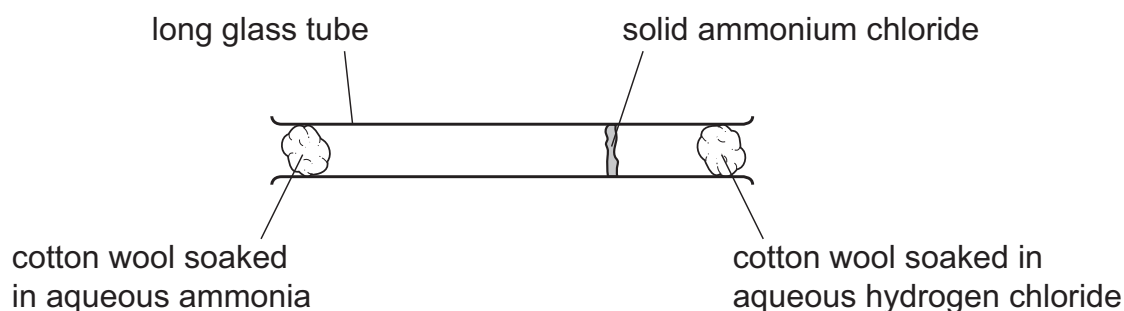


- 2 Ammonia gas is reacted with hydrogen chloride gas using the apparatus shown.

Solid ammonium chloride is produced.



Which statement explains why the solid ammonium chloride is formed nearer to the hydrogen chloride?

- A Aqueous ammonia is a base and aqueous hydrogen chloride is an acid.
- B Ammonia molecules diffuse more slowly than hydrogen chloride molecules.
- C Hydrogen chloride has a greater molecular mass than ammonia.
- D Only ammonia molecules diffuse in all directions at the same time.

- 3 A student investigates the diffusion of ammonia gas, NH_3 , and hydrogen chloride gas, HCl .

Two sets of apparatus are set up as shown at room temperature and pressure.



The damp red litmus paper in apparatus 1 changes colour after 30 seconds.

How long does it take for the damp blue litmus paper in apparatus 2 to change colour?

- A 21 seconds
- B 30 seconds
- C 64 seconds
- D The damp blue litmus paper does **not** change colour.

- 2 Which gas diffuses most quickly at room temperature and pressure?

- A CH_4
- B C_2H_6
- C CO
- D SO_2

3 Samples of four gases are released in a room at the same time.

The gases are carbon dioxide, CO_2 , hydrogen chloride, HCl , hydrogen sulfide, H_2S , and nitrogen dioxide, NO_2 .

Which gas diffuses fastest?

- A** carbon dioxide
- B** hydrogen chloride
- C** hydrogen sulfide
- D** nitrogen dioxide