

0 1

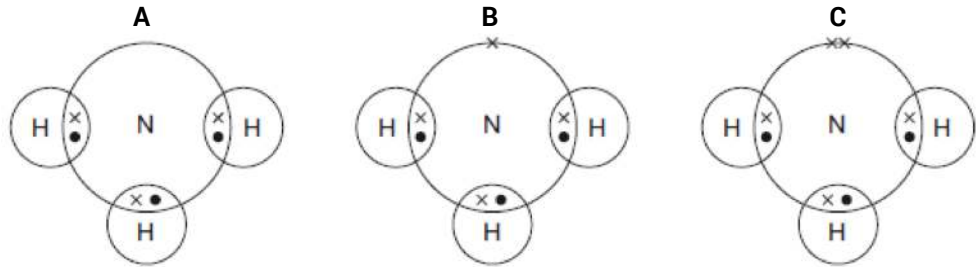
Fertilisers contain elements that plants need.

Fertilisers can be made from ammonia.

0 1 . 1

Which diagram, A, B, or C, represents the electronic structure of an ammonia molecule?

[1 mark]



The electronic structure of an ammonia molecule is shown in diagram ...C...

0 1 . 2

What is the correct formula of ammonia?

Draw a ring around the correct answer.

[1 mark]

N₃HNH₃NH₃

0 2

A student made ammonium nitrate by reacting ammonia solution with an acid.

0 2 . 1

Name the acid used to make ammonium nitrate.

[1 mark]

..... Nitric acid

0 2 . 2

Complete the sentence.

[1 mark]

The student added a few drops of .. indicator .., which changed colour when the ammonia solution had neutralised the acid.

0 2 . 3

The student added charcoal and filtered the mixture.

This produced a colourless solution of ammonium nitrate.

How is solid ammonium nitrate obtained from the solution?

[1 mark]

crystallisation or evaporation

allow by heating or cooling or leave (on windowsill)

0 2 . 4

A farmer put ammonium nitrate fertiliser onto a field of grass.

Suggest what would happen to the grass.

[1 mark]

any one from:

- grass grows faster
- grass grows taller or thicker

allow grass grows better / greener

DON'T FORGET :
Nitrogen has 5 electrons in its outer shell, therefore, it will always make 3 bonds (to complete the outer shell), and there will always be 2 unpaired electrons in the structure.

0	3
---	---

Ammonia is used to make ammonium nitrate.

0	3	.	1
---	---	---	---

Calculate the relative formula mass (Mr) of ammonium nitrate, NH_4NO_3

Relative atomic masses (Ar): H = 1; N = 14; O = 16

$$14 + (1 \times 4) + 14 + (16 \times 3) \quad [1]$$

$$\text{Relative formula mass} = 80 \quad [2]$$

WARNING :

The right answer will get you two marks but my advice is ALWAYS show your working, in case you make a mistake.

Remember to take into account the small numbers after the element.

(Total 8 marks)

End