

Multiple Choice Answers

Q27: B

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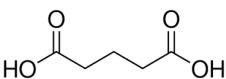
Q27: A

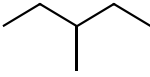
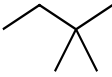
Q28: C

Q29: C

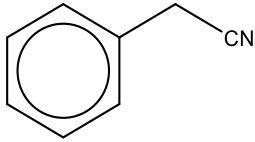
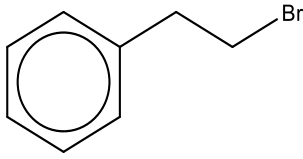
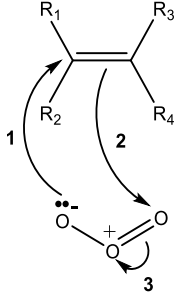
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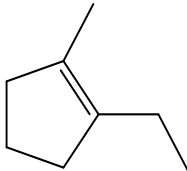
Q25: A

3(a)	simplest /lowest (whole number / integer) ratio of atoms (of each element) in a compound / molecule
3(b)	two of: 
3(c)(i)	homolytic
3(c)(ii)	M1 $\text{C}_5\text{H}_{10} + \text{Cl}\cdot \rightarrow \text{C}_5\text{H}_9\cdot + \text{HCl}$ M2 $\text{C}_5\text{H}_9\cdot + \text{Cl}_2 \rightarrow \text{C}_5\text{H}_9\text{Cl} + \text{Cl}\cdot$
3(c)(iii)	termination
3(d)(i)	HCl (g)
3(d)(ii)	M1 (reaction 1): $-3115 - 286 + 3292 = -109 \text{ (kJ mol}^{-1}\text{)}$ M2 $\Delta H_2 = -53 - (-109) = (+)56 \text{ (kJ mol}^{-1}\text{)}$
3(e)(i)	
3(e)(ii)	M1 absorption labelled at approx. 3000 cm^{-1} identified as O—H M2 absorption labelled at approx. 1720 cm^{-1} identified as C=O

3(a)	M1 (family of molecules / compounds / series with) same general formula OR (family of molecules where) molecular formula differs (only) by (units of) $\text{CH}_2(n)$. M2 similar chemical properties / reactions
3(b)	M1 strong C—H (bonds) M2 non-polar (C—H / molecule / bonds)
3(c)	cracking
3(d)(i)	M1  M2 
3(d)(ii)	M1 $B < A < \text{hexane}$. M2 hexane / unbranched has stronger / more IMFs M3 hexane / unbranched requires most / more energy
3(e)(i)	H_2 ((g)) OR hydrogen (gas)
3(e)(ii)	M1 $+215 + (-156) - (+48) =$ M2 $+11 \text{ kJ mol}^{-1}$
3(e)(iii)	$\text{C}_6\text{H}_{14} + 9\frac{1}{2}\text{O}_2 \rightarrow 6\text{CO}_2 + 7\text{H}_2\text{O}$

9(a)	M1: (basicity linked to) ability of lone pair / p-orbital to AND accept / coordinate with a proton / H^+ M2: (lone pair of) electrons on N is delocalised into C=O group (and make amides neutral)
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9(b)(i)	M1: M  M2: N 
9(b)(ii)	LiAlH ₄
9(c)	ketone / carbonyl AND secondary / 2°
9(d)(i)	 curly arrow 1: from O lone pair to C atom (in C=C) curly arrow 2: from C=C bond to the right-hand O atom in O=O curly arrow 3: from O=O bond to O⁺

9(d)(ii)	
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