

Practice Question Set For A-Level

Subject : Chemistry

Paper-2 Topic: Amines

Name of the Student: _____

Max. Marks : 24 Marks

Time : 24 Minutes

Mark Schemes

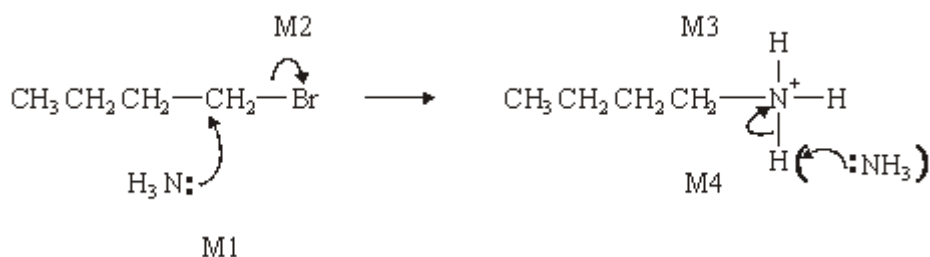
Q1.

D

[1]

Q2.

(a) Nucleophilic substitution



1

M1, M2 and M4 for arrows, M3 for structure of cation

(Allow M2 alone first, i.e. SN1 formation of carbocation)

(Penalise M4 if Br⁻ used to remove H⁺)

4

(b) Step 1 CH₃CH₂CH₂CN 1

CH₃CH₂CH₂Br + KCN → CH₃CH₂CH₂CN + KBr balanced

1

(or CN⁻) (or Br⁻)
(not HCN)

1

Step 2 CH₃CH₂CH₂CN + 2H₂ → CH₃CH₂CH₂CH₂NH₂
(or 4[H])

1

(c) (i) Lone pair (on N) (in correct context)

1

R group increases electron density / donates electrons / pushes electrons / has positive inductive effect

1

(ii) Any strong acid (but not concentrated)
or any amine salt or ammonium salt of a strong acid

1

(d) CH₃CH₂N(CH₃)₂

1

[12]

Q3.
B

[1]

Q4.
B

[1]

Q5.

X is CH_3CN or ethanenitrile or ethanonitrile or methyl cyanide or cyanomethane or ethyl nitrile or methanecarbonitrile

Not ethanitrile

but contradicton of name and structure lose marks

1

Y is $\text{CH}_3\text{CH}_2\text{NH}_2$ or ethylamine or aminoethane or ethanamine

1

Step 1: reagent KCN not HCN/HCl
condition (aq)/alcohol - only allow condition if reagent
correct or incomplete

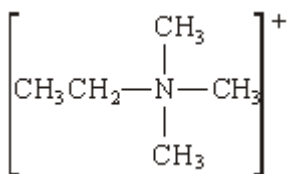
2

Step 2: reagent H_2 LiAlH_4 Na Zn/Fe/Sn Not NaBH_4
condition Ni/Pt/Pd ether ethanol HCl

2

Z is an amine or aminoalkane or named amine even if incorrect name for **Z**
secondary (only award if amine correct)

1



(Br^-) + can be on N or outside brackets as shown

1

nucleophilic substitution

1

[9]