

Question 20 (4 marks)

(a) Identify ONE common household base.

1

..... Ammonia

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

3

Indicator	Colour change	pH range
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.

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

basic 9.6 - 11.0 6-8

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

..... Two of the solution (solution A and B) are definitely basic with
 solution A with a pH of around 12.4 and B with a pH ~~with~~ of
 around 9.6 - 11.0. Two of the solution are basic is correct.
 However, solution C gives a pH of approximately 6-8. This
 cannot conclude that the solution is basic, acidic or neutral.
 Therefore, the conclusion of ^{the} 3 ~~base~~ solutions ^{are basic} ~~is~~ not valid.
 An extra test is needed to see if solution C is acidic, basic or neutral
 and a pH probe / meter would be able to determine it.