

LEC (15)

CHEM 30A

Nov 4th

(1)

(1) CARBOCATIONS

READ 6.3-6.5

(2) REARRANGEMENT

PROBLEMS 6.4-6.7

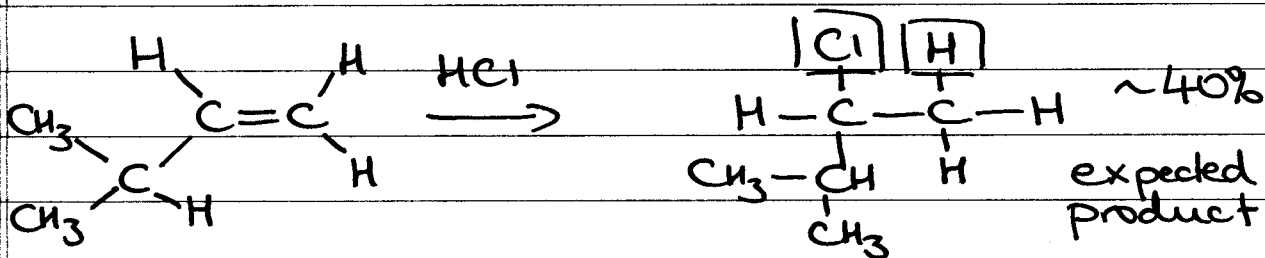
(3) ADDITION of H<sub>2</sub>O

(4) ADDITION of Br<sub>2</sub>/Cl<sub>2</sub>

(1) CARBOCATIONS

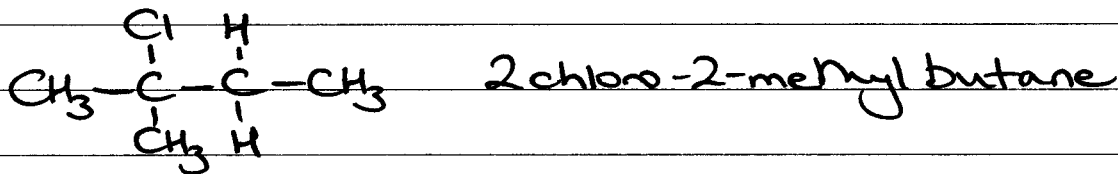
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(2) REARRANGEMENT

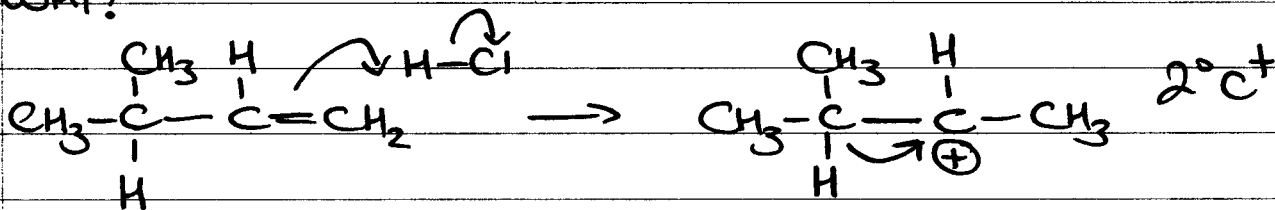


2-chloro-3-methylbutane

other 60%

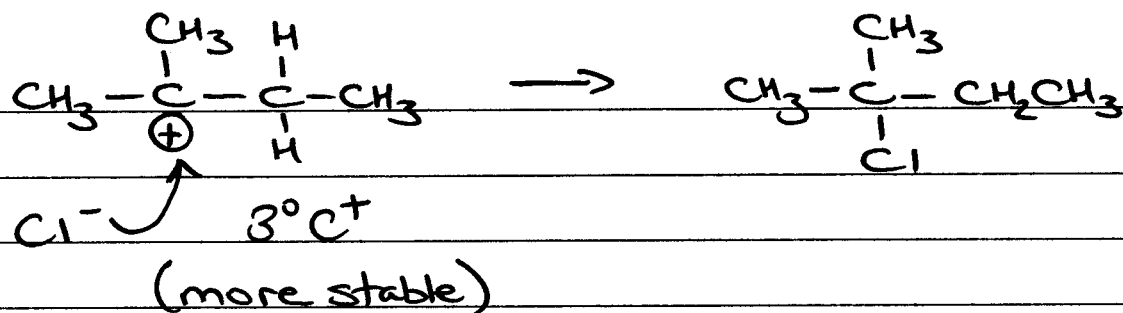


WHY?



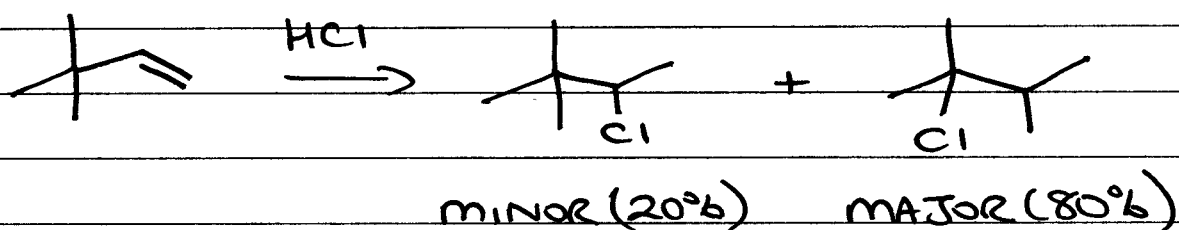
1,2 hydride shift  
(H<sup>-</sup>)

2



Rearrangement is possible whenever a carbocation is formed.

consider:



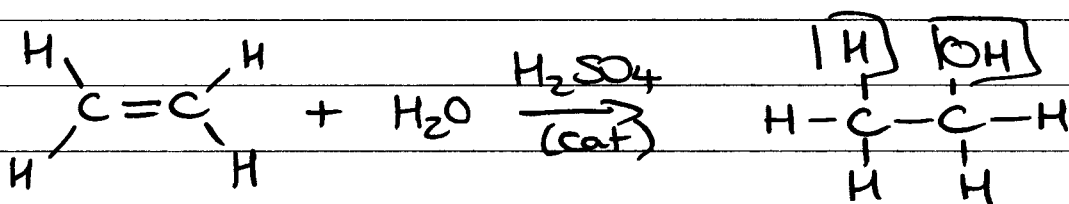
WHY? not 1,2 H<sup>-</sup> shift, but 1,2 methyl shift

2° C<sup>+</sup> → 3° C<sup>+</sup>

(rarely reverse, but is possible - ring strain)

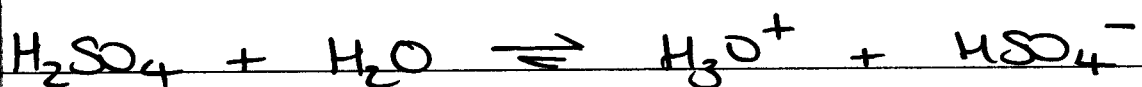
[1° C<sup>+</sup> in reality do not really form during reactions in solution] UNSTABLE

③ ADDITION of H<sub>2</sub>O (acid catalysed hydration)

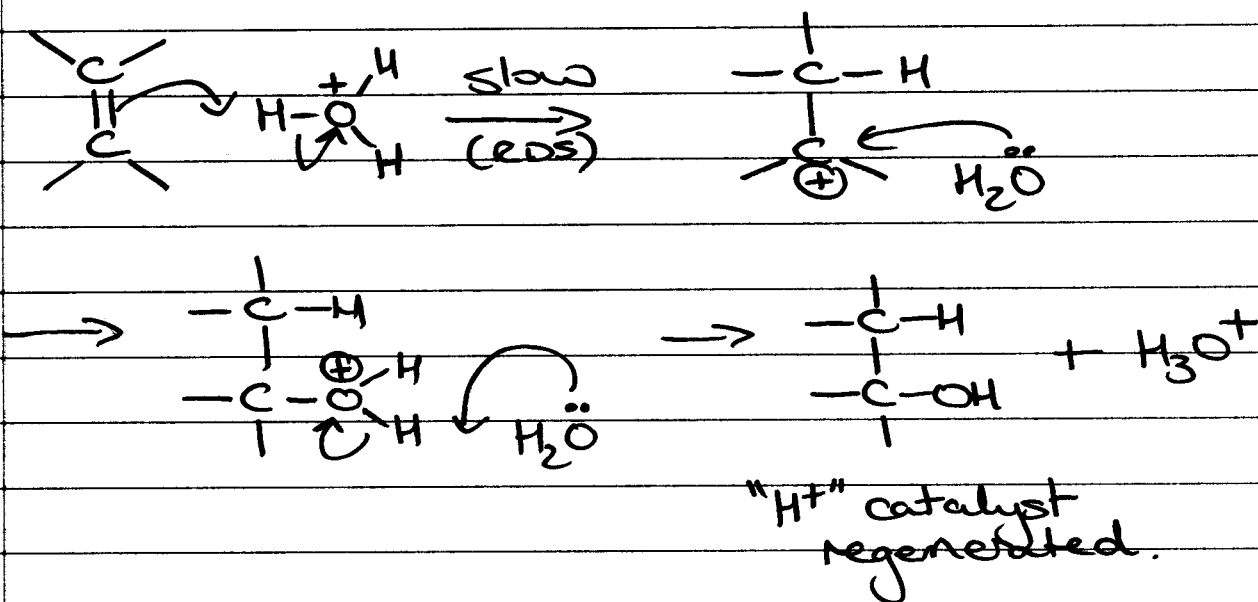


H<sub>2</sub>O alone not ACIDIC enough to protonate C=C

(3)



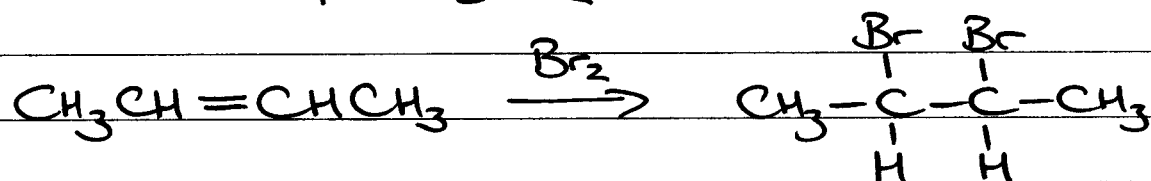
mechanism:



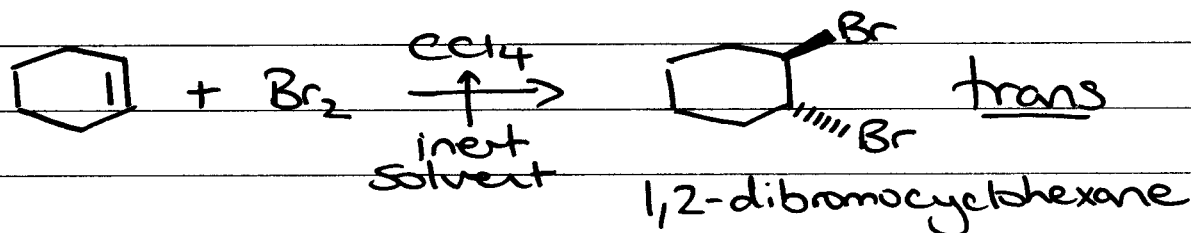
mechanism involves a CARBOCATION, so:

- (i) Rearrangement is possible
- (ii) MARKOVNIKOV selectivity is observed.

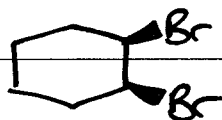
#### (4) ADDITION of $\text{Br}_2/\text{Cl}_2$



note:



STEREOSPECIFIC REACTION



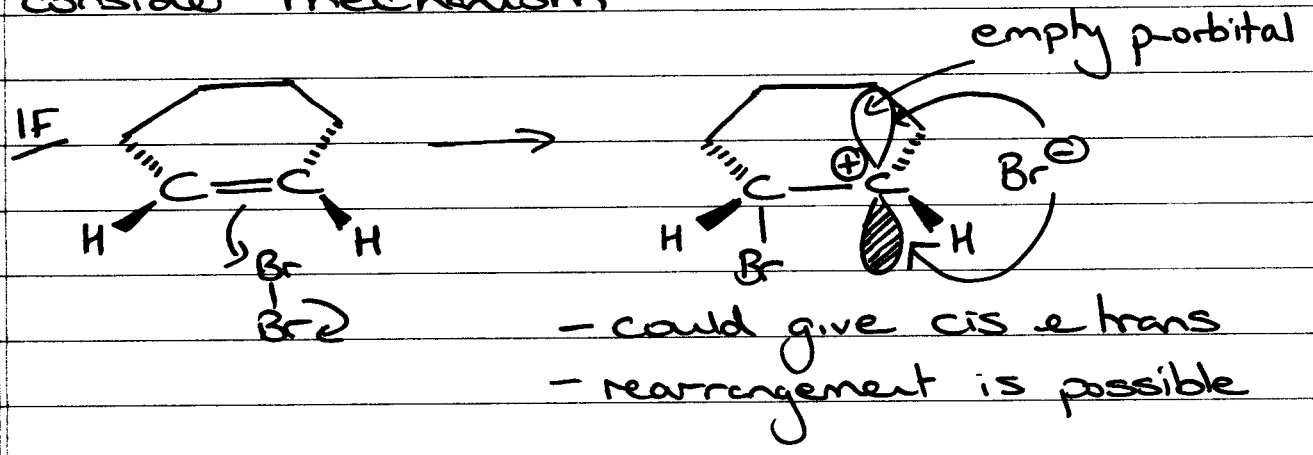
cis isomer is NOT formed.

Note:

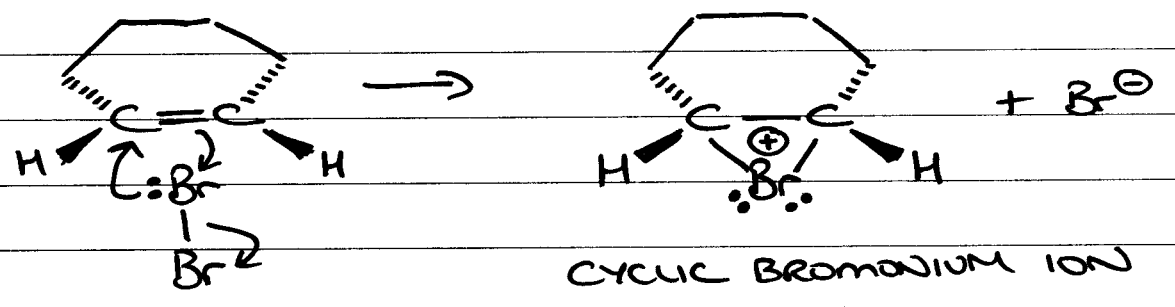
STEREOSPECIFIC (exclusion)  
STERESELECTIVE (preference)

same for REGIO...

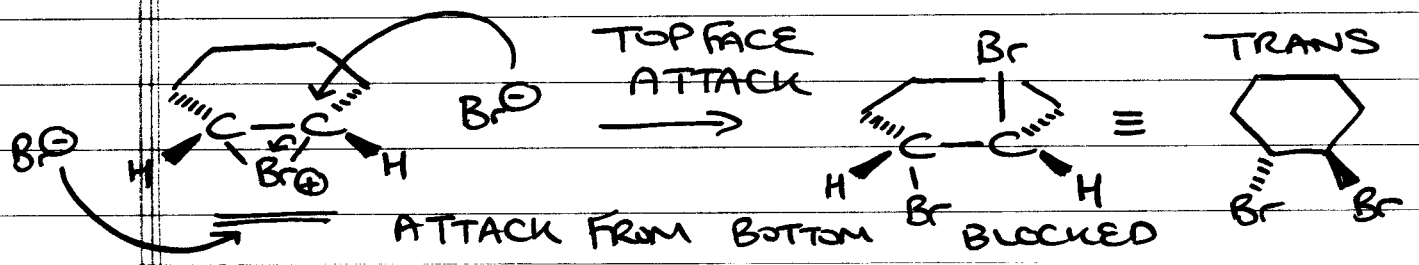
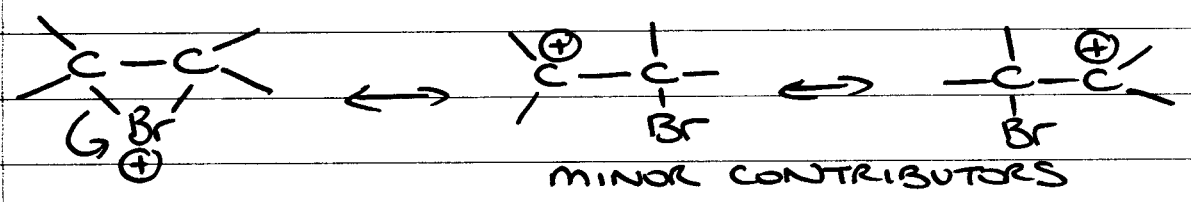
- consider mechanism



mechanism is:



CONTRIBUTING "RESONANCE" STRUCTURES



5

REACTION PROCEEDS w/ ANTISTEREOSPECIFICITY

- if  $\text{Br}^\ominus$  had attached at other C atom, it would lead to the ENANTIOMER