Question 20 (4 marks)

(a) Identify ONE common household base.

.............*Ammonia*...

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

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 ✓

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

.....The student is correct in observing that.....
..Solution A is basic. Alizarin changed purple >pH than 12.4
..Solution B is also basic as the pH is inbetween
.....9.6 and 11
..Solution C needs to undergo further analysis
..as the results showed a pH between 6.0 and 8.0
..It can either be a weak acidic, neutral or basic.
..Hence his conclusion is incorrect in saying all three solutions
..are basic.