theta \uparrow \xrightarrow{\text{Le Chatelier}} \theta \downarrow \Rightarrow$ προς ενδόθερμη $\Rightarrow$ αριστερά

β) Αν $P \downarrow \xrightarrow{\text{Le Chatelier}} p \uparrow \Rightarrow n_{ολ}(g) \uparrow \Rightarrow$ αριστερά

γ) Αν $[O_2] \uparrow \xrightarrow{\text{Le Chatelier}} [O_2] \downarrow \Rightarrow$ δεξιά

δ) Αν $[H_2O_{(g)}] \uparrow \xrightarrow{\text{Le Chatelier}} [H_2O_{(g)}] \downarrow \Rightarrow$ αριστερά

② (mol) $PCl_{3(g)} + Cl_{2(g)} \rightleftharpoons PCl_{5(g)}$

Αρχικά	1	2	0
Αντ-παρ	x	x	x
Ισορροπία	1-x	2-x	x

$1-x = 0,7 \Rightarrow x = 0,3$ mol

$$K_C = \frac{[PCl_5]}{[PCl_3][Cl_2]} = \frac{\frac{x}{V}}{\frac{1-x}{V}\cdot\frac{2-x}{V}} = \frac{xV}{(1-x)(2-x)} = \frac{0,3\cdot 3}{(1-0,3)(2-0,3)} =$$

$= 0,756$

$K_C = K_p (RT)^{1-(1+1)} \Rightarrow K_C = K_p (RT)^{-1} \Rightarrow K_p = K_C RT \Rightarrow$

$\Rightarrow K_p = 0,756 \cdot 0,082 \cdot 300 = 18,6$

③ $\Delta G^\circ = 2\Delta G^\circ_{f,HCl(g)} - \Delta G^\circ_{f,H_2(g)} - \Delta G^\circ_{f,Cl_2(g)} = -190,6$ kJ

$\Delta G^\circ = -RT \ln K_C \Rightarrow \ln K_C = \frac{-190,6}{0,082 \cdot 298} = -7,8 \Rightarrow$

$K_C = e^{-7,8} = 4,1 \cdot 10^{-4}$