

Question 20 (4 marks)

- (a) Identify ONE common household base. 1

..... ammonia in household cleaning agents .....

- (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 >4.4	yellow >4.4	yellow >4.4
Methyl red	yellow > 6	yellow > 6	yellow > 6
Thymol blue	blue >9.6	blue >9.6	yellow < 8
Alizarin	purple >12.4	red < 11	red < 11

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

..... Further testing using another indicator for solution C.....  
 ..... is required as the indicators used place its pH of.....  
 ..... between 6-8 meaning it could be either acidic or.....  
 ..... basic as a pH less than 7 is acidic & a pH of.....  
 ..... greater than 7 is basic. Therefore this is not a.....  
 ..... valid conclusion as although solution A & B are both.....  
 ..... basic the acidity or basicity of substance C is still.....  
 ..... unknown.....