

SL & HL Answers to Alkenes questions

- **1.** i. $CH_3CH=CH_2(g) + H_2(g) \rightarrow CH_3CH_2CH_3(g)$ Product: propane.
 - ii. CH₃CH=CH₂(g) + Cl₂(g) → CH₃CHClCH₂Cl(l) Product: 1,2-dichloropropane
- **2.** Add a small amount of bromine water to each substance. The bromine will dissolve in the hexane to form a yellow-brown solution but no reaction takes place. The hex-3-ene solution will decolourise the bromine water. This is due to the addition of the bromine water to the double bond of the hex-3-ene to form 4-bromohexan-3-ol.

 $CH_3CH_2CH=CHCH_2CH_3(I) + Br_2(aq) + H_2O(I) \rightarrow CH_3CH_2CHBrCH(OH)CH_2CH_3(I) + HBr(aq)$ (The IB would also accept 3,4-dibromohexane, $CH_3CH_2CHBrCHBrCH_2CH_3$, as the product since this would be formed if no water is present).

- **3.** $H_2C=CH_2(g) + H_2O(g) \rightarrow C_2H_5OH(I)$
- **4. i.** $CH_3CH=CHCH_3(g) + HI(g) \rightarrow CH_3CHICH_2CH_3(I)$ Product: 2-iodobutane
 - ii. 1-iodobutane, CH₂ICH₂CH₂CH₃ and 2-iodobutane, CH₃CHICH₂CH₃
- **5. i.** -(-CH₂-CHCl-)_n
 - ii. $-(-CF_2-CF_2-)_n-$
 - iii. The very strong C-F bond is difficult to break **or** the structure is such that there is no room around each carbon atom for other atoms to approach.

© Dr Geoffrey Neuss, InThinking http://www.thinkib.net/chemistry