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ANSWERS

1. (a) $Q = \dfrac{[H_2(g)]\,[I_2(g)]}{[HI(g)]^2}$

$= \dfrac{(0.040)(0.010)}{(0.14)^2}$

$= 0.020$

$Q = K$

Therefore, the system is at equilibrium.

(b) $Q = \dfrac{[H_2(g)]\,[I_2(g)]}{[HI(g)]^2}$

$= \dfrac{(0.15)(0.090)}{(0.20)^2}$

$= 0.34$

$Q \neq K$

Therefore, the system is not at equilibrium.

$Q > K$

Therefore, the system is shifting left (toward the reactants).

3. (a) $K = [O_2(g)]$ (solids are not included)

(b) $Q = [O_2(g)]$

$= 5.0\times10^{-2}$

$Q \neq K$

Therefore, the system is not at equilibrium.

$Q > K$

Therefore, the system is shifting left (toward the reactants).