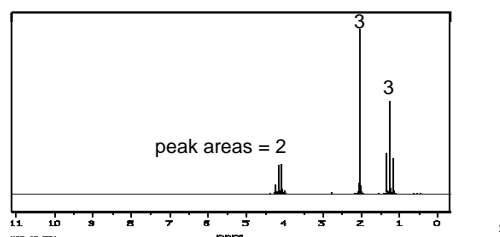
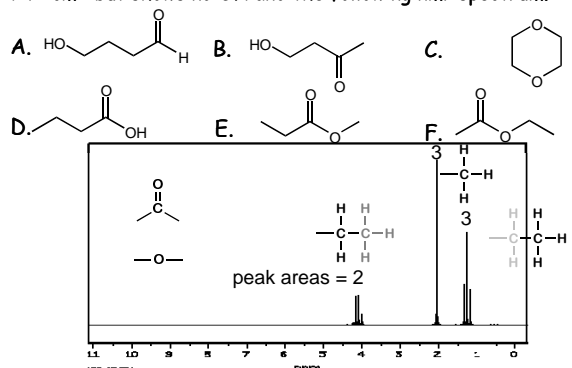


An unknown has a formula of $C_4H_8O_2$, an infrared spectrum that has a very strong absorption at 1742 cm^{-1} but shows no OH and the 1H NMR spectrum shown below.

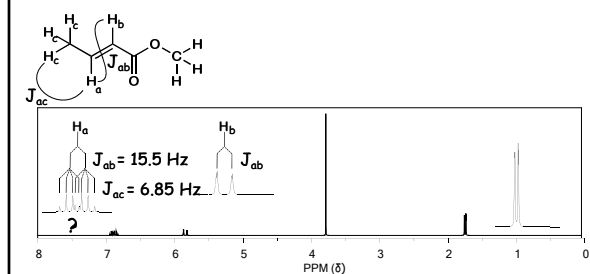
What is the structure of the unknown compound?



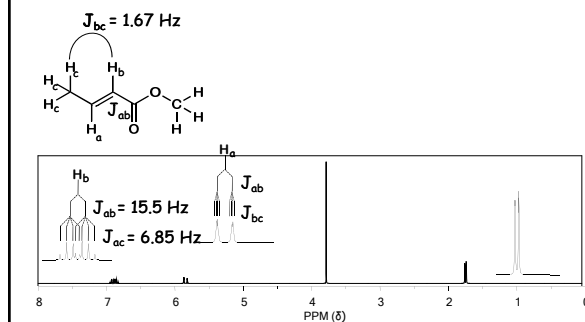
Choose the structure of a compound with the formula $C_4H_8O_2$ an infrared spectrum that has a very strong absorption at 1742 cm^{-1} but shows no OH and the following nmr spectrum.



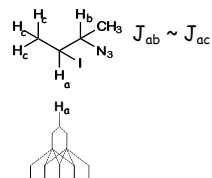
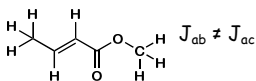
Review:



Review:

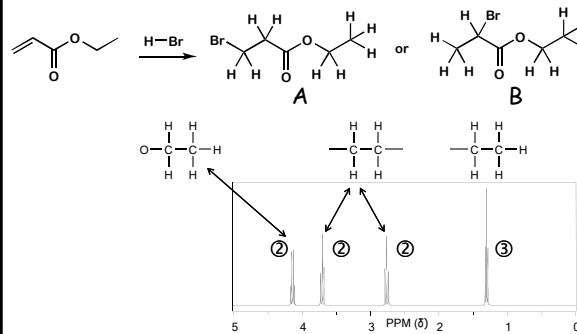


How many lines would be observed if $J_{ab} \sim J_{ac}$?



- A. 2 D. 5
B. 3 E. 6
C. 4 F. 8

Choose the major product of the following reaction.

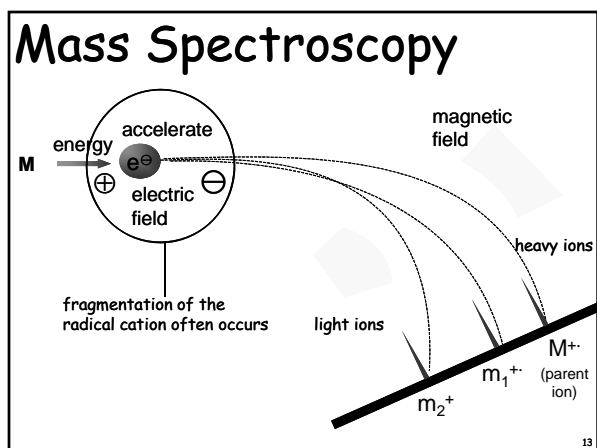
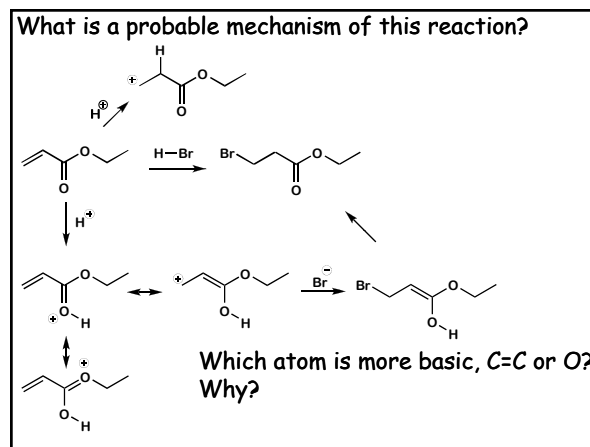
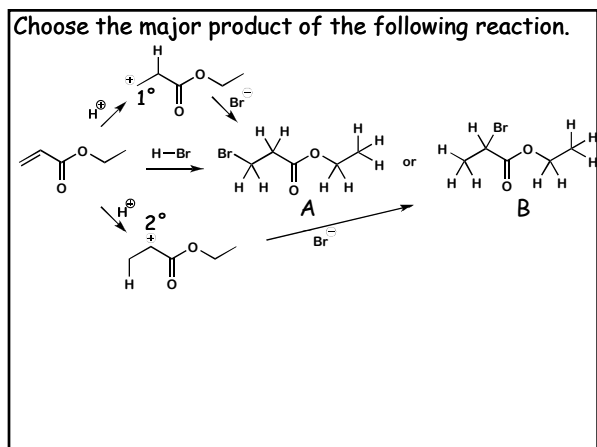


Predict the ^1H NMR spectrum for compound B.
 s = singlet, d = doublet, t = triplet, q = quartet

① ②

A 1H s 3H q
 B 1H d 3H q
 C 1H q 3H d
 D 3H q 1H s
 E 3H d 3H s
 F 3H s 3H s

Predict the ^1H NMR spectrum for compound B.



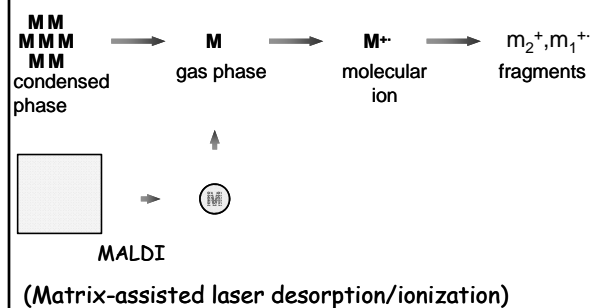
Which path would be predicted to be more favorable?

m/z = 43

m/z = 58

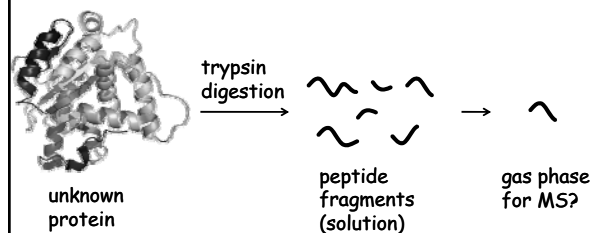
m/z = 15

Mass Spectroscopy

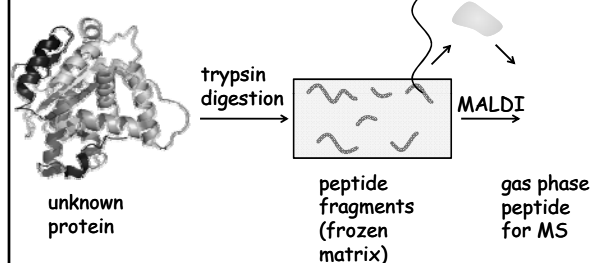


15

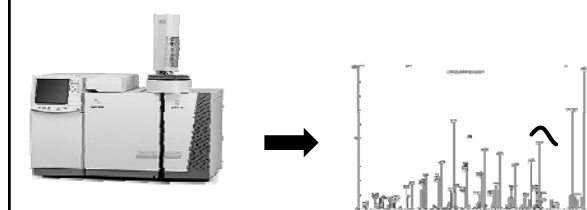
Mass spectroscopy has recently been applied to large molecules such as peptides and even proteins.



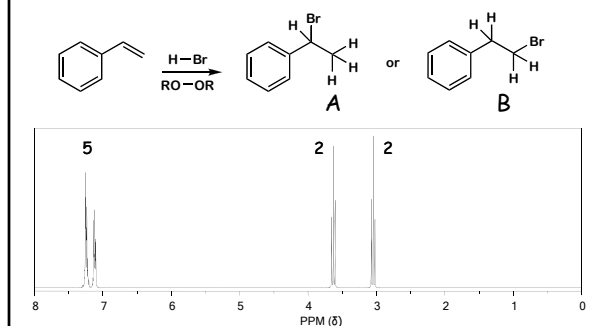
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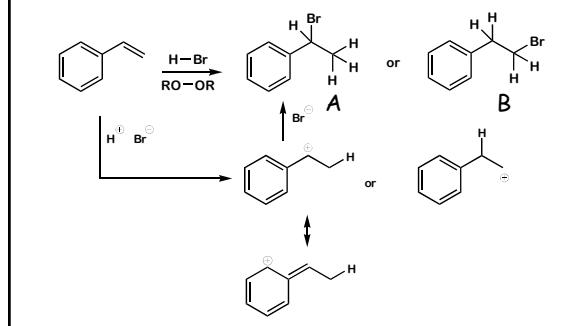
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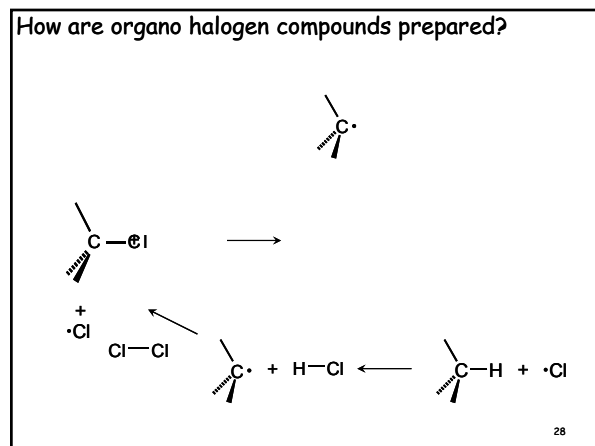
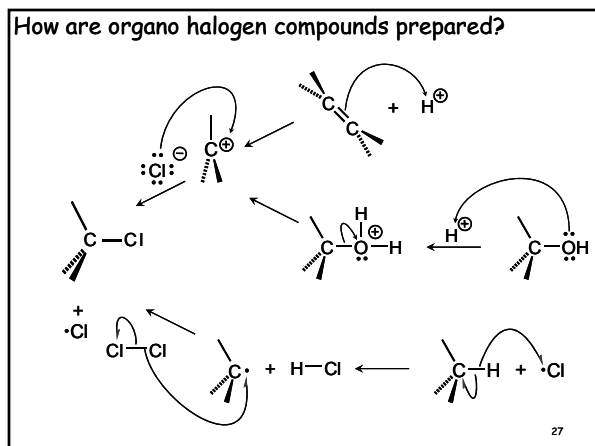
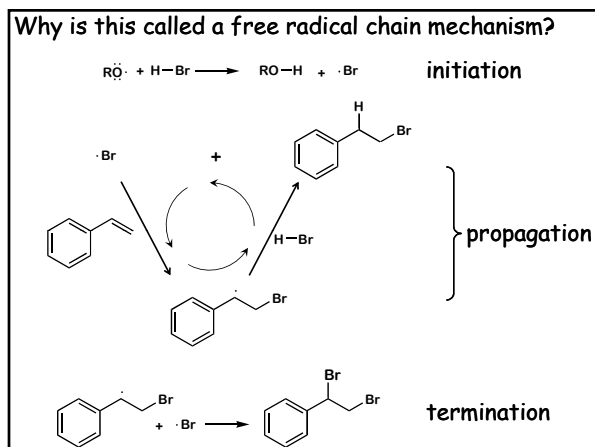
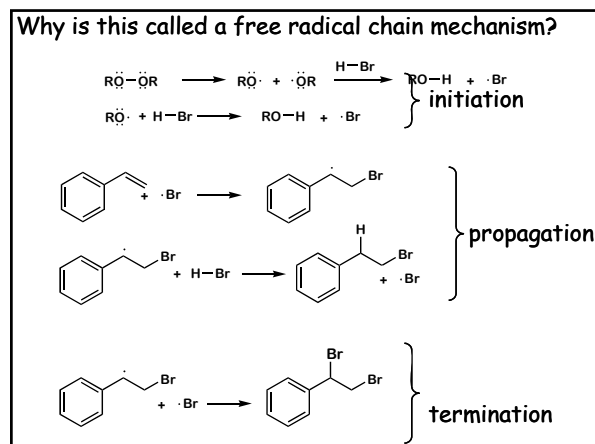
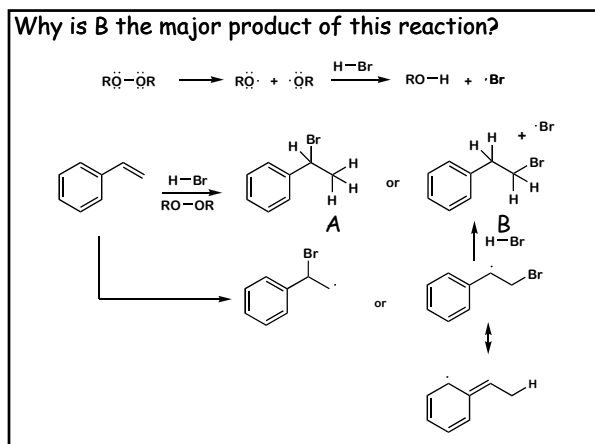


What is the major product of the following reaction.

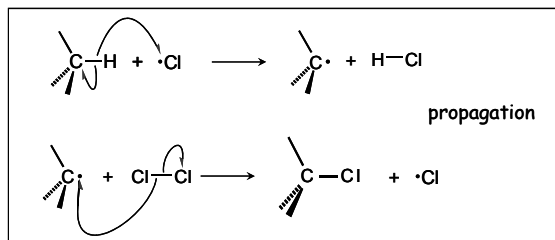


Why is B the major product of this reaction?



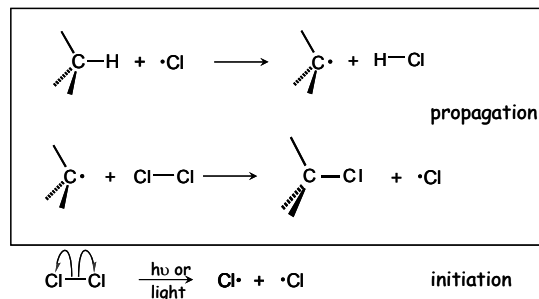


What is the reaction mechanism for free radical halogenation?
How are the bonds being made and broken?



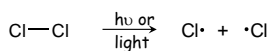
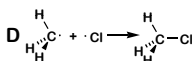
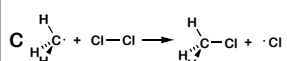
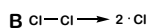
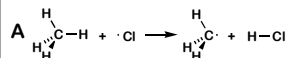
29

Where did the $\text{Cl}\cdot$ come from?



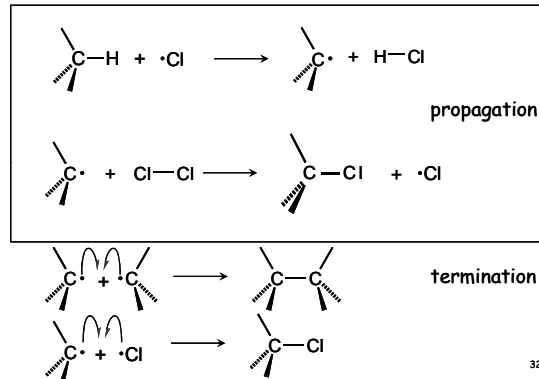
30

Which of the following reactions will terminate the free radical chain?

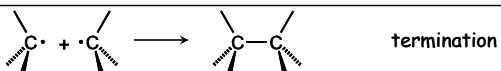
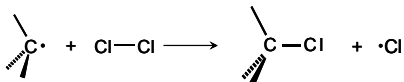
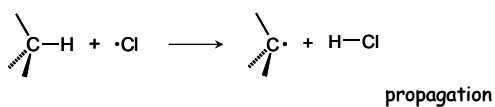
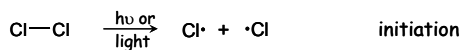


initiation

What happens when two radicals in this mechanism react with each other?



32



Chlorination. An example of a free radical chain reaction mechanism.

33

text