**Science 1.5 AS 90944** Demonstrate understanding of aspects of acids and bases



Writing Excellence answers to **pH, Universal indicator and ions** questions

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| **pH, Universal Indicator and ions QUESTION** | |
| **Question:**  A beaker contains sodium hydroxide solution and 5 drops of universal indicator. Sulfuric acid was added to the beaker until no more changes were observed.  Describe how the **indicator colour** changes as the sulfuric acid is added to the beaker, AND explain what this tells you about the changing pH of this solution.  Explain the relationship between the changing **pH** of the solution and the **ions** in the solution as the sulfuric acid is added to the beaker.  Explain the advantages of using **universal indicator** compared to **litmus paper.** | |
| **ANSWER** | |
| 1. state the overall reaction that is occurring naming the acid and base and the product formed. |  |
| 2. compare the colour and relative concentration of **H+ and OH- ions** in beaker at the start and link to pH | **Step 1:** |
| 3. describe the colour change, pH range and concentration of H+/OH- ions as more acid added. | **Step 2:** |
| 4. describe the colour change, pH and concentration of H+/OH- ions as yet more acid added to form a **neutral solution** | **Step 3:** |
| 5. describe the colour change, pH range and concentration of H+/OH- ions as more acid added **past neutral** | **Step 4:** |
| 6. describe the colour change, pH range and concentration of H+/OH- ions as more acid added to make a **strong acid solution** | **Step 5:** |
| 7. describe the colour changes of **litmus** (red and blue) linked to acid, base or neutral |  |
| 8. describe the colour changes of **Universal indicator** linked to pH |  |
| **9. complete final statement** | Universal Indicator tells us more information about a solutions pH than\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and tells us **how** acidic, basic a solution is or if it is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  Litmus is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_as it only tells us if it is acid, basic, or neutral whereas Universal Indicator tells us how acidic or basic it is. |

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.