AQA – Amines – A2 Chemistry P2

1. June/ 2019/Paper_2/No.1

0 1 This question is about amines.

0 1 . 1 Give an equation for the preparation of 1,6-diaminohexane by the reaction of 1,6-dibromohexane with an excess of ammonia.

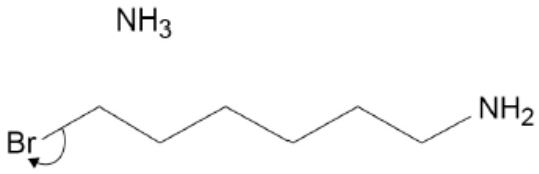
[2 marks]

0 1 . 2 Complete the mechanism for the reaction of ammonia with 6-bromohexylamine to form 1,6-diaminohexane.

Suggest the structure of a cyclic secondary amine that can be formed as a by-product in this reaction.

[4 marks]

Mechanism



Cyclic secondary amine

0 1 . 3 1,6-Diaminohexane can also be formed in a two-stage synthesis starting from 1,4-dibromobutane.
Suggest the reagent and a condition for each stage in this alternative synthesis.

[3 marks]

Stage 1 reagent and condition

Stage 2 reagent and condition

0 1 . 4 Explain why 3-aminopentane is a stronger base than ammonia.

[2 marks]

0 1 . 5 Justify the statement that there are no chiral centres in 3-aminopentane.

[1 mark]