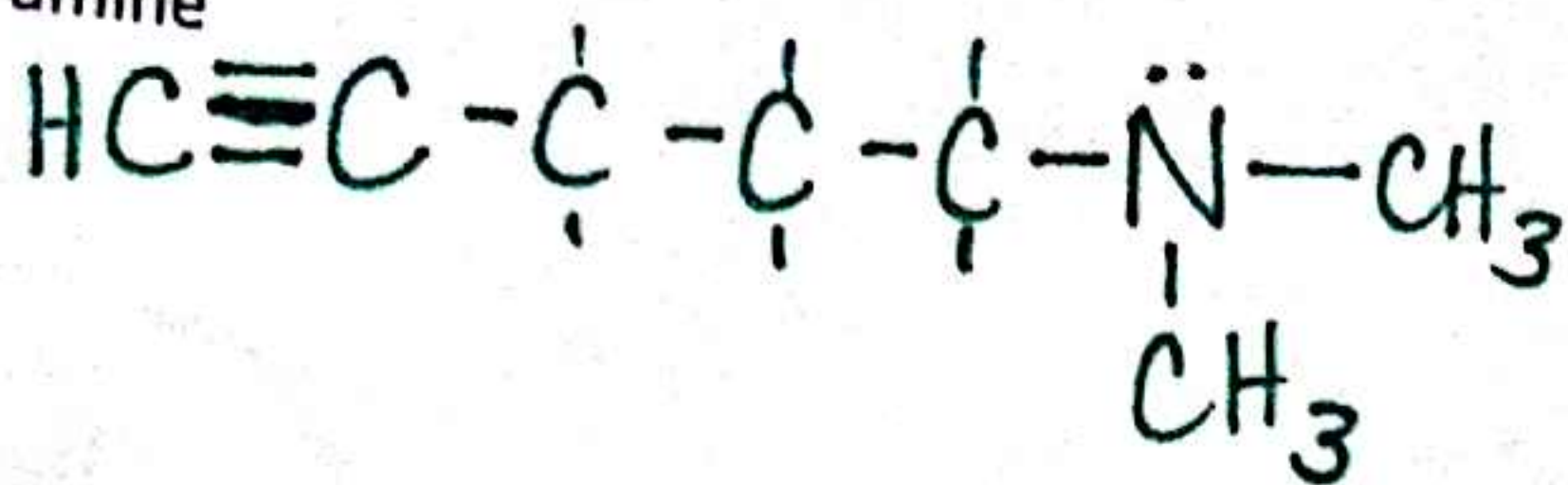
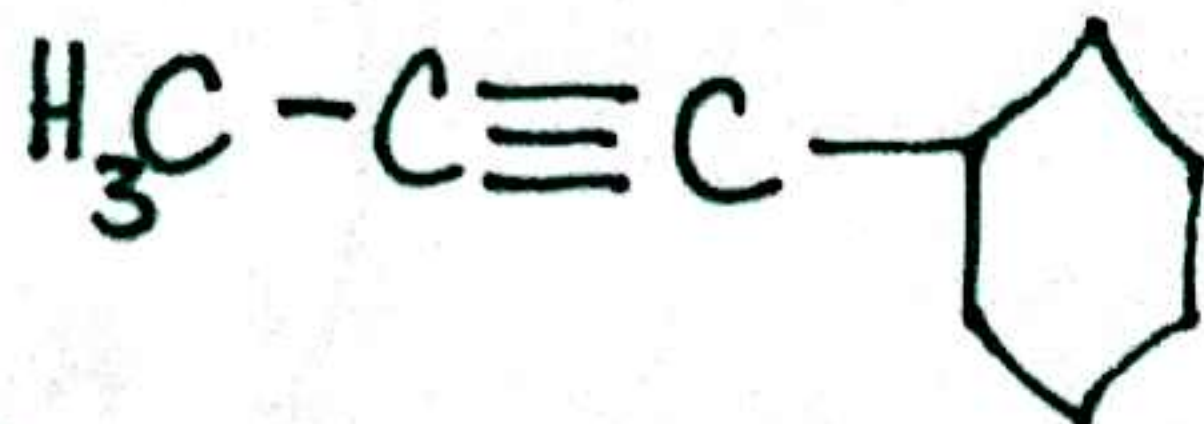


1. Draw the structures of the following:

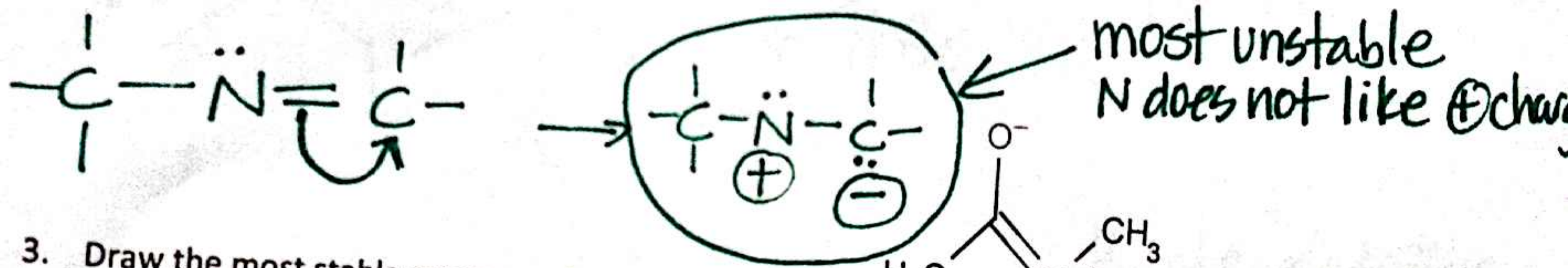
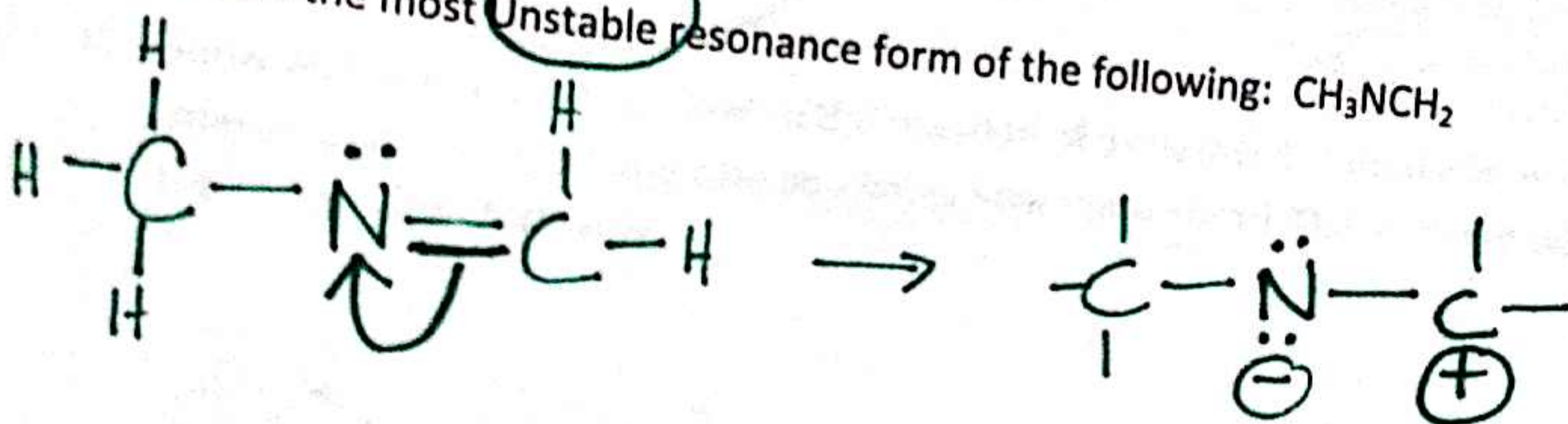
N, N-dimethyl-4-pentyn-1-amine



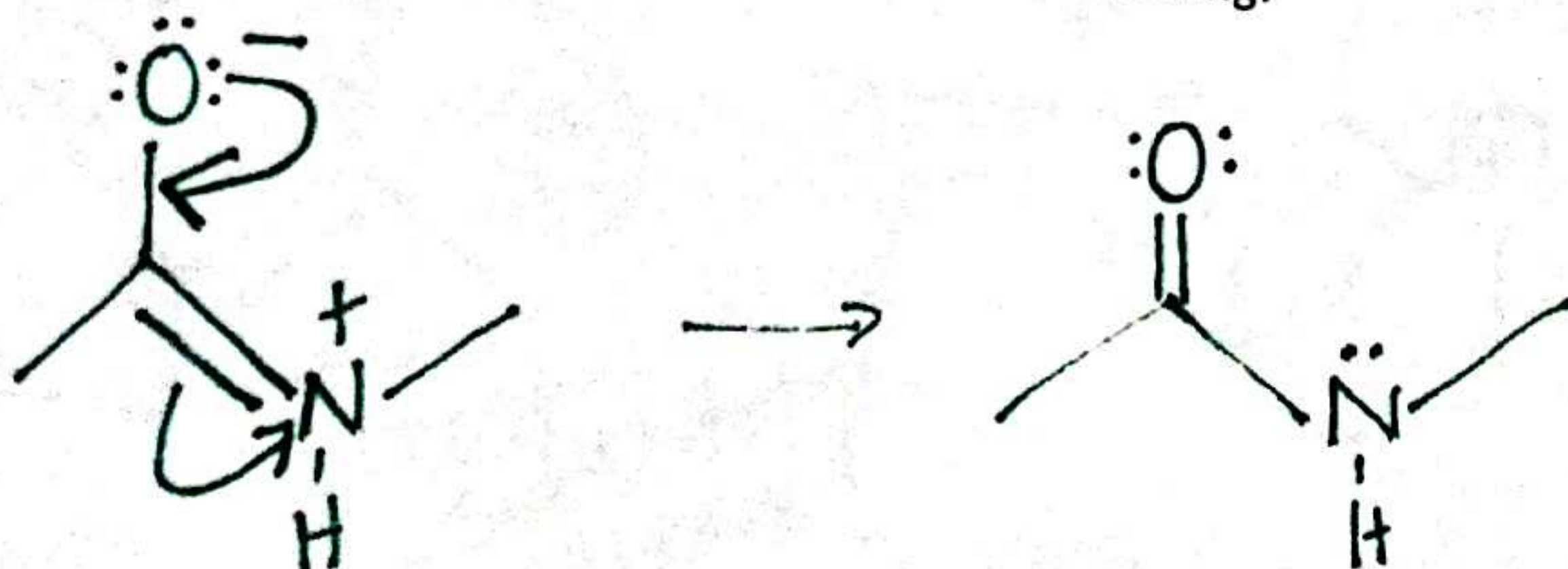
1-cyclohexyl-1-propyne



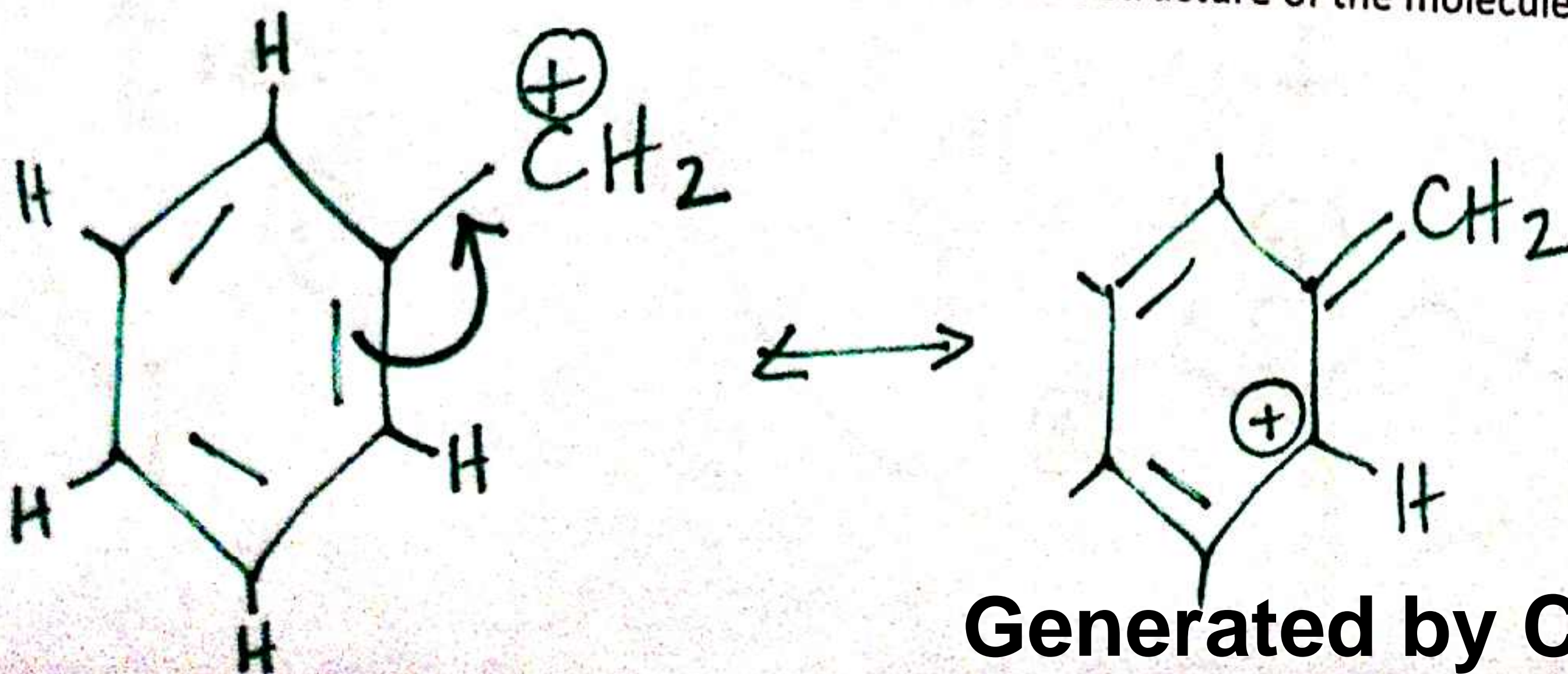
2. Draw the most Unstable resonance form of the following:  $\text{CH}_3\text{NCH}_2$



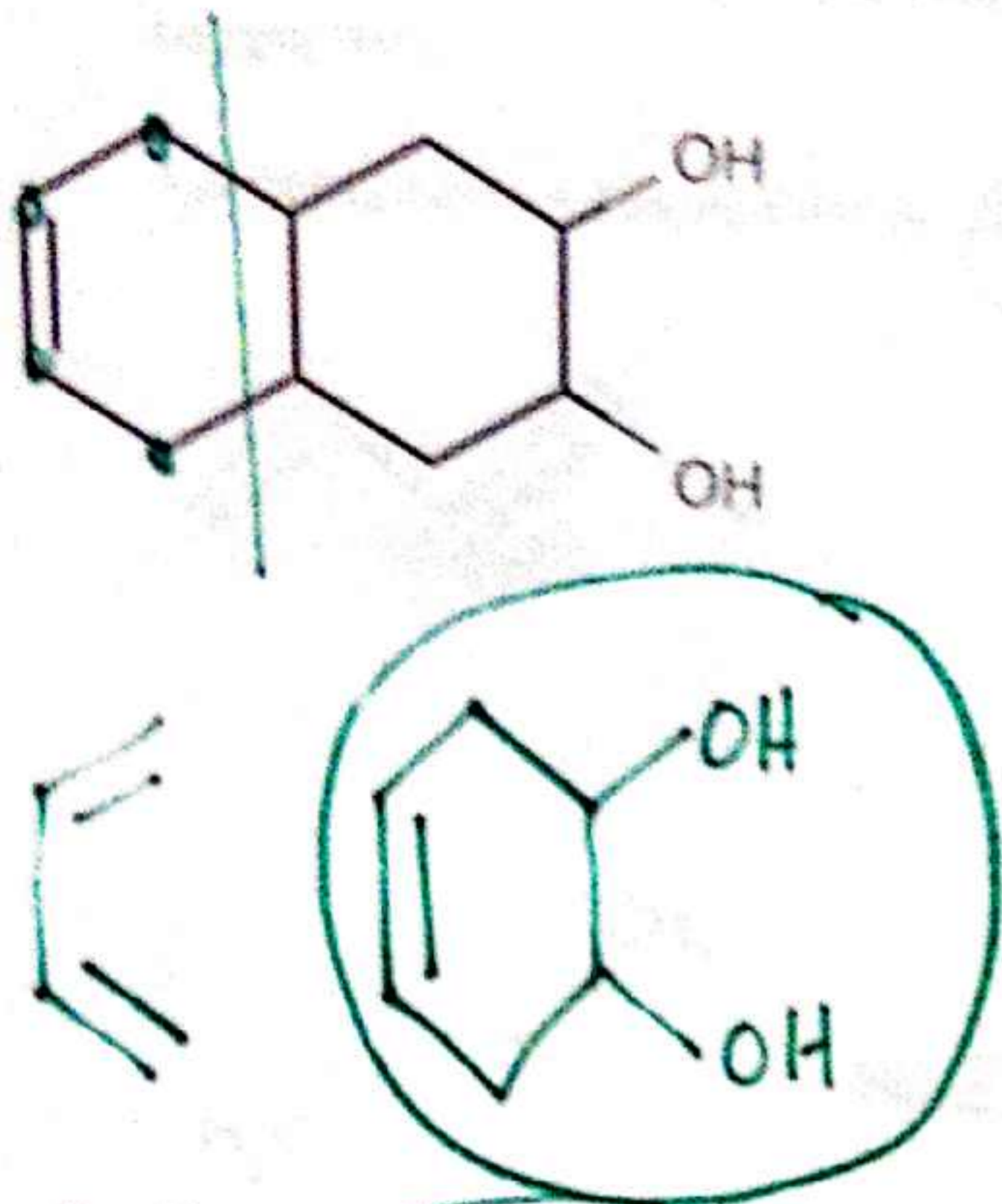
3. Draw the most stable resonance form of the following:



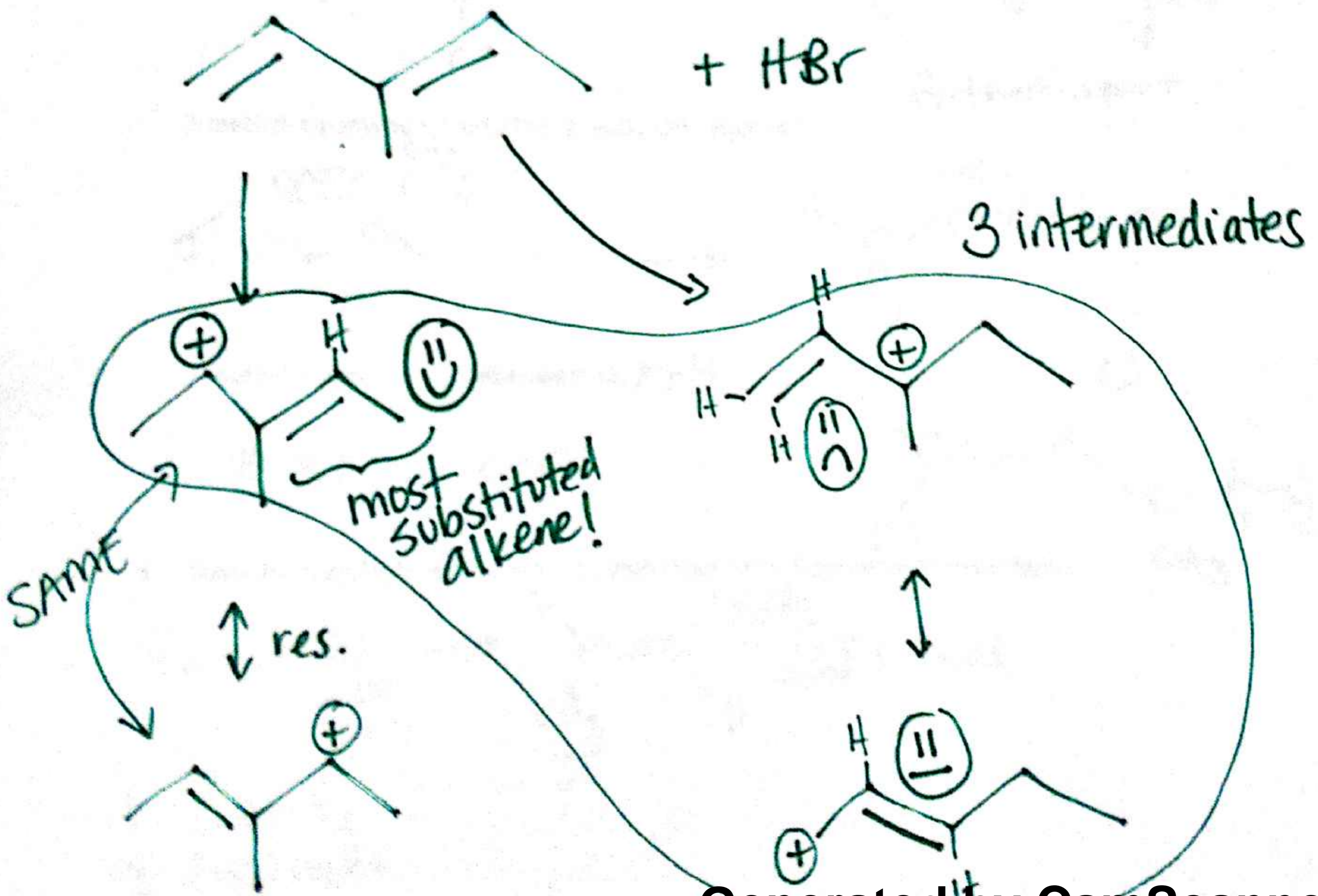
4. Draw a Benzylic Carbocation and show one resonance structure of the molecule.



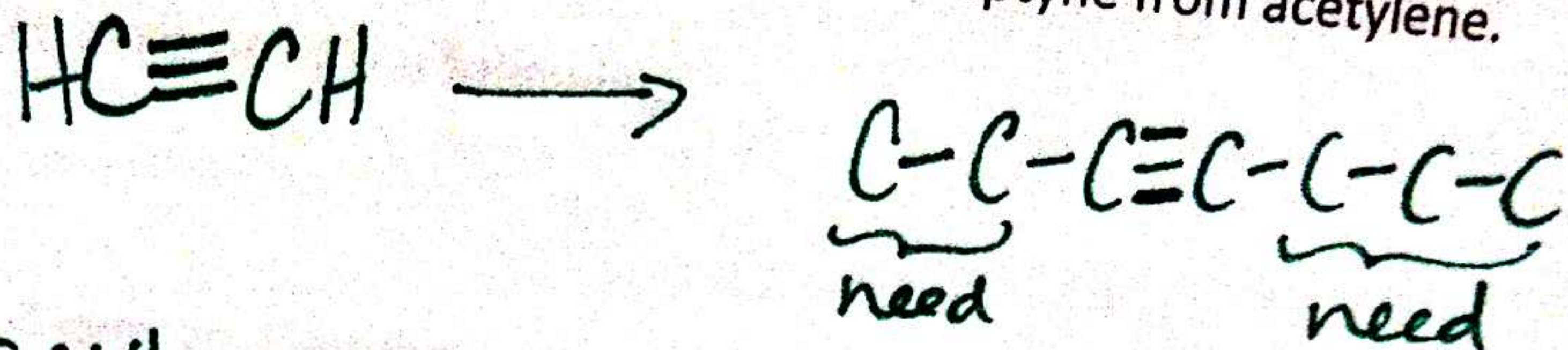
5. Draw the structure of the dienophile used to make the following:



6. Show all intermediates formed in the reaction of 3-methyl-1,3-pentadiene + HBr. Circle the intermediates (this will indicate you know how many form) AND indicate which intermediate is the most stable AND why.

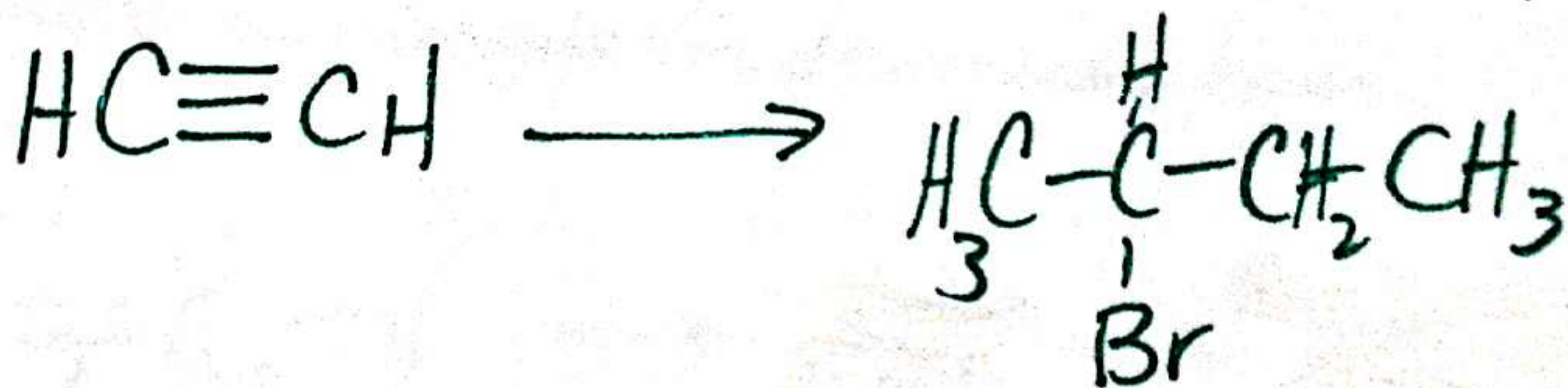


9. Describe in an Ordered List how to synthesize 3-heptyne from acetylene.



1.  $\text{NaNH}_2$
2.  $\text{CH}_3\text{CH}_2\text{Br}$
3.  $\text{NaNH}_2$
4.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{Br}$

10. Describe in an Ordered List how to synthesize 2-bromobutane from acetylene.



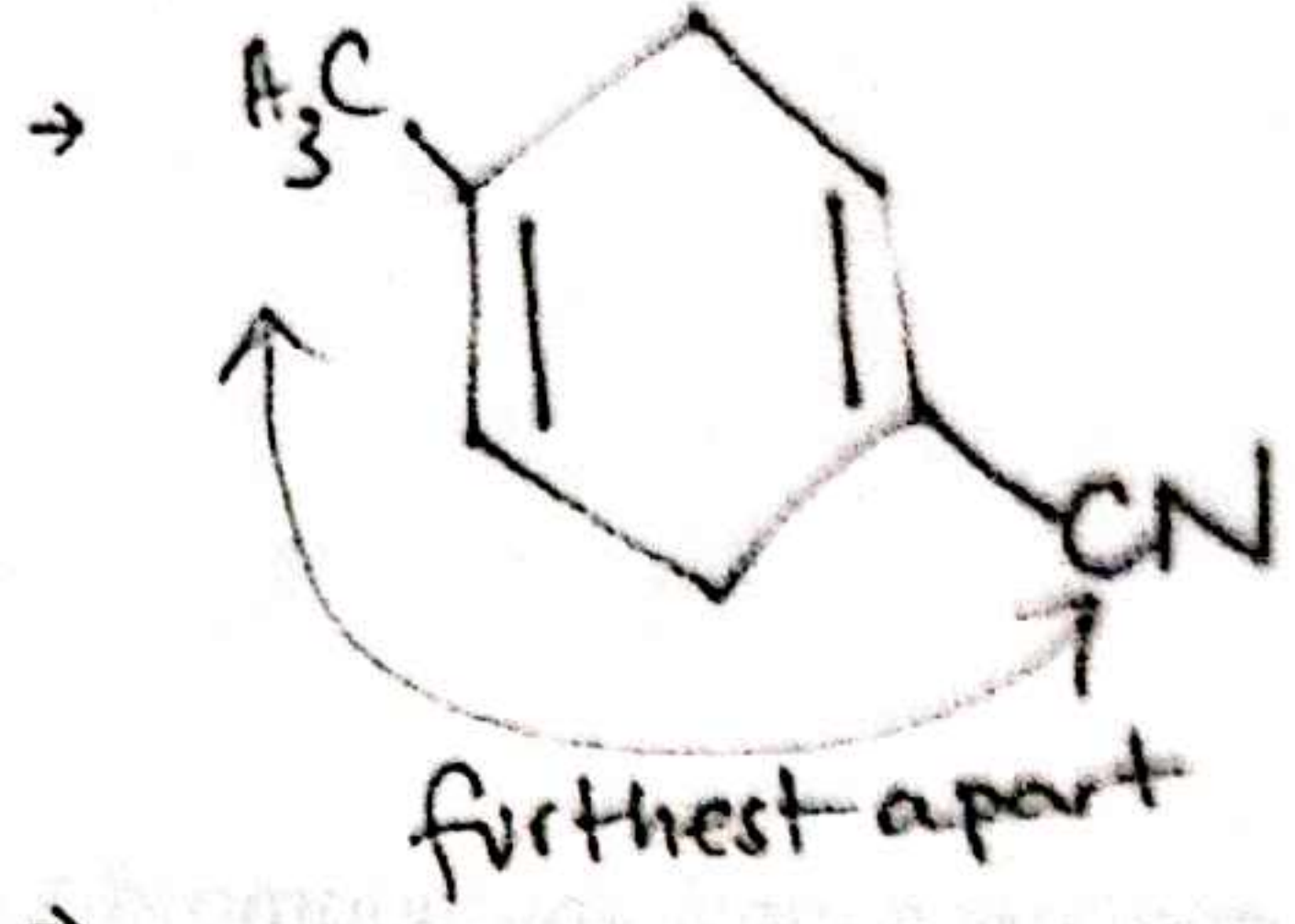
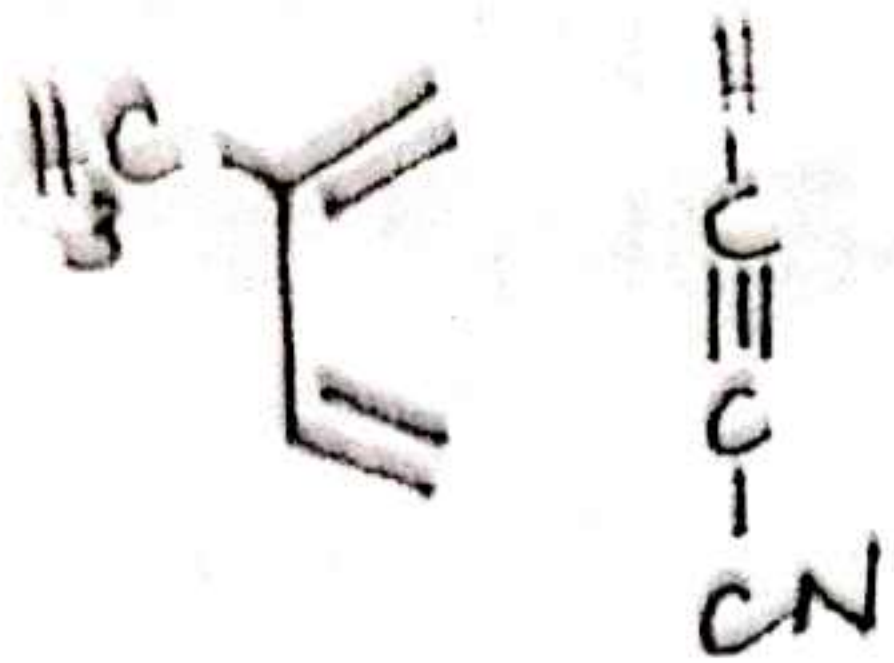
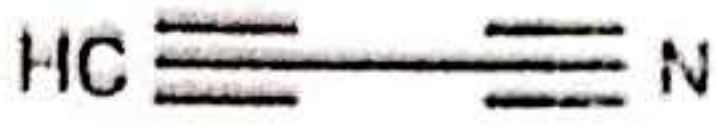
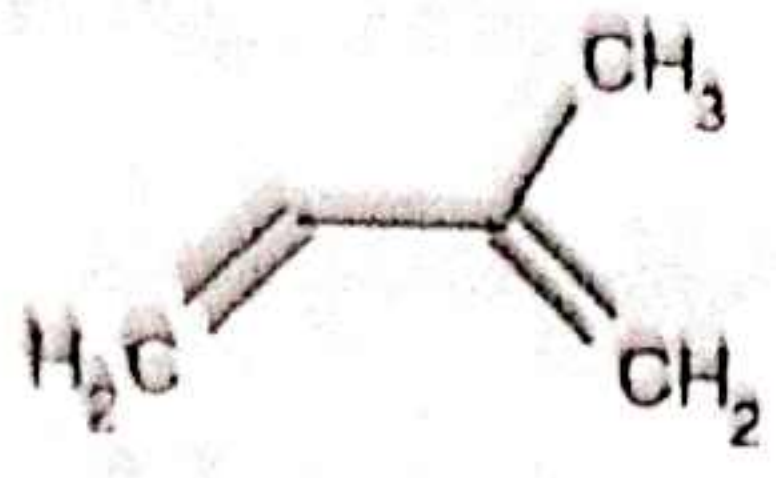
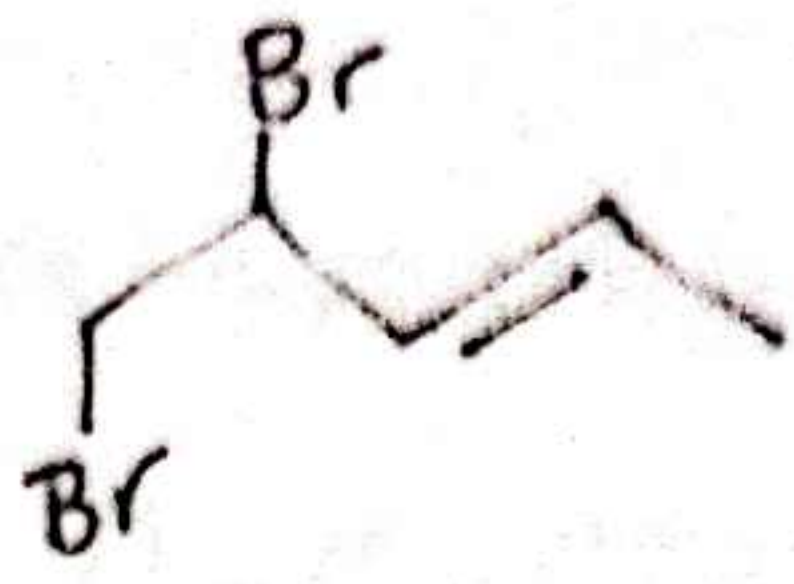
1.  $\text{NaNH}_2$
2.  $\text{CH}_3\text{CH}_2\text{Br}$       $\text{HC}\equiv\text{C}-\text{CH}_2\text{CH}_3$
3.  $\text{H}_2$ , Lindlars      $\text{H}_2\text{C}=\text{CHCH}_2\text{CH}_3$
4. 1 equiv.  $\text{HBr}$

7. Give the Major product of the following (proper stereochemistry/shape required; chirality can be ignored).

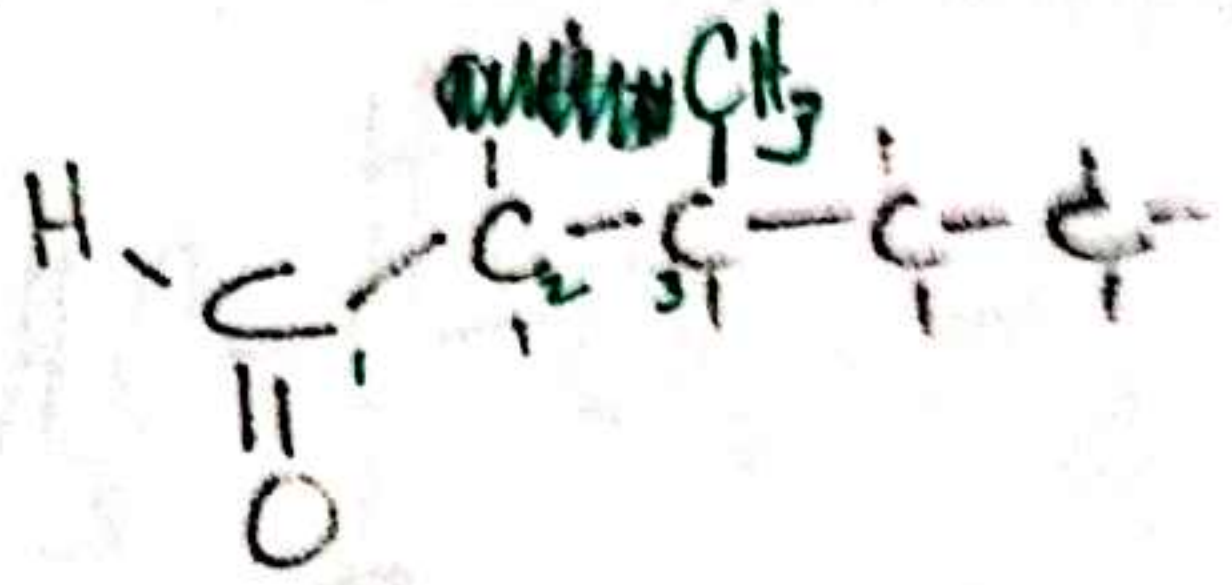
1,3-pentadiene + 1 equivalent Br<sub>2</sub> @ 0°C →



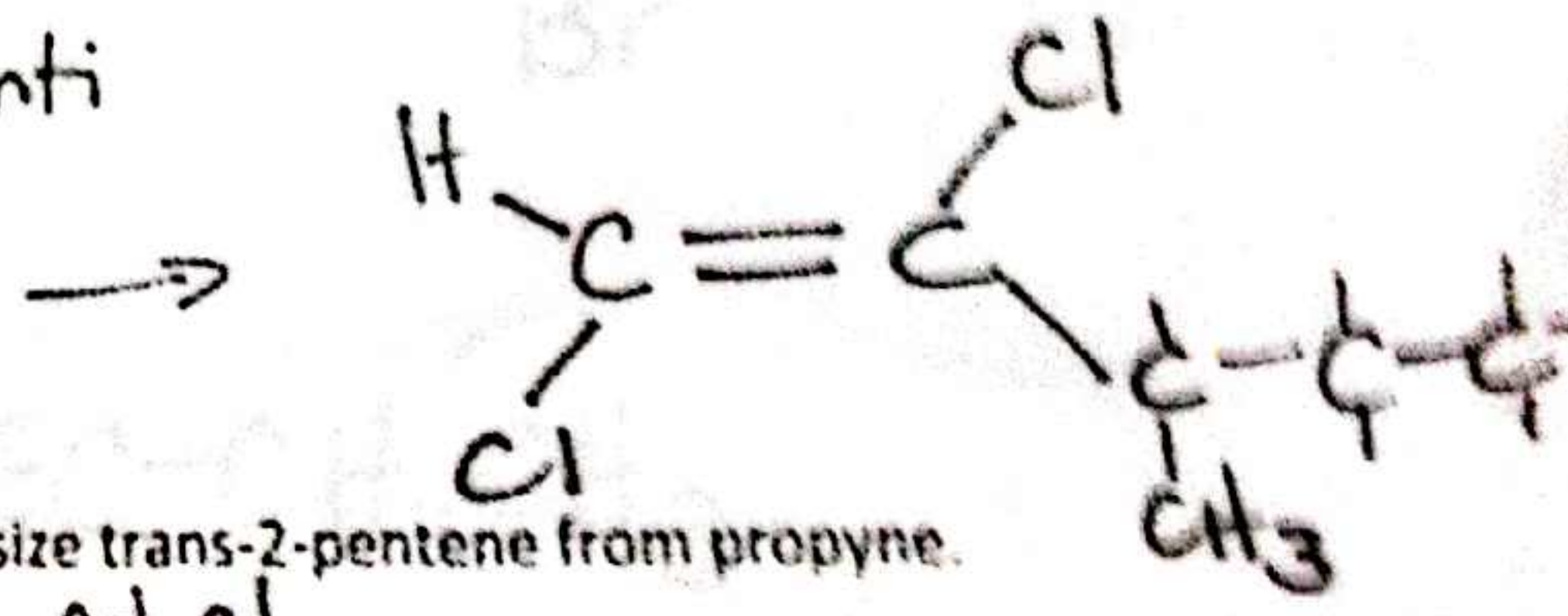
Kinetic



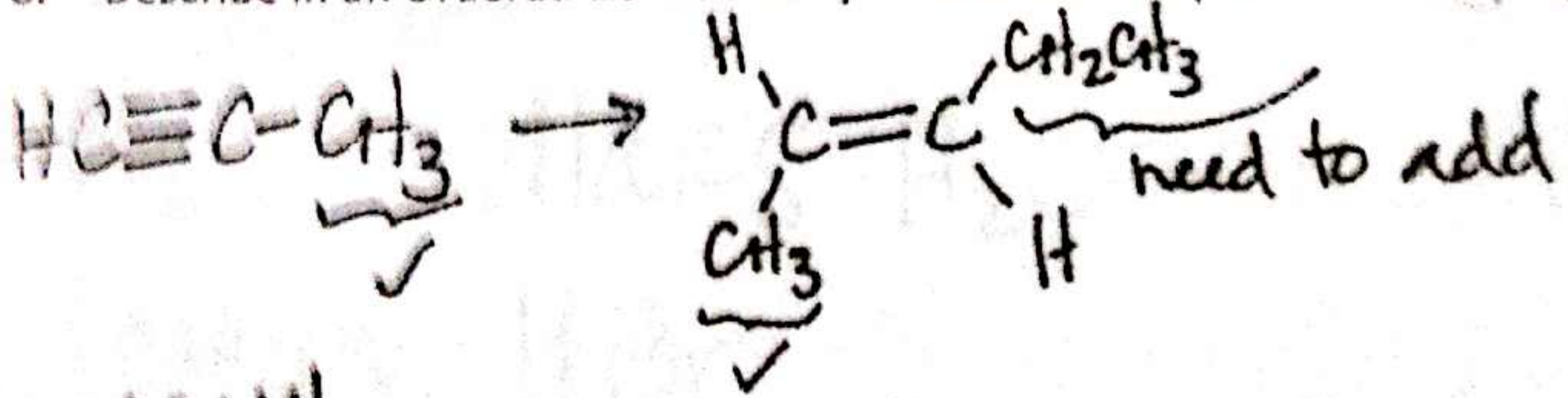
3-methyl-1-pentyne + 1. BH<sub>3</sub>/THF, 2. H<sub>2</sub>O, OH<sup>-</sup>, H<sub>2</sub>O →



3-methyl-1-pentyne + 1 equivalent Cl<sub>2</sub>, Anti



8. Describe in an Ordered List how to synthesize trans-2-pentene from propyne.



1. NaNH<sub>2</sub>
2. CH<sub>3</sub>CH<sub>2</sub>Br
3. Na, NH<sub>3</sub>