

Mark schemes

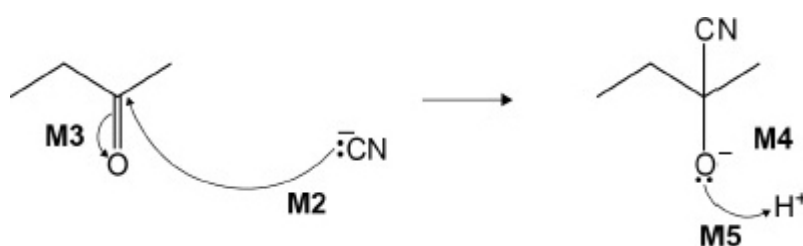
Q1.

(a) **M1** Electrophilic Addition**M2** HBr

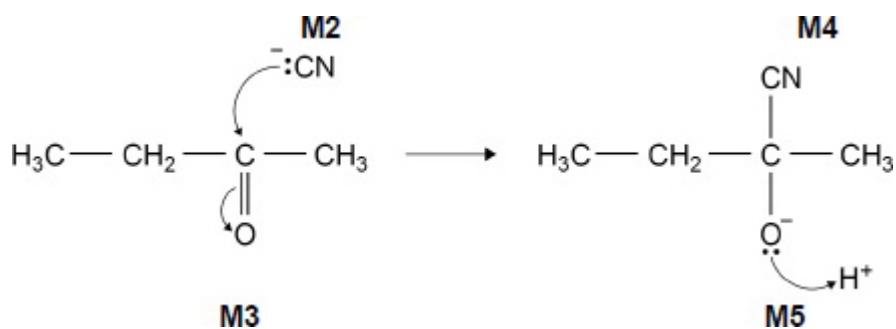
2

(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)

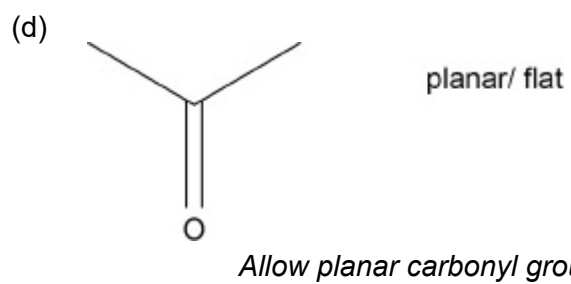
2

(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



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

M3 Giving equal amounts of both optical isomers/enantiomers

3

[12]