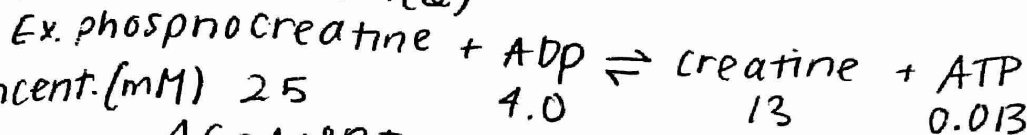


Free Energy Change Under Nonstandard Conditions

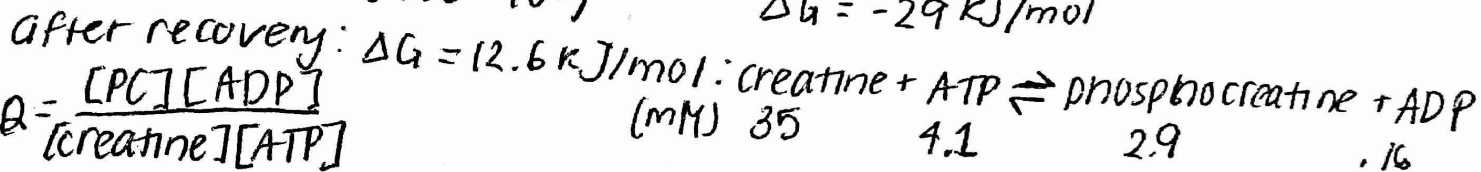
$$\Delta G = \Delta G^\circ + RT \ln(Q)$$



concent. (mM) 25 4.0 13 0.013

$$\Delta G = \Delta G^\circ + RT \ln(Q) = -12.6 \text{ kJ/mol} + (8.315 \times 10^{-3} \text{ kJ/mol K}) 310 \text{ K} \cdot \ln Q$$

$$Q = \frac{(0.013 \times 10^{-3})(13 \times 10^{-3})}{(25 \times 10^{-3})(4.0 \times 10^{-3})} \quad \Delta G = -29 \text{ kJ/mol}$$



$$Q = \frac{[\text{PC}][\text{ADP}]}{[\text{creatine}][\text{ATP}]}$$

(mM) 35 4.1 2.9 .16

ΔG° and K : at equilibrium, $Q=K$ and $\Delta G = 0$

Equation becomes $0 = \Delta G^\circ + RT \ln(K) \rightarrow \Delta G^\circ = -RT \ln K$