

Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Organic Synthesis

Name of the Student: _____

Max. Marks : 18 Marks

Time : 18 Minutes

Mark Schemes

Q1.

A

[1]

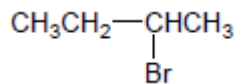
Q2.

Step 1

HBr

In any step, if wrong reagent or extra wrong reagent, can only score mechanism mark, but if AlCl_3 added in Step 3, lose M7 but can score M8 & M9

M1
1



M2
1

electrophilic addition

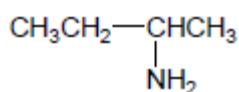
If 1-bromobutane structure given for M2 then 1-aminobutane structure for M5, penalise M2 and M5 but mark M8 consequentially

M3
1

Step 2

NH_3

M4
1



If 1-bromobutane structure given for M2 then 2-aminobutane structure for M5, penalise M2, M5 and M8

M5
1

nucleophilic substitution

If 2-bromobutane structure given for M2 then 1-aminobutane structure, penalise M5 and M8

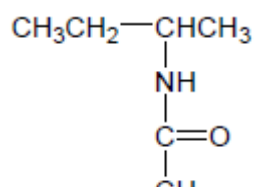
M6
1

Step 3

CH_3COCl or $(\text{CH}_3\text{CO})_2\text{O}$

Allow C_2H_5 for CH_3CH_2

M7
1



M8
1

(nucleophilic) addition-elimination

Not allow (electrophilic) addition-elimination

M9
1

[9]

Q3.

- (a) M1 NaOH
Only score M2 if M1 gained, but mark on from hydroxide. Mention of acid loses M1 & M2
1
- M2 Aqueous/(warm)
Ignore alcoholic / conc / dil.
1
- M3 (Fractional) distillation or described
Not just evaporation; not reflux
Allow chromatography
1
- (b) M1 S is $\text{CH}_3\text{CH}(\text{CN})\text{CH}_2\text{CH}_3$
Allow without brackets
1
- Step 3
- M2 KCN (mark on from CN)
Not HCN, not KCN with acid
1
- M3 Alcoholic / (aqueous)
Allow ethanolic
Can only score M3 if M2 gained
1
- Step 4
- M4 H_2
 LiAlH_4
Na
Can only score M5 if M4 gained
1
- M5 Ni or Pt or Pd
Ethoxyethane or ether
 LiAlH_4 with acid loses both M4 and M5
Ignore 'followed by acid'
Na
Ethanol
NOT NaBH_4 OR Sn/HCl
Penalise other extras as list
Ignore pressure or temperature
1