

Name of the Student: _____

Max. Marks : 21 Marks

Time : 21 Minutes

Mark Schemes

Q1.

(a) **M1** Electrophilic Addition

M2 HBr

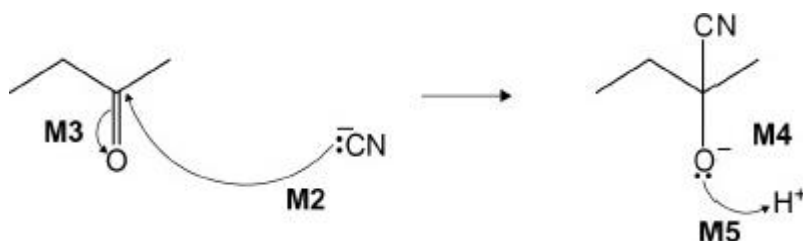
2

(b) **M1** Butan-2-ol or correct structure eg $\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{CH}_3$

M2 NaOH AND (warm) aqueous (Allow cold if stated)

2

(c) **M1** HCN or KCN/ H_2SO_4



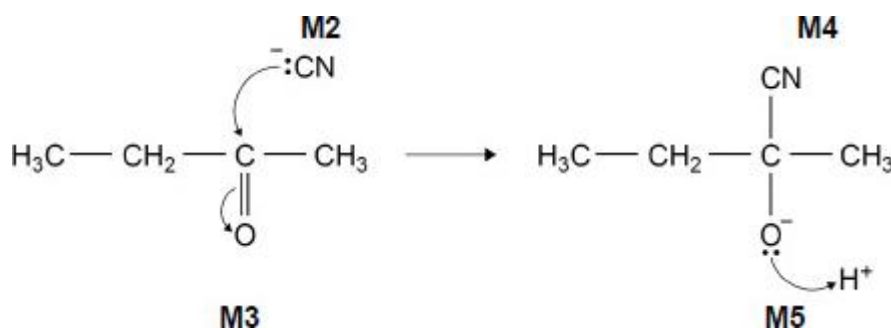
M2 Arrow from lone pair on C to C of $\text{C}=\text{O}$

M3 Arrow from $\text{C}=\text{O}$ to O

M4 Structure of intermediate including negative on O

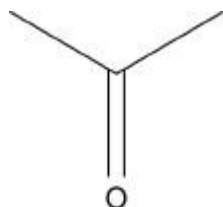
M5 Arrow from lone pair on O to H^+

OR



5

(d)



planar/ flat

Allow planar carbonyl group

M2 Equal chance (50/50) attack from above/below OWTTE

Either side

M3 Giving equal amounts of both optical isomers/enantiomers

3

[12]

Q2.

- (a) **M1** CH_3NH_2 Shown as displayed or abbreviated structural formula

M2 N-methyl ethylamine or N-methyl ethanamine

For **M2** allow alkyl groups reversed

For M2

Allow N-methyl aminoethane

OR

N-methyl N-ethylamine

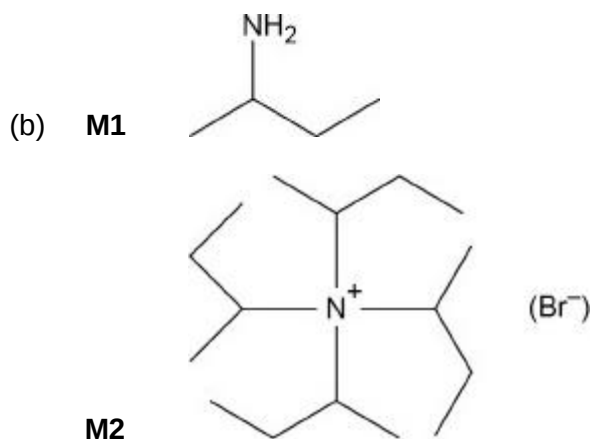
OR

Methyl ethylamine

OR

Methyl ethanamine.

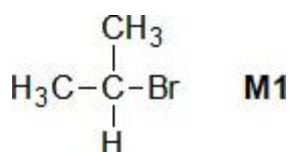
2



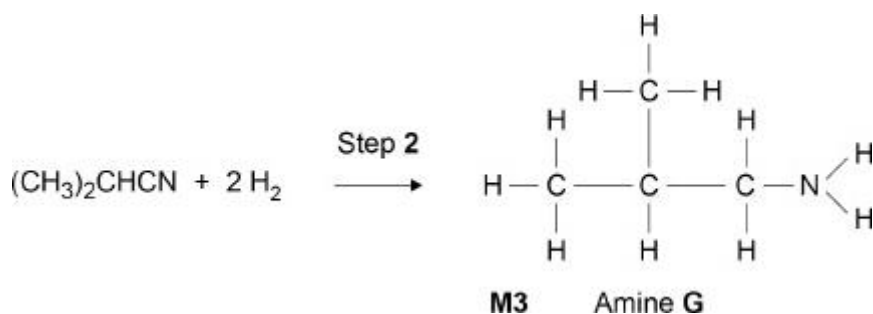
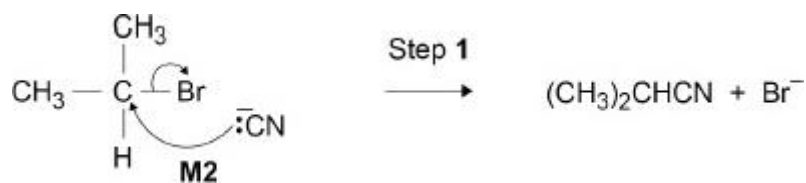
Note: If answers are non-skeletal penalise once only

2

- (c) **M1** For structure of 2 bromo propane



M2 For TWO correct curly arrows



M3 Amine G has a fully displayed structure of Amine G

3

(d) **M1** The lone pair on nitrogen in P is more available or more able to accept protons/ H^+

M2 More alkyl groups are electron releasing/donating
OR
greater (positive) inductive effect (of the alkyl groups).

2

[9]