

AQA A-Level Chemistry

Amines

Questions only

All 7 amines questions

Questions

7

Total marks

24

Time allowed

31 min

Name

Class or teacher

Date

Instructions

- Answer all questions in the spaces provided.
- Use black ink. Show your working for every calculation.
- You may use a scientific calculator and the AQA Data Sheet.
- Print the separate mark scheme when you are ready to mark your answers.

For marking

Q	Source	Marks	Score
1	2023 A-level P3 Q34	1	
2	2020 A-level P2 Q5	9	
3	2022 A-level P2 Q10	10	
4	2018 A-level P3 Q24	1	
5	2019 A-level P3 Q27	1	
6	2025 A-level P3 Q35	1	
7	2025 A-level P3 Q7	1	

Total _____ / 24 Percentage _____ %

Questions from AQA past papers, 2018–2025, reproduced for revision. Practise these topics online, with instant marking:

whiteboardchemistry.com/revision/aqa-a-level-chemistry/exam-questions?topics=amines&len=0

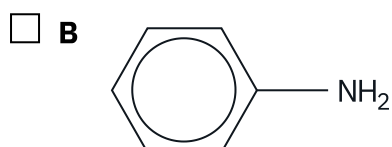
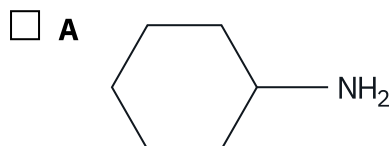
Questions

Amines · 7 questions · 24 marks · time allowed 31 min

Q1 · June 2023 · Paper 3 · Q34 · [1 mark]

Which compound is the strongest base?

Tick (✓) one box.



Q2 · November 2020 · Paper 2 · Q5 · [9 marks]

This question also needs Bonding.

This question is about 2-bromopropane.

(a) Define the term electronegativity.

Explain the polarity of the C–Br bond in 2-bromopropane.

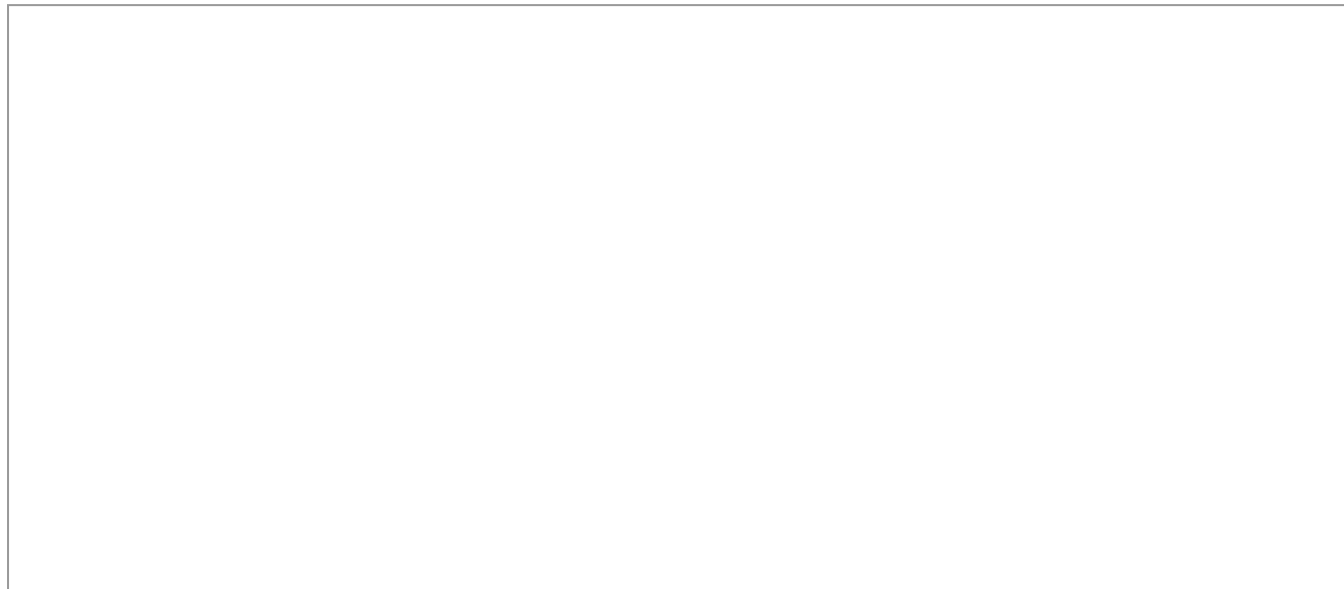
[3 marks]

Electronegativity

Explanation

(b) Outline the mechanism for the reaction of 2-bromopropane with an excess of ammonia.

[4 marks]

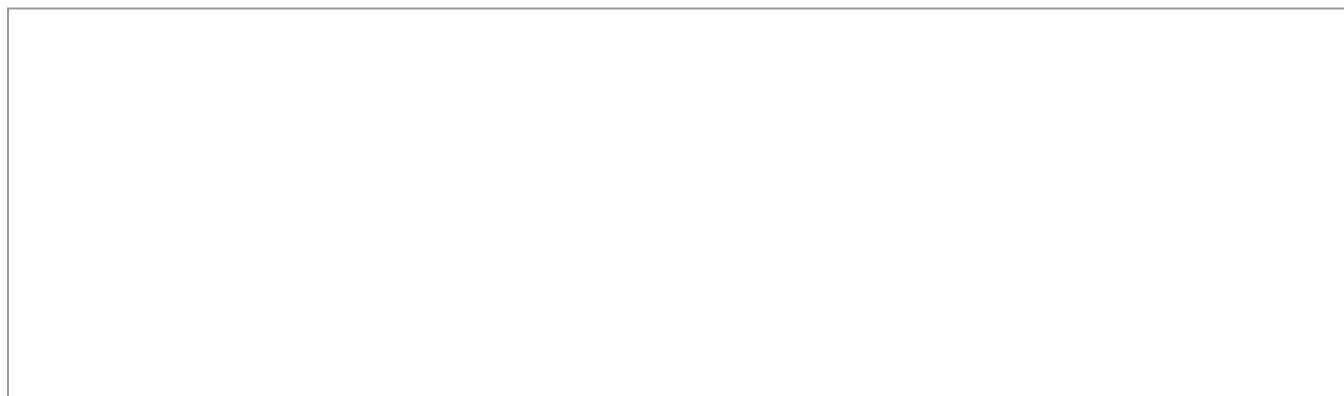


(c) Draw the skeletal formula of the main organic species formed in the reaction between a large excess of 2-bromopropane and ammonia.

Give a use for the organic product.

[2 marks]

Skeletal formula

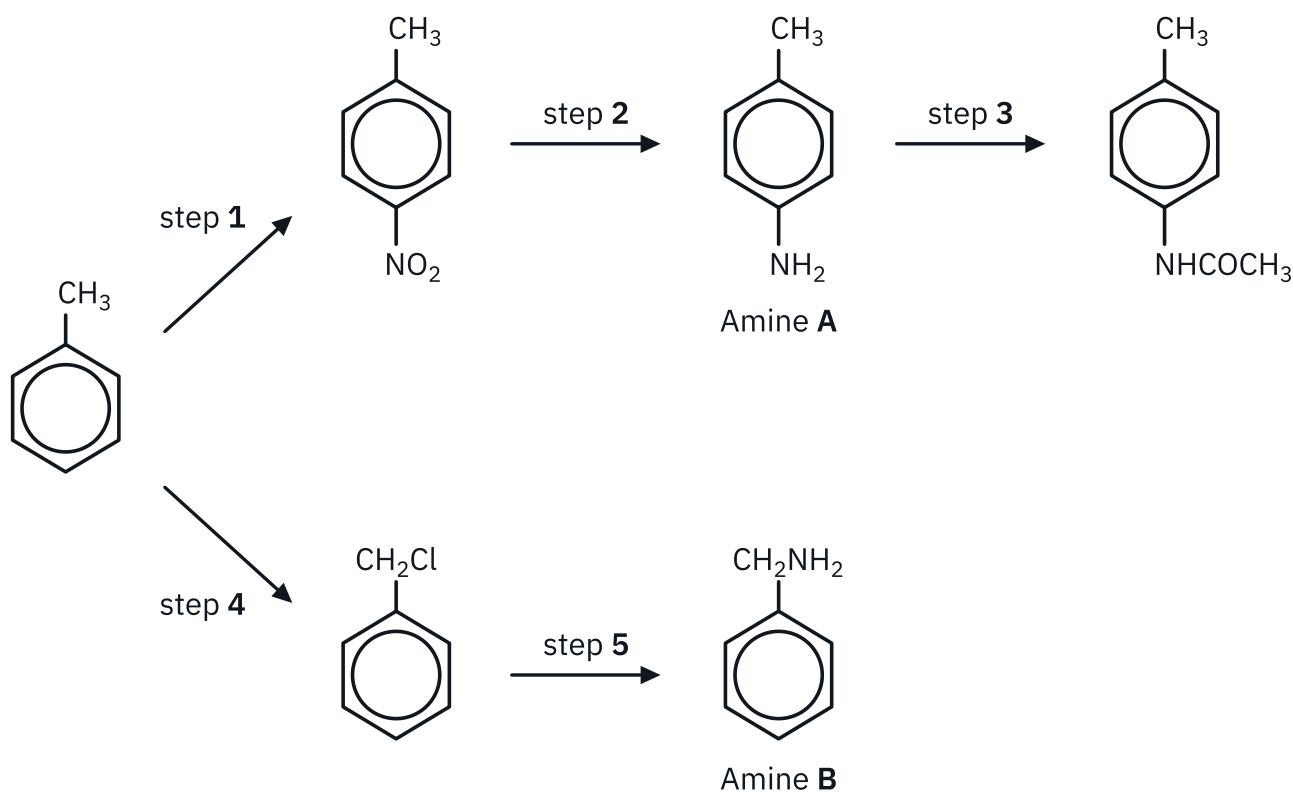


Use

Q3 · June 2022 · Paper 2 · Q10 · [10 marks]

This question also needs Alkanes and Aromatic chemistry.

This question is about the reaction scheme shown.



(a) State the reagents needed for step 1 and the reagents needed for step 2.

[3 marks]

step 1

step 2

(b) Give the name of the mechanism for the reaction in step 3.

[1 mark]

(c) Name the reagent for step 4.

State a necessary condition for step 4.

[2 marks]

Reagent

Condition

(d) Amine A is formed in step 2 and amine B is formed in step 5.

Explain why the yield of B in step 5 is less than the yield of A in step 2.

[2 marks]

(e) Explain why amine B is a stronger base than amine A.

[2 marks]

Q4 • June 2018 • Paper 3 • Q24 • [1 mark]

Aqueous solutions of ammonia, ethylamine and phenylamine are prepared.

Each solution has the same concentration.

Which is the correct order for the pH values of these solutions?

Tick (✓) one box.

- ☐ **A** ammonia > ethylamine > phenylamine
- ☐ **B** ammonia > phenylamine > ethylamine
- ☐ **C** ethylamine > ammonia > phenylamine
- ☐ **D** ethylamine > phenylamine > ammonia
-

Q5 • June 2019 • Paper 3 • Q27 • [1 mark]

Methylamine reacts with bromoethane by substitution to produce a mixture of products.

Which compound is not a possible product of this reaction?

Tick (✓) one box.

- ☐ **A** $\text{C}_2\text{H}_5\text{NHCH}_3$
- ☐ **B** $(\text{C}_2\text{H}_5)_2\text{NCH}_3$
- ☐ **C** $[(\text{C}_2\text{H}_5)_3\text{NCH}_3]^+\text{Br}^-$
- ☐ **D** $[(\text{C}_2\text{H}_5)_2\text{N}(\text{CH}_3)_2]^+\text{Br}^-$
-

Q6 • June 2025 • Paper 3 • Q35 • [1 mark]

Which compound can be used as a cationic surfactant?

Tick (✓) one box.

- ☐ **A** $[\text{C}_{16}\text{H}_{33}\text{N}(\text{CH}_3)_3]\text{Br}$
- ☐ **B** $\text{C}_{16}\text{H}_{33}\text{N}(\text{CH}_3)_2$
- ☐ **C** $\text{C}_{17}\text{H}_{35}\text{COONa}$
- ☐ **D** $\text{C}_{17}\text{H}_{35}\text{COOH}$

Q7 · June 2025 · Paper 3 · Q7 · [1 mark]

The reaction between methylamine (CH_3NH_2) and excess bromoethane ($\text{C}_2\text{H}_5\text{Br}$) produces a quaternary ammonium salt.

What is the formula for the cation in this salt?

Tick (✓) one box.

- ☐ **A** $(\text{C}_2\text{H}_5)_4\text{N}^+$
- ☐ **B** $(\text{C}_2\text{H}_5)_3\text{N}^+\text{CH}_3$
- ☐ **C** $(\text{C}_2\text{H}_5)_2\text{N}^+(\text{CH}_3)_2$
- ☐ **D** $\text{C}_2\text{H}_5\text{N}^+(\text{CH}_3)_3$

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Mark scheme:

whiteboardchemistry.com/revision/aqa-a-level-chemistry/exam-questions/pdf/amines-mark-scheme.pdf