

Question 5: Short Answer

4 points

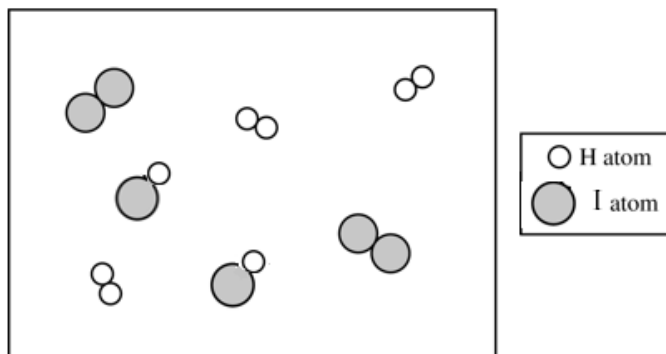
(a) For the correct expression:

1 point

$$K_c = \frac{[\text{HI}]^2}{[\text{H}_2][\text{I}_2]}$$

(b)(i) For the correct drawing consistent with part (a):

1 point



(ii) For a valid hypothesis:

1 point

Accept one of the following:

- *Decreased the temperature.*
- *Added more H_2 and/or I_2 to the reaction vessel.*

(iii) For the correct answer and a valid justification:

1 point

Accept one of the following:

- *Remain unchanged. The number of moles in the numerator and denominator of Q (or K) are equal; changing the volume of the container would not alter the value of Q , which is still equal to K , so the number of moles of HI will remain the same.*
- *Remain unchanged. The increase in volume will decrease the concentration of reactants and products by an equal proportion. Because there are equal moles of gaseous reactants and products in the balanced chemical equation, there is no shift in the equilibrium position, and the number of moles of HI will remain the same.*

Total for part (b) 3 points

Total for question 5 4 points