

Question 20 (4 marks)

- (a) Identify ONE common household base.

1

..... sodium hydroxide

- (b) A student used indicators to determine whether three colourless solutions were acidic or basic. The indicators used are shown in the table.

3

<i>Indicator</i>	<i>Colour change</i>	<i>pH range</i>
Methyl orange	red to yellow	3.2–4.4
Methyl red	red to yellow	4.8–6.0
Thymol blue	yellow to blue	8.0–9.6
Alizarin	red to purple	11.0–12.4

Samples of each solution were tested with the indicators. The colours of the resulting solutions are shown in the table.

<i>Indicator added</i>	<i>Colour of solution A</i>	<i>Colour of solution B</i>	<i>Colour of solution C</i>
Methyl orange	yellow	yellow	yellow
Methyl red	yellow	yellow	yellow
Thymol blue	blue	blue	yellow
Alizarin	purple	red	red

The student concluded that each of the three solutions tested was basic. Assess the validity of this conclusion.

..... Each of the colour changes for the three
 solutions is on the alkaline side of
 the indicator range. This would
 indicate that all three solutions
 are basic. However, to validate
 these results the student would
 need to use an indicator which
 changes colour across the entire
 pH range, such as universal
 indicator.