Question 30 **(6 marks)**

Two major impacts of increasing atmospheric carbon dioxide levels are decreasing ocean pH and decreasing ocean calcium carbonate availability. Consider the equilibrium reactions, represented by the following equations

Equation 1	$CO_2(aq) + H_2O(aq) \leftrightharpoons H_2CO_3(aq)$
Equation 2	$H_2CO_3(aq) \leftrightharpoons H^+(aq) + HCO_3^-(aq)$
Equation 3	$HCO_3^-(aq) \leftrightharpoons H^+(aq) + CO_3^{2-}(aq)$
Equation 4	$CaCO_3(s) + H^+(aq) \leftrightharpoons HCO_3^-(aq) + Ca^{2+}(aq)$

With reference to chemical equilibrium principles and the equations provided, explain each of the following major impacts of increasing atmospheric carbon dioxide concentrations.

(a) Decreasing pH. (4 marks)

(b) Decreasing calcium carbonate availability. (2 marks)