



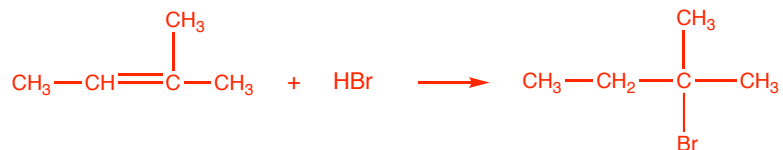
1 a Complete the table about some addition polymers.

monomer		polymer		
name	structure	name	structure	repeating unit
propene	$\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}=\text{CH}_2 \end{array}$	<b>poly(propene)</b>	$\left[ \begin{array}{c} \text{CH}_3 \\   \\ \text{---CH---CH}_2 \end{array} \right]_n$	$\text{---} \begin{array}{c} \text{CH}_3 \\   \\ \text{---CH---CH}_2 \end{array} \text{---}$
<b>methylpropene</b>	$\begin{array}{c} \text{CH}_3 \\   \\ \text{C}=\text{CH}_2 \\   \\ \text{CH}_3 \end{array}$	<b>poly(methylpropene)</b>	$\left[ \begin{array}{c} \text{CH}_3 \\   \\ \text{---C---CH}_2 \\   \\ \text{CH}_3 \end{array} \right]_n$	$\text{---} \begin{array}{c} \text{CH}_3 \\   \\ \text{---C---CH}_2 \\   \\ \text{CH}_3 \end{array} \text{---}$

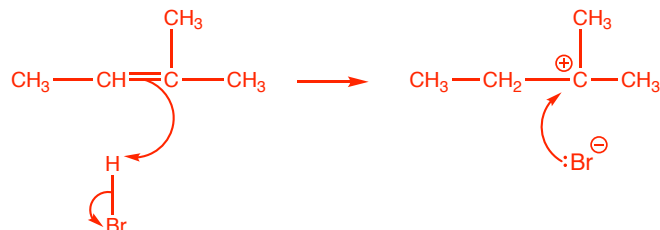
b Explain why the addition polymers shown in the table are not biodegradable. ....

**chain contains non-polar C-C bonds;  
not susceptible to attack by acid / alkali / electrophile / nucleophile**

2 a Write an equation for the formation of the main product from the reaction of 2-methylbut-2-ene with hydrogen bromide.



b Name and outline the mechanism for this reaction.



c Explain why this is the main product formed.

**major product is formed from tertiary carbocation  
minor product is formed from secondary carbocation  
tertiary carbocation is more stable than secondary carbocation**

3 Draw the structure of each of these alkenes and then state which exist as *E-Z* stereoisomers.

name	pent-1-ene	pent-2-ene	1-bromo-3-ethylhex-3-ene
structure	$\text{CH}_2=\text{CH---CH}_2\text{---CH}_2\text{---CH}_3$	$\text{CH}_3\text{---CH}=\text{CH---CH}_2\text{---CH}_3$	$\begin{array}{c} \text{CH}_3 \\   \\ \text{Br} \text{---} \text{CH}_2\text{---CH}_2\text{---C}=\text{CH---CH}_2\text{---CH}_3 \\   \\ \text{CH}_2 \end{array}$
<i>E-Z</i> stereoisomers?	<b>no</b>	<b>yes</b>	<b>yes</b>