

## Answers to examination-style questions

Answers				Marks	Examiner's tips
1	(a)	(i)	<ul> <li>show a gradual change in physical properties or a gradual change in, for example, melting point</li> <li>differ by CH<sub>2</sub></li> </ul>		Don't say they have the same molecular formula or empirical formula. Their formulae go up by CH <sub>2</sub> each time.
	(b)	(i)	<ul> <li>react in similar way</li> <li>have the same functional group the molecular formula gives the actual number of atoms of each element in a molecule</li> </ul>	2 1	Learn this definition. Do not confuse with amount of atoms or ratio of atoms.
		(ii)	$C_{14}H_{30}$ only	1	The general formula is $C_nH_{2n+2}$
2	(a)	(i)	molecule or compound which consists of hydrogen and carbon only (ii) $C_nH_{2n+2}$ (iii) $C_6H_{14}$	1 1 1	
	(b)	any	<ul> <li>two from:</li> <li>chemically similar / react in same way</li> <li>differ by CH<sub>2</sub></li> <li>same functional group</li> <li>gradation in physical properties or</li> </ul>		
	(c)	(i) (ii)	specified trend, e.g. b.p. same molecular formula and different structural formula 2-methylpentane 2,2-dimethylbutane	2 1 1 1	Don't get confused with $M_{\rm r}$
		(iii) Iso	•	2	Always draw stick pictures when structures are asked for.
Cl	H <sub>3</sub> CI	H <sub>2</sub> —	CH-CH <sub>2</sub> CH <sub>3</sub> CH <sub>3</sub> -CH-CH C	$^{\circ}\mathrm{H}_{3}$	
	(d)	(i)	% by mass of H = 7.70% mol H = 7.70 / 1 = 7.70	1	
		(ii)	mol C = $92.3 / 12 = 7.69$ ratio 1 : 1 $\rightarrow$ CH CH has empirical mass of	1	
			13 and $\frac{78}{13} = 6 \rightarrow C_6 H_6$	1	
3	` '	tetr	hlorodifluoromethane achloromethane ,2,2-tetrachloroethane	1 1 1	



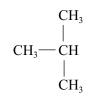
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## **Answers**

## Marks Examiner's tips

- 4 (a) any two from:
  - appropriate structure for pent-2-ene
  - appropriate structure for 2-methylbut-2-ene
  - appropriate structure for 3-methylbut-l-ene
  - **(b)** Y = 2-bromo-2-methylbutane

5 (a) (i)



CH<sub>3</sub>CH<sub>2</sub>CH(Br)CH<sub>3</sub>

(ii) 2-bromo-2-methylpropane

Draw 'stick' pictures showing all the bonds.

2

Remember to number the longest chain and then give the substituents the lowest numbers.

1

1

1 The groups added on are put in alphabetical order so bromo comes before methyl.