

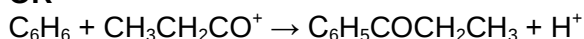
Name of the Student: _____

Max. Marks : 18 Marks

Time : 18 Minutes

Mark Schemes

Q1.

**OR***allow C_2H_5* *penalise $\text{C}_6\text{H}_5\text{—CH}_3\text{CH}_2\text{CO}$* *allow + on C or O in equation*

1

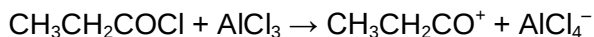
Phenylpropanone

OR ethylphenylketone **OR** phenylethylketone*Ignore 1 in formula, but penalise other numbers*

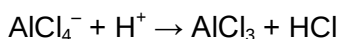
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 AlCl_3 *can score in equation*

1

*allow C_2H_5* *allow + on C or O in equation*

1

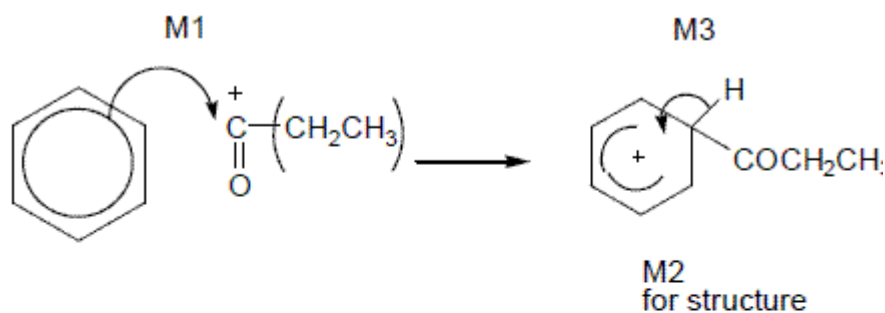


1

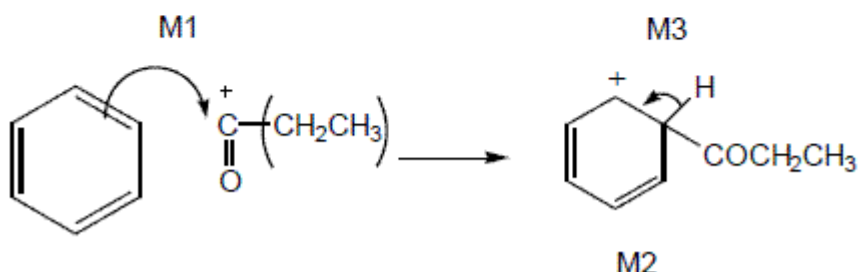
(ii) electrophilic substitution

can allow in (a)(i) if no contradiction

1

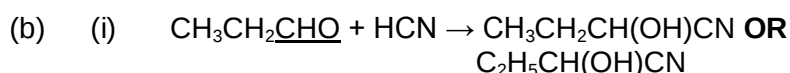


OR



M1 arrow from circle or within it to C or to + on C
 horseshoe must not extend beyond C2 to C6 but can be smaller
 + not too close to C1
 M2 penalise $C_6H_5-CH_3CH_2CO$ (even if already penalized in (a)(i))
 M3 arrow into hexagon unless Kekule
 allow M3 arrow independent of M2 structure
 ignore base removing H in M3

3



aldehyde must be $-CHO$ brackets optional

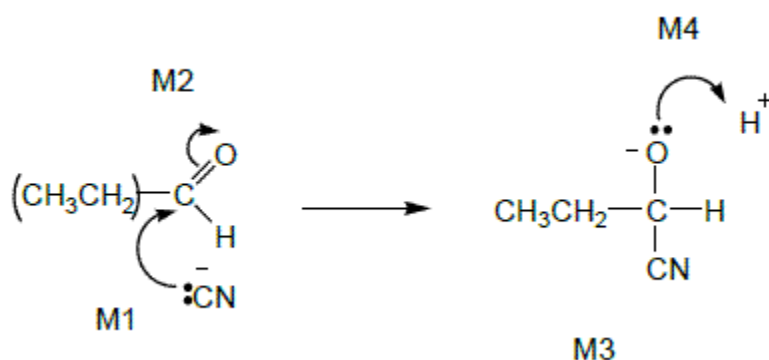
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2-hydroxybutanenitrile OR 2-hydroxybutanenitrile
 no others

1

(ii) nucleophilic addition

1



M1 includes lp and arrow to Carbonyl C and minus charge (on either C or N)
 Not allow M2 before M1, but allow M1 to C^+ after non-scoring carbonyl arrow
 Ignore δ^+ , δ^- on carbonyl group, but if wrong way round or full + charge on C lose M2

*M3 for correct structure including minus sign. Allow C₂H₅
M4 for lp and curly arrow to H⁺*

4

(iii) (propanone) slower **OR** propanal faster

1

inductive effects of alkyl groups

OR

C of C=O less δ⁺ in propanone

OR

alkyl groups in ketone hinder attack

OR

easier to attack at end of chain

if wrong, no further marks

1

[18]