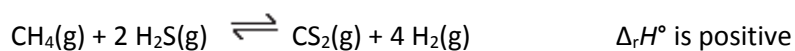


Q5 Chemical Equilibrium

[3 + 4 = 7 marks]

a) Consider the equilibrium:



In which direction will the equilibrium be shifted by the following changes? Explain.

[3 marks]

(i) addition of $\text{CH}_4(\text{g})$

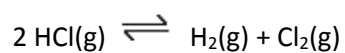
(ii) increasing the temperature of the reaction mixture

(iii) decreasing the volume of the container at constant temperature

Q5 (continued) Chemical Equilibrium

[3 + 4 = 7 marks]

- b) $K_c = 3.2 \times 10^{-34}$ for the following reaction at 25 °C



The reaction vessel initially contained 0.0500 mol L⁻¹ HCl.

Calculate the concentrations of H₂ and Cl₂ at equilibrium.

[4 marks]