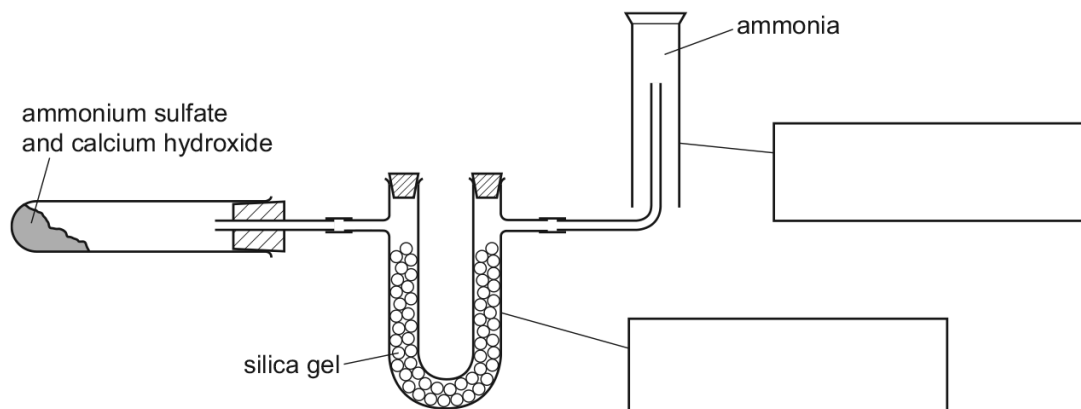




10.3. NITROGEN AND FERTILISERS

02. 0620\_w14\_qp\_62 Q: 1

Ammonia gas can be prepared using the apparatus below. A mixture of two solids, ammonium sulfate and calcium hydroxide, is heated.



(a) (i) Complete the boxes to identify the pieces of apparatus. [2]

(ii) Show, by using an arrow, where heat is applied. [1]

(b) Why is the ammonia collected by upward delivery as shown, and not over water?

.....  
 ..... [2]

(c) A stopper from a bottle of concentrated hydrochloric acid was placed near the ammonia gas. Clouds of white smoke were seen. Explain this observation.

.....  
 .....  
 ..... [3]

(d) Give a different test for ammonia gas.

test .....

result .....

[2]

[Total: 10]

01. 0620\_s12\_ms\_63 Q: 7

known mass/weight (1) of each fertiliser (1)  
add to same amount of soil (1)  
+ bean (1) water (1)  
leave for specified time (1) observe plant growth/effect (1)  
comparison/conclusion (1) max 7

[7]

**[Total: 7]**

02. 0620\_w14\_ms\_62 Q: 1

- (a) (i) U-tube (1)  
gas jar (1) [2]  
**not:** measuring cylinder
- (ii) arrow inserted under shaded solid mixture (1) [1]
- (b) less dense / lighter than air (1)  
reacts / dissolves in water (1) [2]
- (c) reaction occurs (1)  
ammonia is alkaline / neutralisation / hydrogen chloride (1)  
ammonium chloride formed (1) [3]  
**note:** correct equation scores (3)
- (d) red litmus (1)  
turns blue (1) [2]  
**allow:** pH / Universal Indicator (1)  
turns blue / purple (1)
-