

Name of the Student: _____

Max. Marks : 28 Marks

Time : 28 Minutes

Mark Schemes

Q1.

- (a) (i) M_r N-phenylethanamide = 135.0 1

Theoretical yield = $135.0 \times 2 (1.15 / 284.1) = 1.09 \text{ g}$ 1

Answer recorded to 3 significant figures. 1

- (ii) $\frac{0.89}{\text{Ans to (a)}} \times 100$
 = 81.4 %
Mark consequentially to (a)
Allow 81 to 82 1

- (b) (i) Dissolve the product in the **minimum** volume of water / solvent (in a boiling tube / beaker)
If dissolving is not mentioned, CE = 0 / 4 1

Hot water / solvent
Steps must be in a logical order to score all 4 marks 1

Allow the solution to cool and allow crystals to form. 1

Filter off the pure product under reduced pressure / using a Buchner funnel and side arm flask
Ignore source of vacuum for filtration (electric pump, water pump, etc.) 1

- (ii) Measure the melting point 1

Use of melting point apparatus or oil bath 1

Sharp melting point / melting point matches data source value 1

- (iii) Any **two** from:
 Product left in the beaker or glassware

Sample was still wet
Sample lost during recrystallisation.

Do not allow "sample lost" without clarification.

2 Max

(c) An identified hazard of ethanoyl chloride

E.g. "Violent reaction", "harmful", "reacts violently with water"

Do not allow "toxic", "irritant" (unless linked with HCl gas).

1

HCl gas / fumes released / HCl not released when ethanoic anhydride used

1

[15]

Q2.

(a)	(i)	$\underline{3}\text{CH}_3\text{OH}$ <i>Not molecular formula</i>	1
		$\text{HOCH}_2\text{CH}(\text{OH})\text{CH}_2\text{OH}$	1
	(ii)	$\rightarrow 19\text{CO}_2 + 19\text{H}_2\text{O}$ <i>Or doubled</i>	1
		$\text{C}_{17}\text{H}_{35}\text{COOCH}_3 + 27\frac{1}{2} \text{ or } 55/2 \text{ O}_2$ <i>Consequential on correct right-hand side</i>	1
(b)	(i)	A0.7	1
		Ethanol6.4	1
		Water3.6	1
(ii)		No effect <i>If wrong, CE = 0</i>	1
		Equal moles on each side of equation OR V cancels <i>Ignore moles of gas</i>	1
(iii)	M1	$K_c = \frac{[\text{DEM}][\text{H}_2\text{O}]^2}{[\text{A}][\text{C}_2\text{H}_5\text{OH}]^2}$	
		<i>Must have all brackets but allow ()</i>	1
(iv)	M2	$\frac{2.1 \times (3.4)^2}{0.85 \times (7.2)^2}$	
		<i>If K_c wrong can only score M4 for units consequential to their K_c working in (b)(iv)</i>	1
		M3 0.55 (min 2dp)	1
		M4 No units	1

[13]