

THEORY

1. The reaction of an alkene with a halogen is an example of an electrophilic addition reaction. The mechanism involves the formation of a carbocation intermediate. The first step is the attack of the alkene on the halogen molecule, forming a cyclic halonium ion. The second step is the attack of a nucleophile on the carbocation, leading to the final product.

Step	Reaction	Intermediate
1	$\text{C}_2\text{H}_4 + \text{Br}_2 \rightarrow \text{C}_2\text{H}_4\text{Br}^+\text{Br}^-$	Cyclic bromonium ion
2	$\text{C}_2\text{H}_4\text{Br}^+\text{Br}^- + \text{H}_2\text{O} \rightarrow \text{C}_2\text{H}_4\text{BrOH} + \text{H}^+$	2-bromooxetane

QUESTION

