

1. What are the products of following reactions?

- (i) $\text{CH}_2 = \text{CH}_2 + \text{HCl}$ \longrightarrow
- (ii) $\text{CH}_2 = \text{CH}_2 + \text{HBr}$ \longrightarrow
- (iii) $\text{CH}_2 = \text{CH}_2 + \text{HBr}$ $\xrightarrow{\text{R}_1 - \text{O} - \text{O} - \text{R}_2}$
- (iv) $\text{CH}_2 = \text{CH}_2 + \text{HI}$ \longrightarrow
- (v) $\text{CH}_2 = \text{CH}_2 + \text{Cl}_2$ \longrightarrow
- (vi) $\text{CH}_2 = \text{CH}_2 + \text{Br}_2$ \longrightarrow
- (vii) $\text{CH}_2 = \text{CH}_2 + \text{I}_2$ \longrightarrow
- (viii) $\text{CH}_2 = \text{CH}_2 + \text{dil. H}_2\text{SO}_4$ \longrightarrow
- (ix) $\text{CH}_2 = \text{CH}_2 + \text{H}_2$ $\xrightarrow{\text{Ni or Pd or Pt}}$
- (x) $\text{CH}_2 = \text{CH}_2 + \text{cold, alkaline, dilute KMnO}_4$ \longrightarrow

2. What are the products of following reactions?

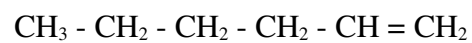
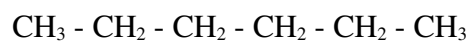
- (i) $\text{CH}_3 - \text{CH} = \text{CH}_2 + \text{HCl}$ \longrightarrow
- (ii) $\text{CH}_3 - \text{CH} = \text{CH}_2 + \text{HBr}$ \longrightarrow
- (iii) $\text{CH}_3 - \text{CH} = \text{CH}_2 + \text{HBr}$ $\xrightarrow{\text{R}_1 - \text{O} - \text{O} - \text{R}_2}$
- (iv) $\text{CH}_3 - \text{CH} = \text{CH}_2 + \text{HI}$ \longrightarrow
- (v) $\text{CH}_3 - \text{CH} = \text{CH}_2 + \text{Cl}_2$ \longrightarrow
- (vi) $\text{CH}_3 - \text{CH} = \text{CH}_2 + \text{Br}_2$ \longrightarrow
- (vii) $\text{CH}_3 - \text{CH} = \text{CH}_2 + \text{I}_2$ \longrightarrow
- (viii) $\text{CH}_3 - \text{CH} = \text{CH}_2 + \text{dil. H}_2\text{SO}_4$ \longrightarrow
- (ix) $\text{CH}_3 - \text{CH} = \text{CH}_2 + \text{H}_2$ $\xrightarrow{\text{Ni or Pd or Pt}}$
- (x) $\text{CH}_3 - \text{CH} = \text{CH}_2 + \text{cold, alkaline, dilute KMnO}_4$ \longrightarrow

3. Fill in the blanks with correct products in the following table

		$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{CH} = \text{C} \\ \\ \text{CH}_3 \end{array}$	$\text{CH}_3 - \text{CH}_2 - \text{CH} = \text{CH} - \text{CH}_3$
I.	HCl		
II.	HBr		
III.	HBr + R ₁ - O - O - R ₁		
IV.	HI		
V.	Cl ₂		
VI.	Br ₂		

		$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{CH} = \text{C} \\ \\ \text{CH}_3 \end{array}$	$\text{CH}_3 - \text{CH}_2 - \text{CH} = \text{CH} - \text{CH}_3$
VII.	I ₂		
VIII.	dil. H ₂ SO ₄		
IX.	H ₂ / Pd or Ni or Pt		
X.	cold, alkaline, dilute KMnO ₄		

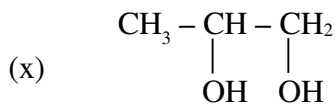
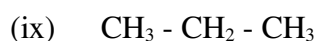
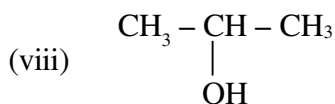
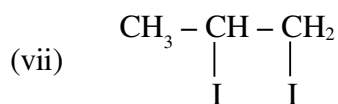
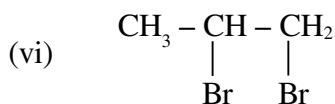
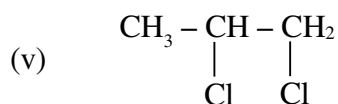
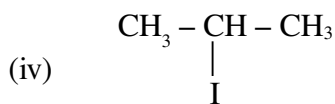
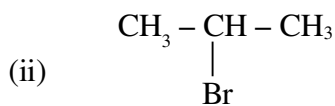
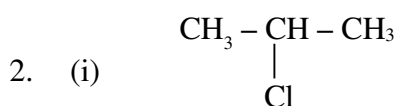
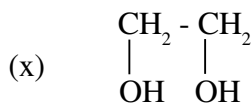
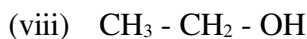
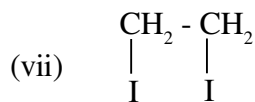
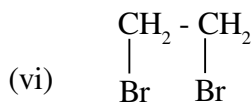
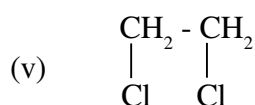
4. Briefly explain how the following compounds can be distinguished experimentally.



It's better to try answering on your own before checking the given answers.

Answers:

1. (i) $\text{CH}_3 - \text{CH}_2 - \text{Cl}$ (ii) $\text{CH}_3 - \text{CH}_2 - \text{Br}$
 (iii) $\text{CH}_3 - \text{CH}_2 - \text{Br}$ (iv) $\text{CH}_3 - \text{CH}_2 - \text{I}$



3.

		$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{CH} = \text{C} \\ \\ \text{CH}_3 \end{array}$	$\text{CH}_3 - \text{CH}_2 - \text{CH} = \text{CH} - \text{CH}_3$
I.	HCl	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{CH}_2 - \text{C} - \text{Cl} \\ \\ \text{CH}_3 \end{array}$	$\begin{array}{c} \text{CH}_3 - \text{CH}_2 - \text{CH} - \text{CH}_2 - \text{CH}_3 \\ \\ \text{Cl} \end{array}$
II.	HBr	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{CH}_2 - \text{C} - \text{Br} \\ \\ \text{CH}_3 \end{array}$	$\begin{array}{c} \text{CH}_3 - \text{CH}_2 - \text{CH} - \text{CH}_2 - \text{CH}_3 \\ \\ \text{Br} \end{array}$

		$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{CH} = \text{C} \\ \\ \text{CH}_3 \end{array}$	$\text{CH}_3 - \text{CH}_2 - \text{CH} = \text{CH} - \text{CH}_3$
III.	HBr + R ₁ - O - O - R ₁	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{CH} - \text{CH} \\ \quad \\ \text{Br} \quad \text{CH}_3 \end{array}$	$\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \underset{\text{Br}}{\text{CH}} - \text{CH}_3$
IV.	HI	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{CH}_2 - \text{C} - \text{I} \\ \\ \text{CH}_3 \end{array}$	$\text{CH}_3 - \text{CH}_2 - \underset{\text{I}}{\text{CH}} - \text{CH}_2 - \text{CH}_3$
V.	Cl ₂	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{CH} - \text{C} - \text{Cl} \\ \quad \\ \text{Cl} \quad \text{CH}_3 \end{array}$	$\text{CH}_3 - \text{CH}_2 - \underset{\text{Cl}}{\text{CH}} - \underset{\text{Cl}}{\text{CH}} - \text{CH}_3$
VI.	Br ₂	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{CH} - \text{C} - \text{Br} \\ \quad \\ \text{Br} \quad \text{CH}_3 \end{array}$	$\text{CH}_3 - \text{CH}_2 - \underset{\text{Br}}{\text{CH}} - \underset{\text{Br}}{\text{CH}} - \text{CH}_3$
VII.	I ₂	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{CH} - \text{C} - \text{I} \\ \quad \\ \text{I} \quad \text{CH}_3 \end{array}$	$\text{CH}_3 - \text{CH}_2 - \underset{\text{I}}{\text{CH}} - \underset{\text{I}}{\text{CH}} - \text{CH}_3$
VIII.	dil. H ₂ SO ₄	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{CH}_2 - \text{C} - \text{OH} \\ \\ \text{CH}_3 \end{array}$	$\text{CH}_3 - \text{CH}_2 - \underset{\text{OH}}{\text{CH}} - \text{CH}_2 - \text{CH}_3$
IX.	H ₂ / Pd or Ni or Pt	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{CH}_2 - \text{CH} \\ \\ \text{CH}_3 \end{array}$	$\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$
X.	cold, alkaline, dilute KMnO ₄	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{CH} - \text{C} - \text{OH} \\ \quad \\ \text{OH} \quad \text{CH}_3 \end{array}$	$\text{CH}_3 - \text{CH}_2 - \underset{\text{OH}}{\text{CH}} - \underset{\text{OH}}{\text{CH}} - \text{CH}_3$

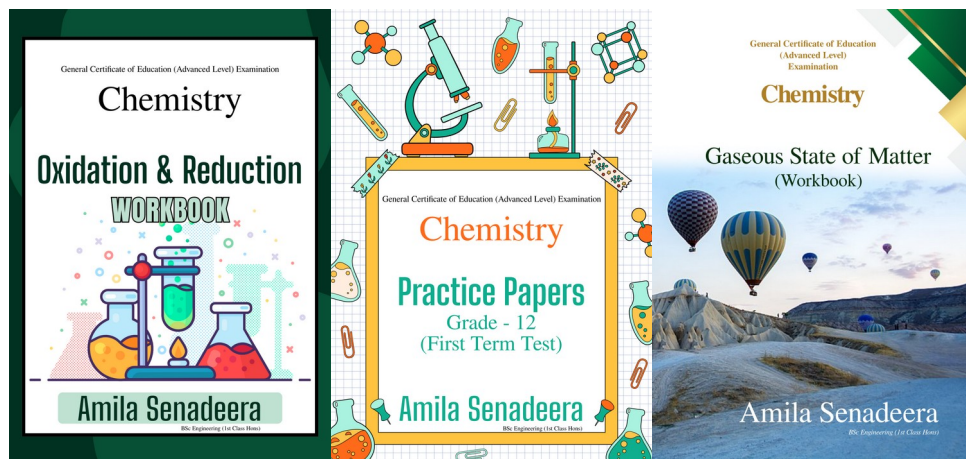
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4. Take two portions from give compounds.
Add $\text{Br}_2(\text{CCl}_4)$ to those portions seperately.
 $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{CH} = \text{CH}_2$ decolorizes bromine.
The other compound is $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$ and it doesn't decolorize bromine.

OR

Take two portions from give compounds.
Add diluted KMnO_4 solution with Na_2CO_3 to those portions seperately.
 $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{CH} = \text{CH}_2$ gives a dark brown coloured precipitate.
The other compound is $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$ and it doesn't give a dark brown coloured precipitate.