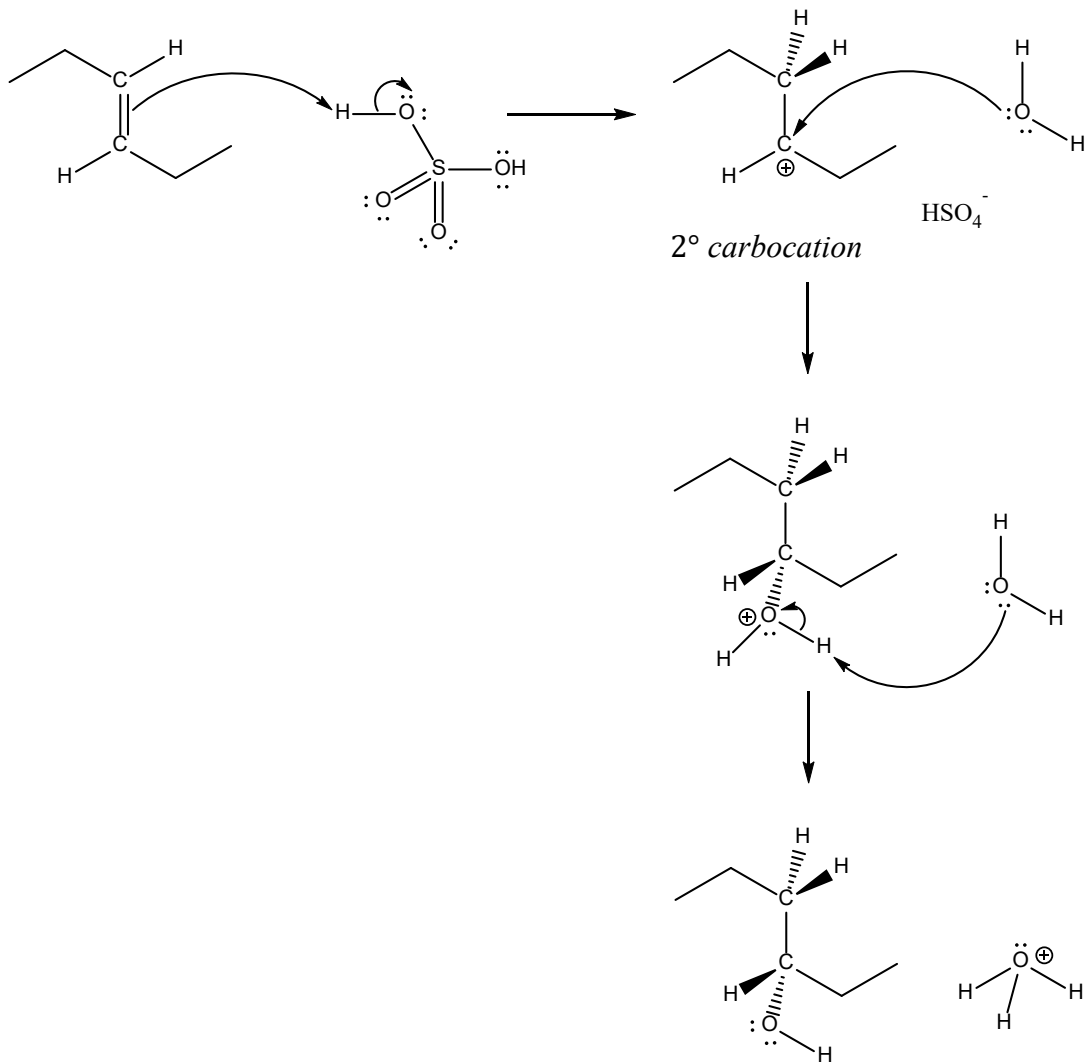


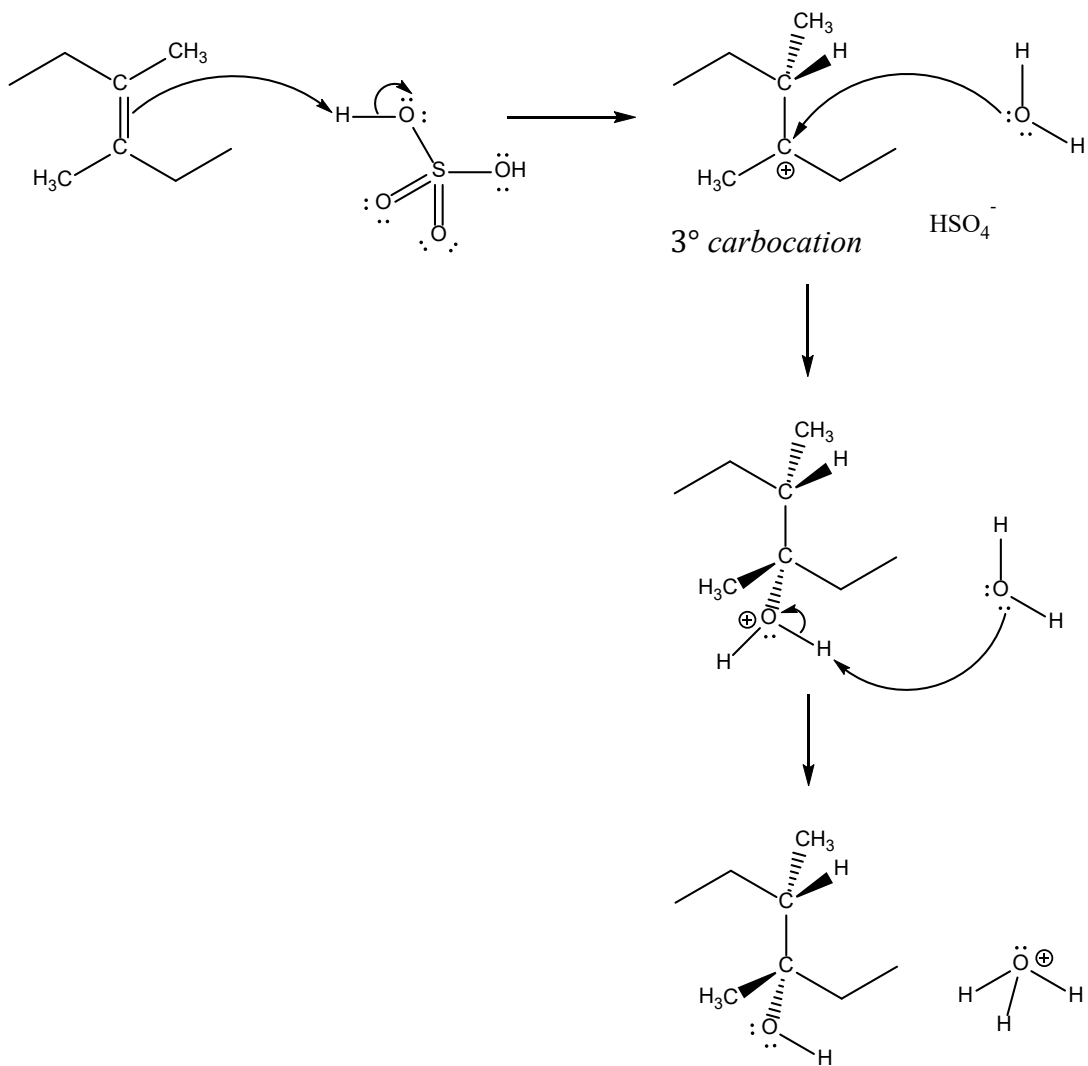
Answers to Exercise 11.5
Addition of H₂O to Alkenes

1.
(a)



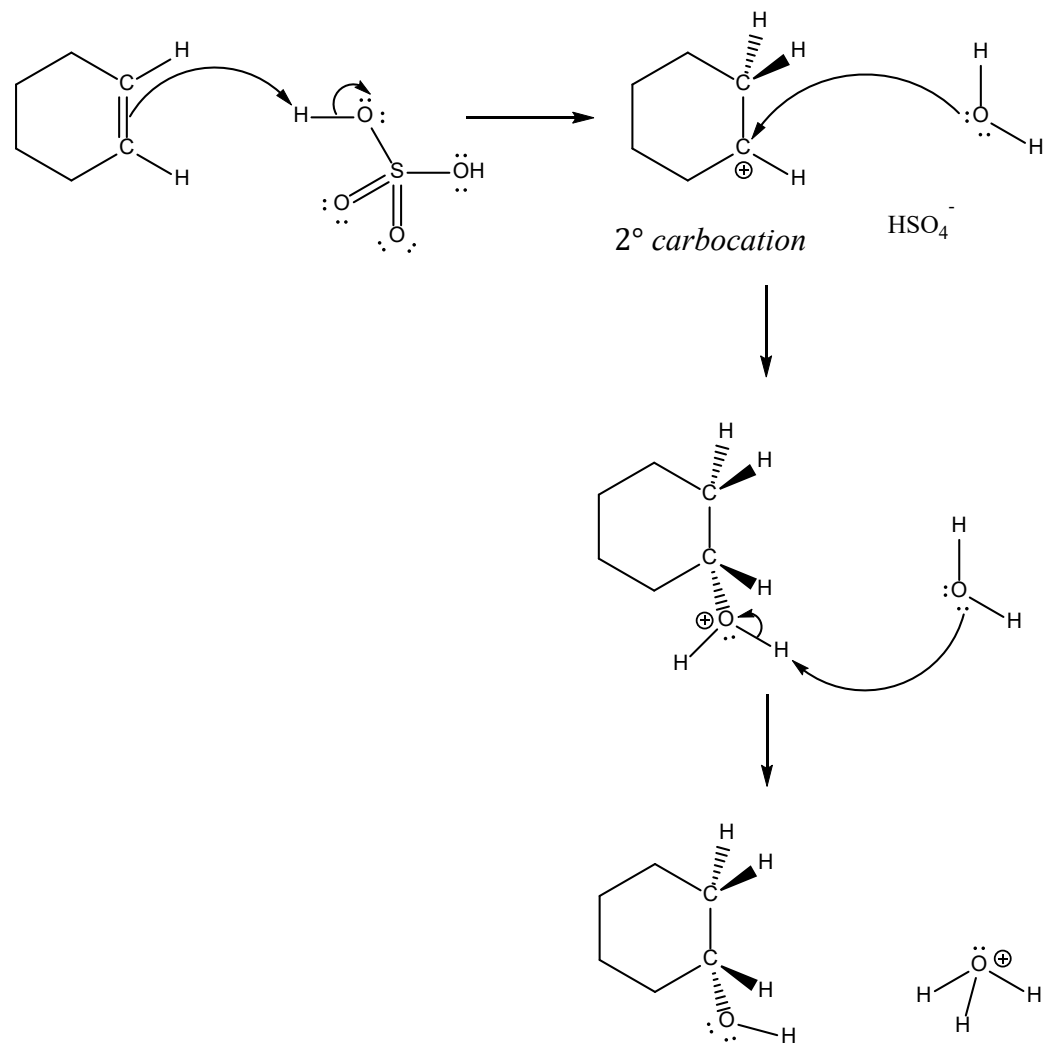
Product is chiral. You may draw either enantiomer.

(b)



*Product contains 2 chirality centers.
You may draw any of the four possible stereoisomers.*

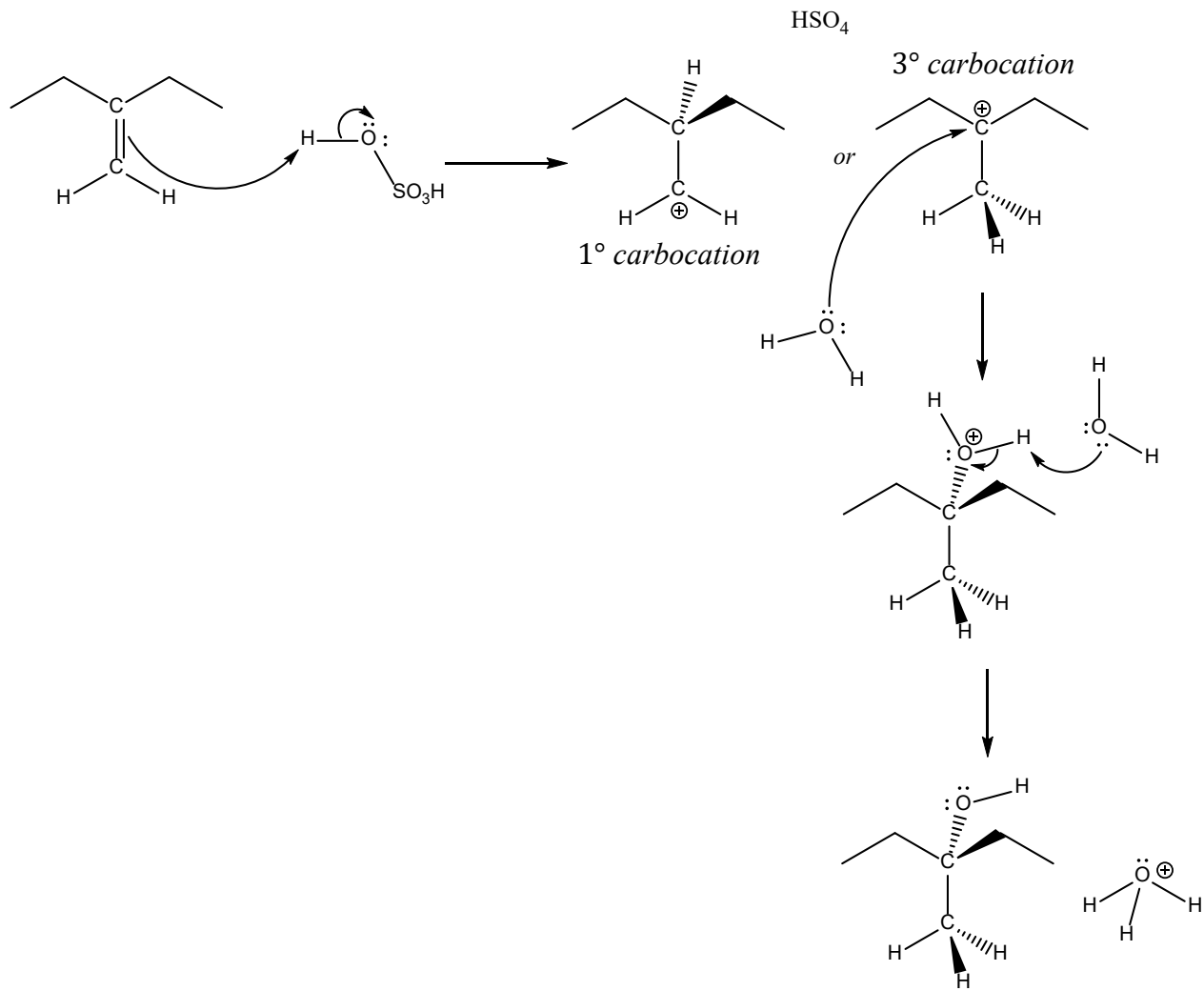
(c)



Product is not chiral.

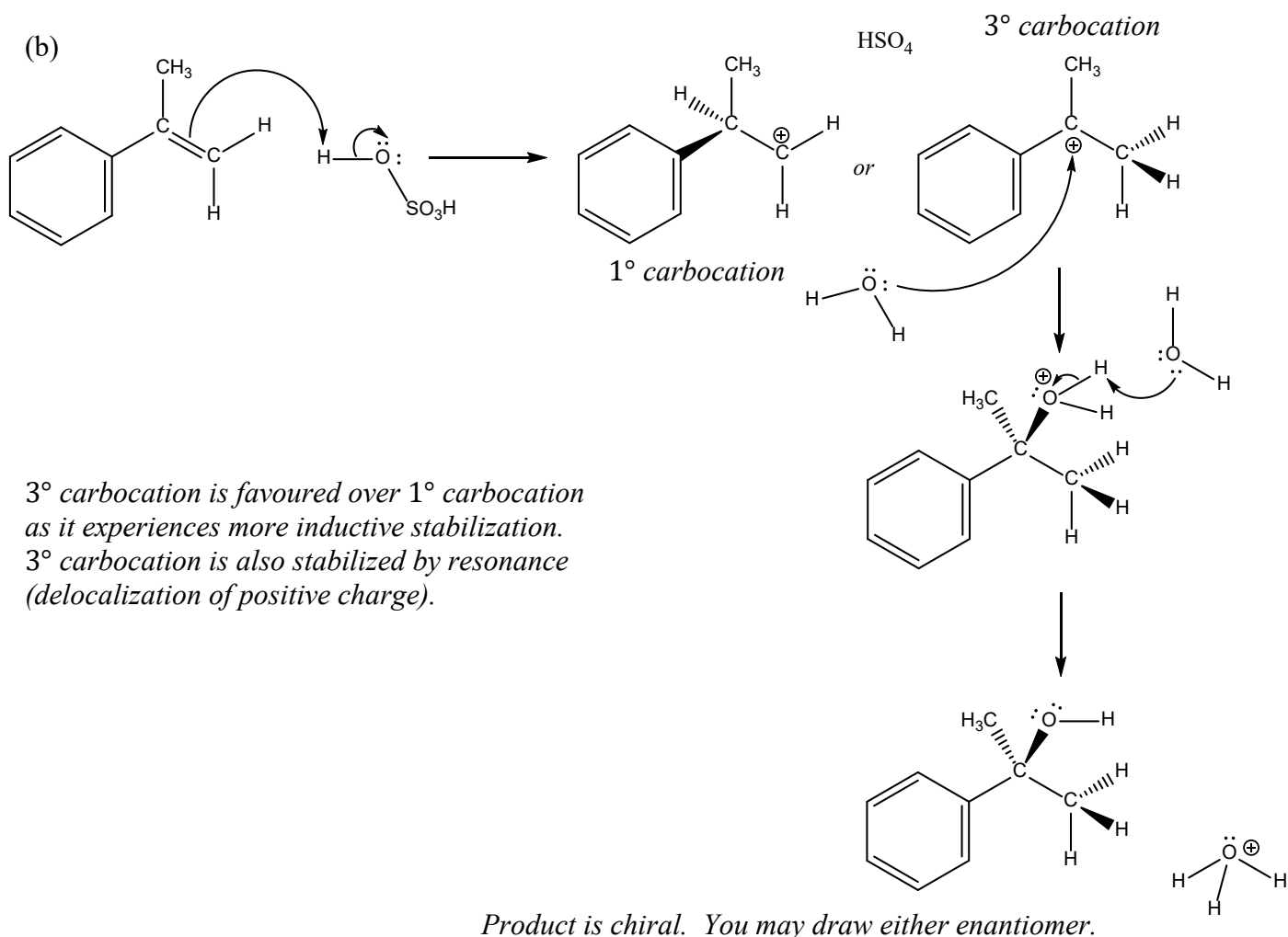
2.

(a)



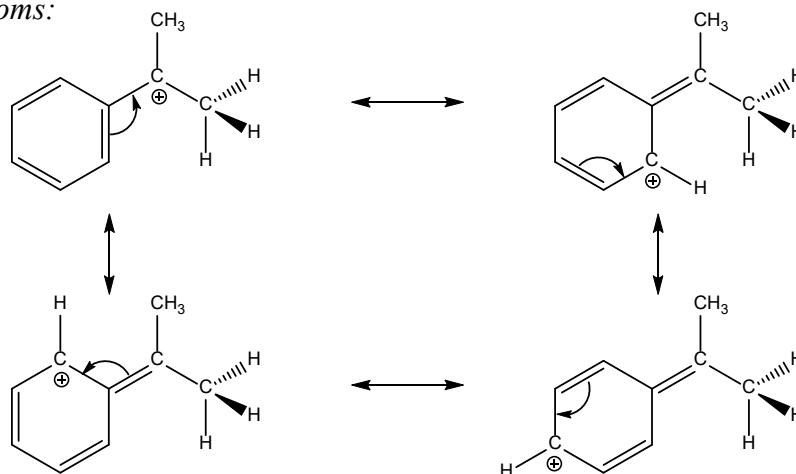
Product is not chiral.

3° carbocation is favoured over 1° carbocation as it experiences more inductive stabilization.

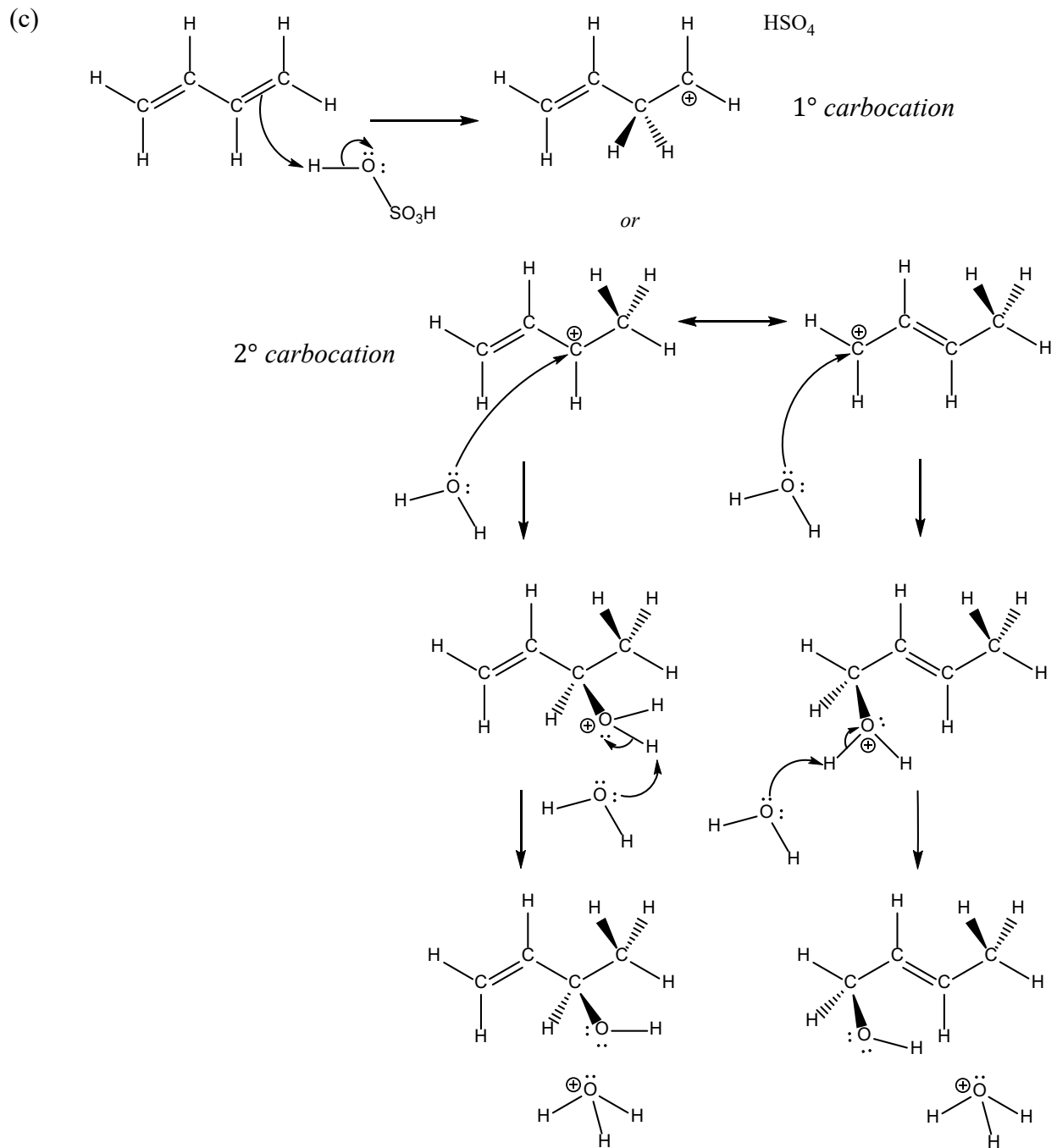


3° carbocation is favoured over 1° carbocation as it experiences more inductive stabilization. 3° carbocation is also stabilized by resonance (delocalization of positive charge).

The 3° carbocation intermediate in 2(b) has its positive charge delocalized (shared) over four carbon atoms:



This does not result in other addition products because reactions in which benzene rings stop being benzene rings are highly unfavourable. So, only the option that preserves the benzene ring is observed.



This product is chiral. This product is not chiral.
 You may draw either enantiomer.

2° carbocation is favoured over 1° carbocation as it experiences more inductive stabilization.
 2° carbocation is also stabilized by resonance (delocalization of positive charge).

The cis-isomer of the product on the right is also possible (though less favoured than the trans).