

Question 20 (4 marks)

- (a) Identify ONE common household base. 1

ammonia (can be both a acid or base)

- (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 a
Methyl red	red to yellow	4.8–6.0 a
Thymol blue	yellow to blue	8.0–9.6 b
Alizarin	red to purple	11.0–12.4 b

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 a
Methyl red	yellow	yellow	yellow a
Thymol blue	blue	blue	yellow b
Alizarin	purple	red	red b

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

The student's conclusion is wrong because ~~it~~ remembering the pH chart solutions with the pH from 1-6 is considered an acid, 7 is neutral and from 8-13 it is regarded to be a base. Referring to the student's results, there seems to be a 50% ~~set~~ of solutions which are acidic and 50% base taking into account pH ranges.