

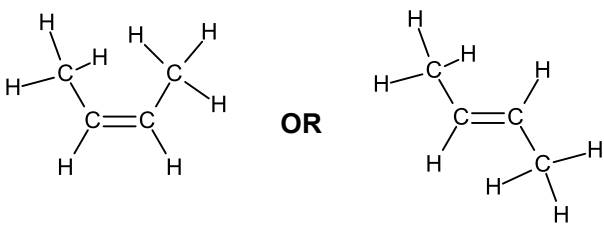
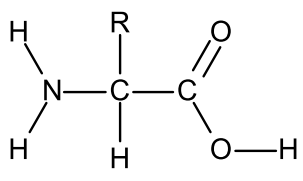
Question 34 (Answer: C)

- Structural isomers must have the *same* molecular formula but a different arrangement of atoms.
- So count the carbons and hydrogens in each structure before comparing anything.
- Only structures with identical formulae can be isomers; the difference between them is the branching.

Question 37 (Answer: C)

- Members of a homologous series share the same functional group and the same general formula.
- So identify the functional group in each structure before comparing them.
- Two alkanes belong together; an alkene or an alcohol belongs to a different series.

5(a)	M1 (have a) general formula of C_nH_{2n+2} M2 differ from one member to the next by a $-CH_2-$ unit
5(b)(i)	increases
5(b)(ii)	M1 physical property M2 change as chain length increases
5(c)	all carbon-carbon bonds are single (bonds)
5(d)(i)	ultraviolet light
5(d)(ii)	M1 $CH_3CH_2CH_2Cl$ M3 1-chloropropane M2 $CH_3CHClCH_3$ M4 2-chloropropane
5(d)(iii)	(compounds with) the same molecular formula but different structural formulae or structure
6(a)	correctly circled ester link (including 2 C atoms and 2 O atoms)
6(b)	ethyl butanoate
6(c)	C_3H_6O
6(d)(i)	M1 butanoic acid M2 ethanol
6(d)(ii)	acid
6(e)	4
6(f)	$2C_5H_{10}O_2 + 13O_2 \rightarrow 10CO_2 + 10H_2O$

6(a)	M1 C $50(.00) \div 12$ H $5.56 \div 1$ O $44.44 \div 16$ OR 4.17:5.56:2.78 M2 fractions shown dividing all by smallest OR 1.5:2:1 OR 3:4:2 M3 C₃H₄O₂
6(b)	C ₄ H ₄ O ₄
6(c)(i)	water
6(c)(ii)	acid
6(c)(iii)	M1 propanoic acid M2 butan-1-ol
6(d)(i)	addition
6(d)(ii)	polymers are of indefinite length
6(d)(iii)	3 / three
6(d)(iv)	M1 C = C M2 displayed formula of but-2-ene 
6(e)(i)	 M1 –NH₂ displayed M2 –COOH displayed functional groups can be on either side
6(e)(ii)	one circle around either amide linkage
6(e)(iii)	proteins

Question 33 (Answer: B)

- Methyl ethanoate is $C_3H_6O_2$, and a structural isomer must have exactly that formula.
- Ethyl methanoate and propanoic acid are both $C_3H_6O_2$, so both qualify.
- Propane-1,3-diol is $C_3H_8O_2$ – two hydrogens too many, so it is not an isomer.

Question 34 (Answer: A)

- Members of a homologous series share the same functional group and the same general formula.
- Their physical properties change gradually along the series as the chain lengthens.
- So their physical properties are *not* the same – only the trend is shared.

6(a)	M1 (have a) general formula of C_nH_{2n} M2 (have a) $C=C$ functional group
6(b)	compounds made of C and H only
6(c)	$2C_3H_6 + 9O_2 \rightarrow 6CO_2 + 6H_2O$ M1 $CO_2 + H_2O$ as only products M2 correct equation
6(d)	CH_2
6(e)	but-2-ene
6(f)	displayed formula of but-1-ene
6(g)(i)	only one product is formed
6(g)(ii)	orange to colourless
6(g)(iii)	2,3-dibromobutane
6(h)(i)	displayed formula of ethanoic acid
6(h)(ii)	ethanoic acid
6(h)(iii)	$CH_3CH=CHCH_3 + 2O_2 \rightarrow 2CH_3COOH$