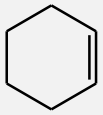
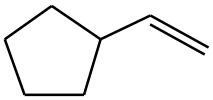
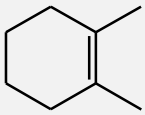
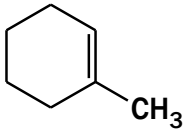
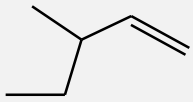
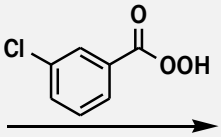
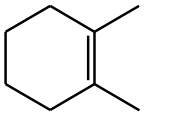
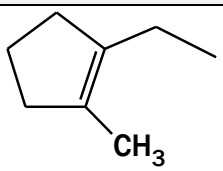
Alkene Addition Reactions 2

Give the product for each reaction. Do not peek at the answers until you have a reasonable solution. Answers are shown below.

	$\xrightarrow{:CH_2}$	
	$\xrightarrow[Et_2O]{ICH_2ZnI}$	
	$\xrightarrow{N\equiv\overset{\oplus}{N}-\overset{\ominus}{C}H_2}$	
	$\xrightarrow{CH_3\overset{O}{\overset{\|\|}{C}}-OOH}$	
	$\xrightarrow[CH_2Cl_2]{}$ 	
	$\xrightarrow[CH_2Cl_2]{MCPBA}$	
	$\xrightarrow[H_2O_2]{OsO_4}$	
	$\xrightarrow[H_2O_2]{OsO_4}$	
	$\xrightarrow[\text{cold, dilute}]{KMnO_4}$	

Alkene Addition Reactions 2

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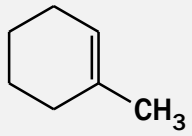
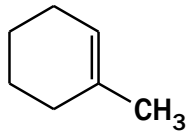
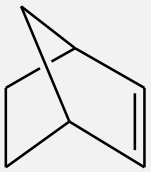
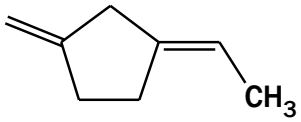
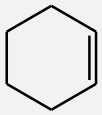
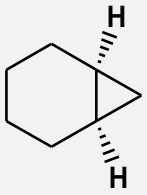
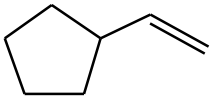
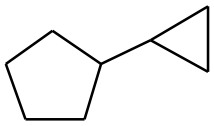
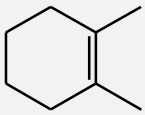
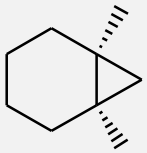
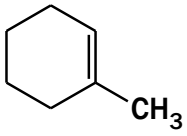
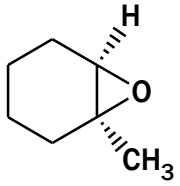
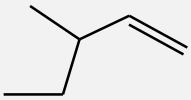
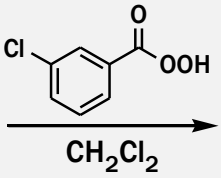
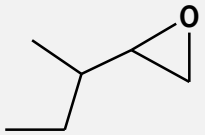
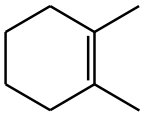
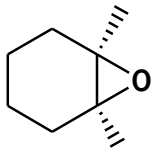
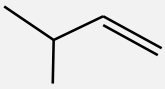
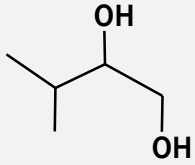
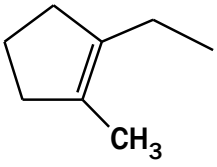
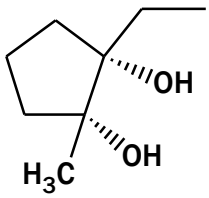
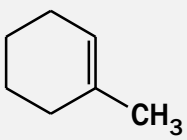
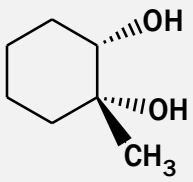
	$\xrightarrow[\text{hot, conc.}]{KMnO_4}$	
	$\xrightarrow[\text{2. DMS}]{\text{1. } O_3}$	
	$\xrightarrow[\text{2. DMS}]{\text{1. } O_3}$	
	$\xrightarrow[\text{2. DMS}]{\text{1. } O_3}$	

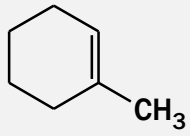
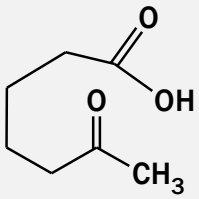
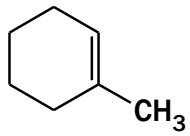
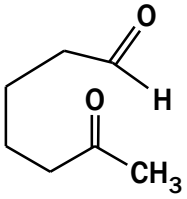
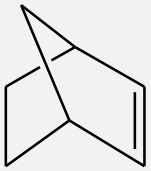
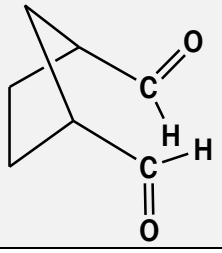
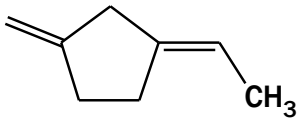
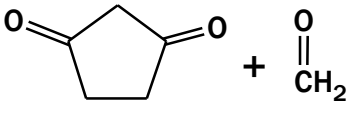
ANSWER KEY

Alkene Addition Reactions 1

	$:CH_2$	
	ICH_2ZnI Et_2O	
	$N\equiv\overset{\oplus}{N}-\overset{\ominus}{C}H_2$	
	$CH_3C(=O)OOH$	
		
	$MCPBA$ CH_2Cl_2	
	OsO_4 H_2O_2	
	OsO_4 H_2O_2	
	$KMnO_4$ cold, dilute	

ANSWER KEY

Alkene Addition Reactions 2

	$KMnO_4$ → hot, conc.	
	1. O_3 → 2. DMS	
	1. O_3 → 2. DMS	
	1. O_3 → 2. DMS	

Compare KMnO4 under different reaction conditions:

- Cold and dilute conditions provides a cis diol similar to OsO4 reagent
- Hot and concentrated conditions results in cleavage of the C=C bond and oxidation of C-H bonds

Ozonolysis also cleaves C=C bond but does not further oxidize C-H bonds