

Question 2 (Answer: **C**)

- Both gases diffuse along the tube and the white solid forms where they meet.
- Ammonia has the smaller relative molecular mass (17 against 36.5), so it travels faster.
- The ring therefore forms nearer the hydrogen chloride end, not in the middle.

Question 3 (Answer: **C**)

- Ammonia is alkaline and turns damp red litmus blue; hydrogen chloride is acidic and turns damp blue litmus red.
- Ammonia has the smaller relative molecular mass (17 against 36.5), so it diffuses faster.
- So the ammonia apparatus shows its colour change sooner and further from the source.

Question 2 (Answer: **A**)

- Lighter molecules diffuse faster at the same temperature.
- Relative molecular masses: CH_4 16, CO 28, C_2H_6 30, SO_2 64.
- Methane is the lightest, so it diffuses most quickly.

Question 3 (Answer: **C**)

- Lighter molecules diffuse faster at the same temperature.
- Relative molecular masses: H_2S 34, HCl 36.5, CO_2 44, NO_2 46.
- H_2S is the lightest, so it diffuses fastest.