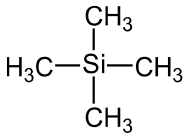
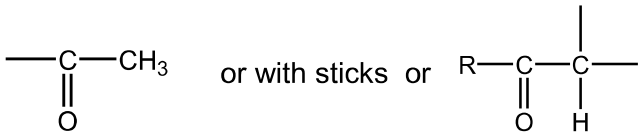
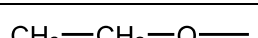
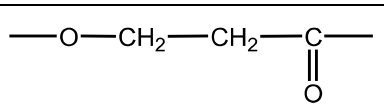
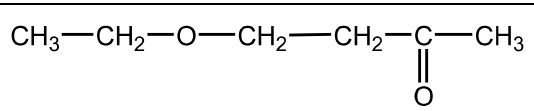
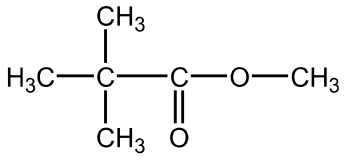
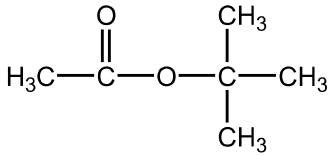
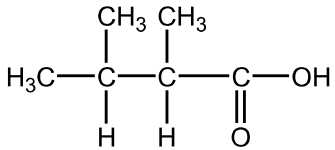
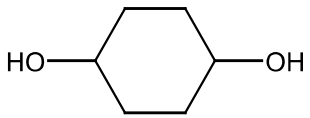
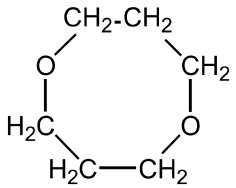
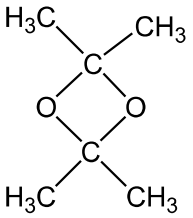
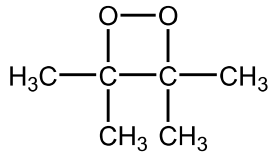
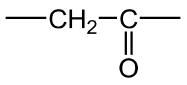
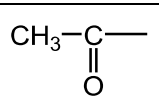
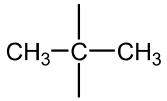
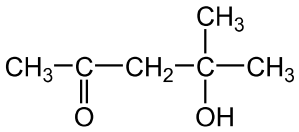
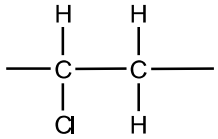
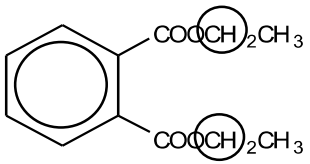
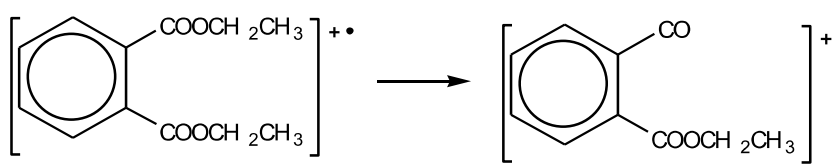
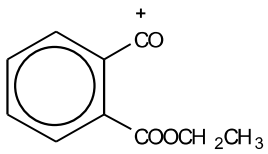
Question	Marking Guidance	Mark	Comments
5(a)(i)	Single/one (intense) peak/signal ***OR*** all H or all C in same environment ***OR*** 12 equiv H or 4 equiv C ***OR*** Upfield / to the right of (all) other peaks ***OR*** well away from others ***OR*** doesn't interfere with other peaks ***OR*** Low bp ***OR*** volatile ***OR*** can easily be removed	2	**Do not allow non-toxic or inert (both given in Q)** Any 2 from three Ignore peak at zero Ignore cheap Ignore non-polar Ignore mention of solubility
5(a)(ii)		1	Allow $Si(CH_3)_4$
5(b)(i)	 or with sticks or	1	Ignore any group joined on other side of CO Ignore missing trailing bond Ignore charges
5(b)(ii)	 or with sticks	1	Ignore any group joined on other side of –O– Ignore missing trailing bond Ignore charges as if MS fragment
5(b)(iii)	 or with sticks	1	Ignore missing trailing bond Ignore charges as if MS fragment
5(b)(iv)		1	

5(c)(i)	Check structure has 6 carbons 	1	Allow $(CH_3)_3CCOOCH_3$ or $(CH_3)_3CCO_2CH_3$
		1	Allow $CH_3COOC(CH_3)_3$ or $CH_3CO_2C(CH_3)_3$
5(c)(ii)	Check structure has 6 carbons 	1	Allow $(CH_3)_2CHCH(CH_3)COOH$ or $(CH_3)_2CHCH(CH_3)CO_2H$ Penalise C_3H_7
5(c)(iii)	Check structure has 6 carbons  ***OR*** 	1	Allow  OR 

Question	Marking Guidance	Mark	Comments
5(a)	H ***OR*** hydrogen ***OR*** $H^{\cdot}$	1	Ignore brackets ignore dot penalise + or – charge
5(b)	CH_3 ***OR*** methyl ***OR*** $CH_3^{\cdot}$ ***OR*** $^{\cdot}CH_3$	1	Ignore brackets ignore dot penalise + or – charge
5(c)	Either order C_2H_5 ***OR*** ethyl ***OR*** $CH_3CH_2^{\cdot}$ ***OR*** $C_2H_5^{\cdot}$ CHO ***OR*** HCO ***OR*** COH ***OR*** H—C=O	 1 1	 Ignore brackets ignore dot penalise + or – charge
5(d)	I A II C III D IV B	1 1 1 1	

Question	Marking Guidance			Mark	Comments
6(a)	<u>OH alcohols</u>			1	
6(b)(i)	2.6		Ignore any group on RHS On LHS, penalise H or CH or CH_2 or CH_3	1	Must clearly indicate relevant **two** H on a C next to C=O Ignore missing trailing bonds or attached R groups
6(b)(ii)	2.2		Ignore all groups on RHS	1	Must clearly indicate relevant **three** H on C next to C=O Ignore missing trailing bonds or attached R group
6(b)(iii)	1.2		Or in words: two <u>equivalent</u> CH_3 groups Penalise attached H	1	Must clearly indicate two <u>equivalent</u> methyl groups. Ignore missing trailing bonds or attached R groups
6(b)(iv)				1	

Question	Marking Guidance	Mark	Comments
5(a)	Benzene-1,2-dicarboxylic acid	1	Allow 1,2-benzenedicarboxylic acid
5(b)		1	Must show all bonds including trailing bonds Ignore *n*
5(c)(i)	2 C_2H_5OH H_2O	1 1	*NB Two ethanols* *but only one water*
5(c)(ii)	6 or six	1	
5(c)(iii)		1	Ignore overlap with O to the left or H to the right, but must only include this one carbon. either or allow both (as they are identical)

5(d)	 $\dot{O}CH_2CH_3$ $[DEP]^{+\cdot}$ OR $[C_{12}H_{14}O_4]^{+\cdot} \rightarrow [C_{10}H_9O_3]^{+} + [C_2H_5O]^{\cdot}$	1 LHS 1 RHS	Allow + on C or O in  Dot must be on O in radical
5(e)(i)	Rate = k[DEP]	1	Must have brackets but can be ( )
5(e)(ii)	Any **two** of • experiment repeated/continued <u>over a long period</u> • repeated by independent body/other scientists/avoiding bias • investigate breakdown products • results made public	2 Max	Not just repetition Ignore animal testing