

Question 1

1(a)(i)	circle around the OH group	1
1(a)(ii)	C=C bond	1
1(a)(iii)	C ₄ H ₈ O	1
1(a)(iv)	1 mark each for any two of: <ul style="list-style-type: none"> (when mixture is heated) water boils off first / water boils off before crotyl alcohol (because) water has a lower boiling point / crotyl alcohol has a higher boiling point water reaches the condenser first / water condenses first 	2
1(c)	C _n H _{2n}	1

Question 2

2(a)(i)	circle around one or both COOH groups	1
2(a)(ii)	C ₅ H ₈ O ₄	1
2(a)(iii)	orange (1) to colourless (1)	2
2(b)	(family / group of similar) compounds with similar chemical properties (1) having the same functional group (1)	2

Question 3

3(a)(i)	circle around the COOH group	1
3(a)(ii)	C ₃ H ₆ O ₃	1

Question 4

4(c)(i)	COOH group circled	1
4(c)(ii)	C ₃ H ₆ O ₃	1

Question 5

5(a)(i)	Q	1
5(a)(ii)	S	1
5(a)(iii)	R	1
5(a)(iv)	C ₄ H ₈ O ₂	1

Question 6

6(c)	C ₉ H ₈ O	1
------	---------------------------------	---

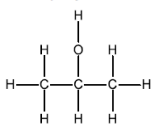
Question 7

7(a)(i)	C	1
7(a)(ii)	D	1
7(a)(iii)	C	1
7(a)(iv)	E	1

Question 8

8(a)(i)	circle around OH attached to middle carbon atom	1
8(a)(ii)	$C_3H_6O_3$	1
8(c)	compounds with similar <u>chemical</u> properties (1) same functional group (1)	2

Question 9

9(a)	same functional group	1
9(b)	carboxylic acids	1
9(c)	$C_nH_{2n+1}COOH$	1
9(d)	M1 propan-2-ol (1) M2 displayed formula of propan-2-ol (1) 	2

Question 10

10(a)(i)	needs or uses ultra violet light	1
10(a)(ii)	M1 displayed formula of 1-chlorobutane(1) M2 displayed formula of 2-chlorobutane(1)	2
10(b)(i)	$C_4H_6O_3$	1
10(b)(ii)	M1 alkene(1) M2 alcohol(1) M3 carboxylic acid(1)	3


Question 11

11(a)	C_4H_6	1
	propyne	1
11(b)(i)	Any two from: • (contain the) same functional group • differ from one member to the next by a $-CH_2-$ unit • trend in physical properties • similar chemical properties	2
11(b)(ii)	C_nH_{2n-2}	1
11(b)(iii)	<i>test</i> : bromine water OR aqueous bromine	1
	<i>result</i> : changes to colourless OR decolourises	1
11(c)(i)	four C atoms shown with double bond between C2 and C3	1
	rest of structure	1
11(c)(ii)	one shared pair of electrons between each H and a C atom	1
	two shared pairs of electrons between the C atoms and no other unpaired electrons	1

Question 12

12(a)(i)	homologous series	1
12(a)(ii)	Same functional group	1
12(a)(iii)	general (formula)	1
12(a)(iv)	7	1

Question 13

13(e)	$C_nH_{2n+1}COOH$	1
13(f)	COOH fully displayed (1)  whole molecule completely correct (1)	2

Question 14

14(a)	C_nH_{2n}	1
-------	-------------	---