

Question number	Answer	Marks	Guidance
1 (a) (i)	molecule or compound which consists of hydrogen and carbon only	1	
1 (a) (ii)	C_nH_{2n+2}	1	
1 (a) (iii)	C_6H_{14}	1	
1 (b)	any two from: <ul style="list-style-type: none"> chemically similar / react in same way differ by CH_2 same functional group gradation in physical properties or specified trend, e.g. b.p. 	2	
1 (c) (i)	same molecular formula and different structural formula	1 1	
1 (c) (ii)	2-methylpentane 2,2-dimethylbutane	1 1	
1 (c) (iii)	<div style="text-align: center;"> <p>isomer 3 either order isomer 4</p> <p> $CH_3CH_2-\overset{\overset{CH_3}{ }}{CH}-CH_2CH_3$ $CH_3-\overset{\overset{CH_3}{ }}{CH}-\underset{\underset{CH_3}{ }}{CH}CH_3$ </p> </div>	2	Always draw stick pictures when structures are asked for.
1 (d) (i)	% by mass of H = 7.70% mol H = $7.70 / 1 = 7.70$ mol C = $92.3 / 12 = 7.69$ ratio 1 : 1 → CH	1 1 1	
1 (d) (ii)	CH has empirical mass of 13 and $78/13 = 6$ → C_6H_6	1	
2 (a)	Dichlorodifluoromethane	1	
2 (b)	Tetrachloromethane	1	
2 (c)	1,1,2,2-tetrachloroethane	1	
3 (a)	any two from: <ul style="list-style-type: none"> appropriate structure for pent-2-ene appropriate structure for 2-methylbut-2-ene appropriate structure for 3-methylbut-1-ene 	2	Draw 'stick' pictures showing all the bonds.

3 (b)	Y = 2-bromo-2-methylbutane	1	Remember to number the longest chain and then give the substituents the lowest numbers.
4 (i)	$\begin{array}{c} \text{CH}_2\text{Br} \\ \\ \text{CH}_2\text{Br} - \text{CH} \\ \\ \text{CH}_2\text{Br} \end{array}$ $\text{CH}_3\text{CH}_2\text{CH}(\text{Br})\text{CH}_3$	1 1	
4 (ii)	2-bromo-2-methylpropane	1	The groups added on are put in alphabetical order so bromo comes before methyl.
5 (a)	2-bromo-2,3-dimethylbutane $\text{C}_n\text{H}_{2n+1}\text{Br}$ or $\text{C}_n\text{H}_{2n+1}\text{X}$ or $\text{C}_x\text{H}_{2x+1}\text{Br}$ <u>Stronger / more vdw (forces) between molecules (of 1-bromohexane)</u>	1 1 1	Ignore punctuation. Any order. QoL Allow converse arguments for Z Not just more IMF. Ignore size of molecule.
5 (b)	$\begin{array}{ccccc} & \text{Cl} & \text{Cl} & \text{H} & \\ & & & & \\ \text{H} & - \text{C} & - \text{C} & - \text{C} & - \text{H} \\ & & & & \\ & \text{H} & & \text{H} & \\ & & \text{H} - \text{C} - \text{H} & & \\ & & & & \\ & & \text{H} & & \end{array}$ $\text{C}_2\text{H}_4\text{Cl}$	1 1	Any order.