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



Writing Excellence answers to **Equilibrium – Temperature** questions

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| **Equilibrium – Temperature QUESTION** |
| **Question:**  In a reaction, the brown gas nitrogen dioxide, NO2(*g*), exists in equilibrium with the colourless gas dinitrogen tetroxide, N2O4(*g*). The equation for this reaction is represented by: 2NO2(*g*) ↔ N2O4(*g*) brown gas colourless gas The table below shows the observations when changes were made to the system. Analyse these experimental observations. In your answer you should: • link all of the observations to equilibrium principles • justify whether the formation of dinitrogen tetroxide from nitrogen dioxide is endothermic or exothermic.  |
| **ANSWER** |
| 1. State the **equilibrium principle** |  |
| 2. Describe the **factor** in your question AND Link the principle to how the **system responds to cooling or heating** |  |
| 3. **Generally,** explain which side of the equation is favoured (relate to endothermic or exothermic) |  |
| 4. **Specifically,** for your reaction with heating, link the observation to which direction of reaction would be favoured (endothermic or exothermic) |  |
| 5. Describe how the **system shift** in heating would affect which products are made AND final observation. |  |
| 6. **Specifically,** for your reaction with cooling, link the observation to which direction of reaction would be favoured (endothermic or exothermic) |  |
| 7. Describe how the **system shift** in cooling would affect which products are made AND final observation. |  |

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.