**Chemistry 2.6 AS 91166** Demonstrate understanding of chemical reactivity



Writing Excellence answers to **Equilibrium Expression** questions

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| **Equilibrium Expression QUESTION** | |
| **Question:**  The following chemical equation represents a reaction that is part of the Contact Process, which produces sulfuric acid.  2SO2(*g*) + O2(*g*) ↔ 2SO3(*g*) Δ*H* = −200 kJ mol–1, *K*c= 4.32 at 600°C  **(i)** Write an equilibrium constant expression for this reaction.  **(ii):** A reaction mixture has the following concentration of gases at 600°C:  [SO2(*g*)] = 0.300 mol L–1  [O2(*g*)] = 0.100 mol L–1  [SO3(*g*)] = 0.250 mol L–1  Justify why this reaction mixture is not at equilibrium, using the equilibrium expression and the data provided | |
| **ANSWER** | |
| 1. Write out the **equilibrium constant expression** in full |  |
| 2. **Calculate the Q value** by inserting all of the [ ] data given.  Show working and remember order of operation and 3sgf  Final value will have no units |  |
| 3. Write down the Kc value and **compare** with the Q value stating whether it is equal or not (and therefore is or is not at equilibrium) |  |
| 4. Link the Q value as either being **bigger** (and lying to the products side as the numerator is greater) OR as being **smaller** (and lying to the reactants side as the numerator is smaller) |  |

NOTE: The white column is how your answer would appear on your test paper so make sure you **write out complete sentences**. The grey area is just to help you structure your answer and would not appear in the question.