

Name of the Student: _____

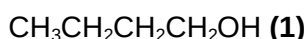
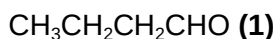
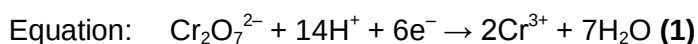
Max. Marks :29 Marks

Time :29 Minutes

Mark Schemes

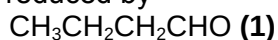
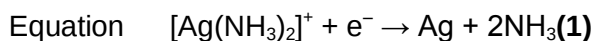
Q1.

- (a)
- $\text{K}_2\text{Cr}_2\text{O}_7/\text{H}_2\text{SO}_4$
- reduced by


 oxidised to $\text{CH}_3(\text{CH}_2)_2\text{CHO}$ (1)
 and $\text{CH}_3(\text{CH}_2)_2\text{COOH}$ (1)
oxidised to $\text{CH}_3(\text{CH}_2)_2\text{COOH}$ (1)*Note: Deduct one if all three compounds given as reducing agents.*

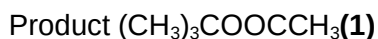
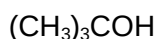
6

- (b) Tollens' reduced by

oxidised to $\text{CH}_3(\text{CH}_2)_2\text{COOH}$ (1)

3

- (c)
- $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$
- (1)



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- (d)
- $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$
- has five peaks (1)

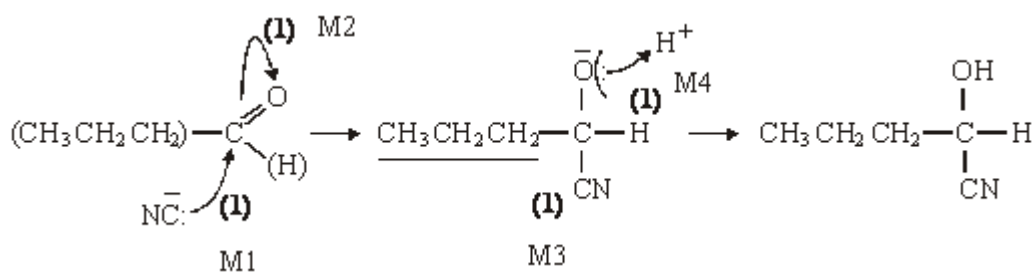


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[15]

Q2.

(a) Mechanism



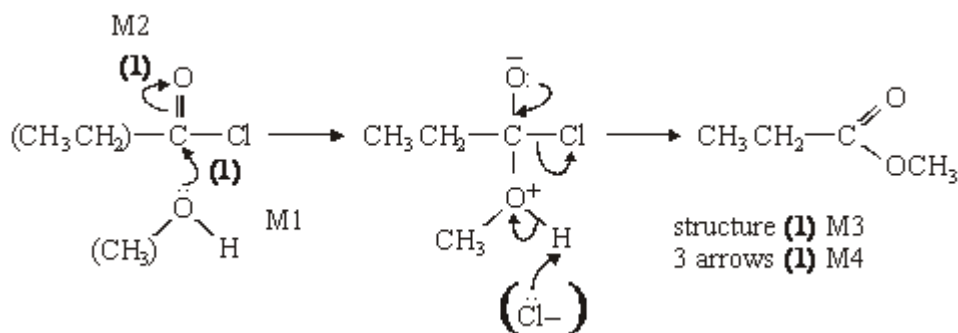
Allow C₃H₇ if structure shown elsewhere
penalise HCN splitting if wrong

Name of product: 2-hydroxypenta(neo)nitrile (1)

or 1-cyanobutan-1-ol

5

(b) Mechanism

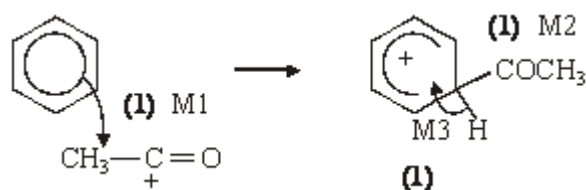


Name of organic product: methylpropanoate (1)

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(c) (i) (1) CH₃CO (1)⁺ (1)

(ii)



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Notes

(abc) extra curly arrows are penalised

(a) be lenient on position of negative sign on :CN⁻ but arrow must come from lp

(a)/(b) $\text{C}=\text{O}$ alone loses M2 but can score M1 for attack on C⁺, similarly $\text{C}-\text{Cl}$

(a) allow 2-hydroxypentanitrile or 2-hydroxypenta(ne)nitrile ... pentynitrile

- (b) in M4, allow extra: Cl^- attack on H, showing loss of H^+
- (c) (i) allow formula in an "equation" (balanced or not)
be lenient on the position of the + on the formula
- (ii) for M1 the arrow must go to the C or the + on the C
don't be too harsh about the horseshoe, but + must not be close to the saturated C
M3 must be final step not earlier; allow M3 even if structure (M2) is wrong

[14]