

CHM 234, Spring 2018
QUIZ #7 ANSWER KEY

(hit the RETURN Button to return to the Main Quiz Page)

QUESTION 1

MC29ea

Give the IUPAC name for the following structure
(stereochemistry is ignored)



- A 1-methoxy-3-bromohexane
 - B 3-bromo-1-methoxyhexane
 - C 3-bromohexyl methyl ether
 - D methyl 3-bromohexyl ether
-

A 1-methoxy-3-bromohexane
substituents need to be ordered alphabetically

B 3-bromo-1-methoxyhexane

C 3-bromohexyl methyl ether

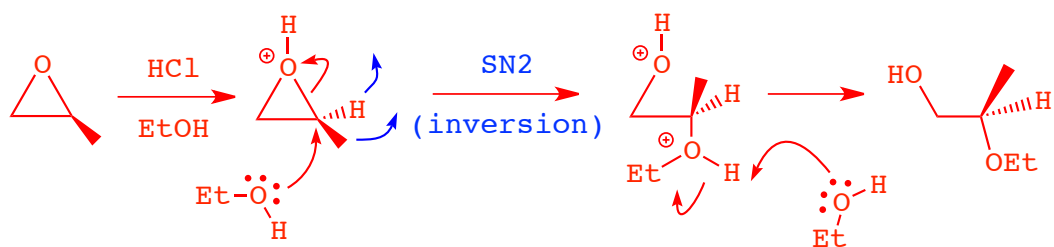
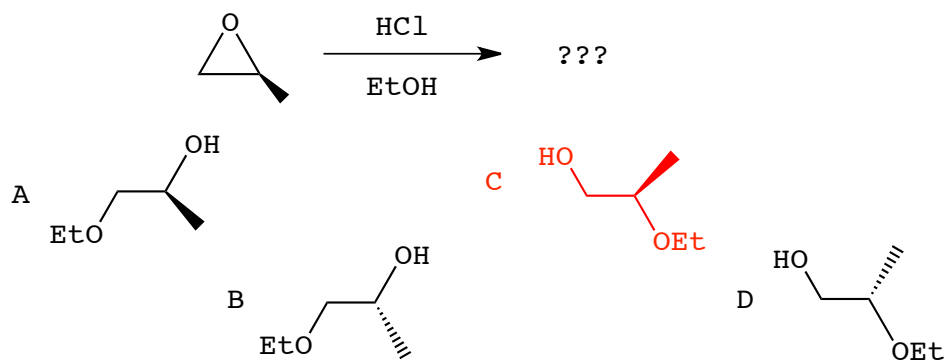
these "work", but are not IUPAC names

D methyl 3-bromohexyl ether

QUESTION 2

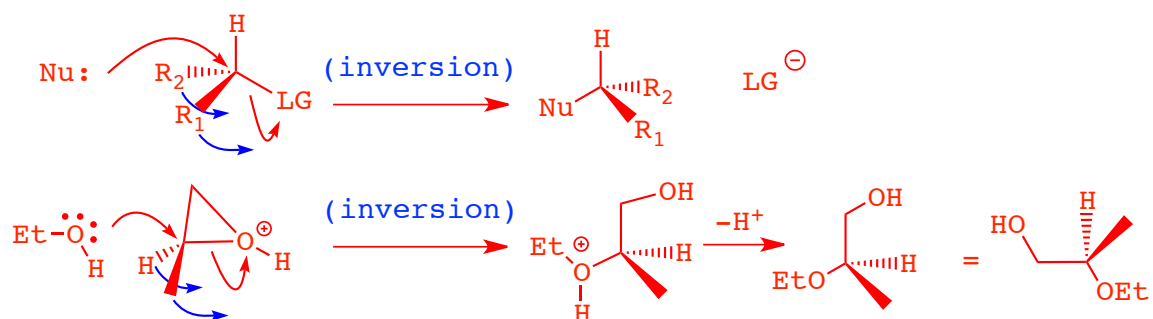
MC29ea

Give the product of the following reaction



EtOH nucleophile attacks
the most substituted side
of the protonated epoxide

think about the stereochemistry of the SN2 inversion this way



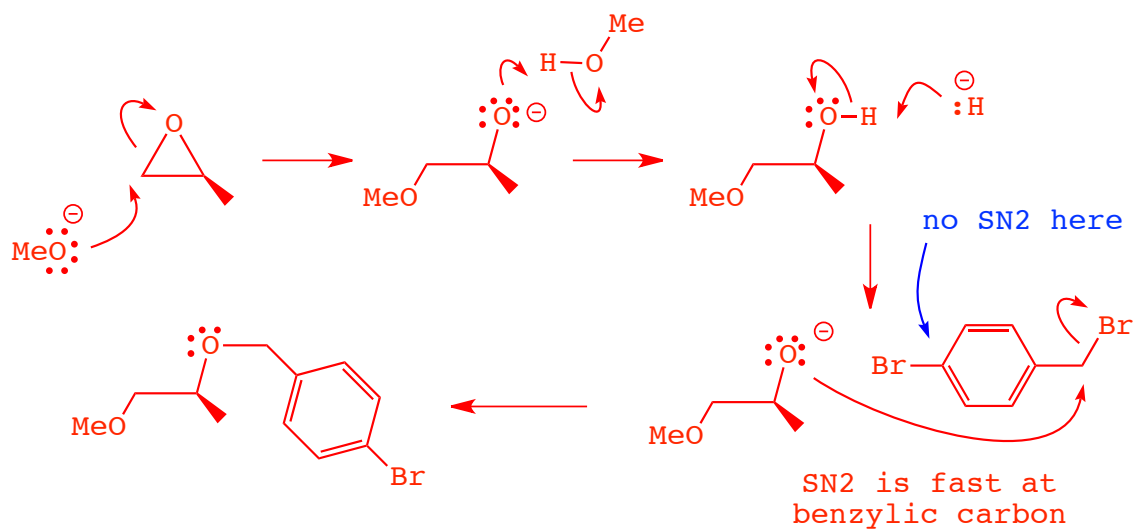
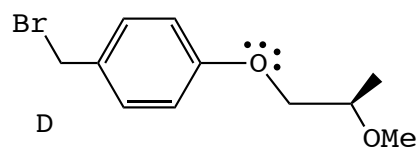
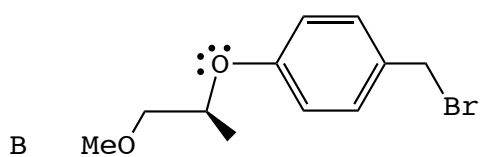
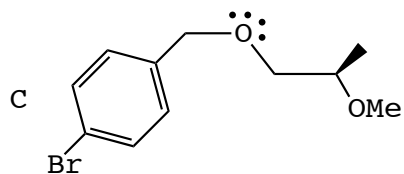
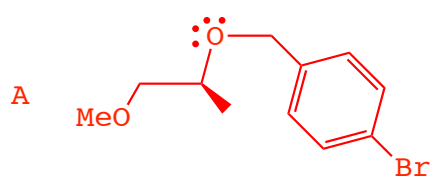
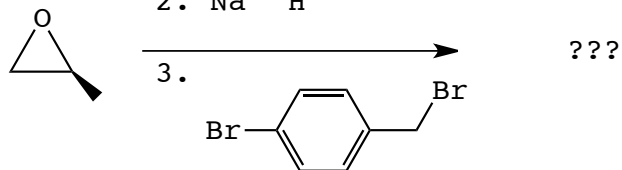
QUESTION 3

MC29ec

Give the product of the following reaction sequence

1. $\text{Na}^+ \text{ } ^-\text{OMe}/\text{MeOH}$

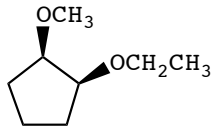
2. $\text{Na}^+ \text{ } ^-\text{H}$



QUESTION 4

MC29ed

Which is the correct IUPAC name for the following compound?



- A (1R)-methoxy-(2S)-ethoxycyclopentane
- B cis-1-methoxy-2-ethoxycyclopentane
- C (1S)-ethoxy-(2R)-methoxycyclopentane
- D cis-1-ethoxy-2-methoxycyclopentane

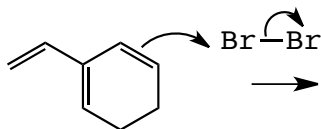
you can not use cis-1-ethoxy-2-methoxycyclopentane here because there are two molecules with this name, the one given and its enantiomer.....



QUESTION 5

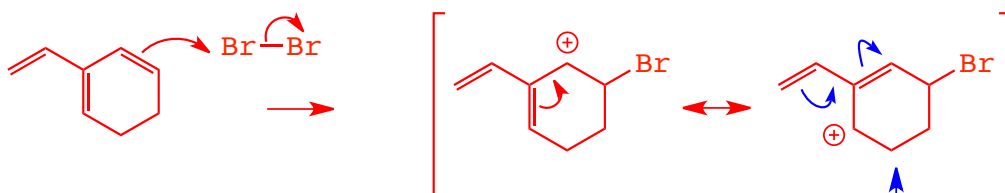
MC30b

What is the TOTAL NUMBER of reasonable resonance structures that can be drawn for the first intermediate in the following reaction:

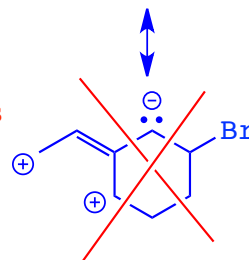


A two
B three

C four
D five



there is no bromonium ion intermediate in addition of Br_2 to dienes, check your notes

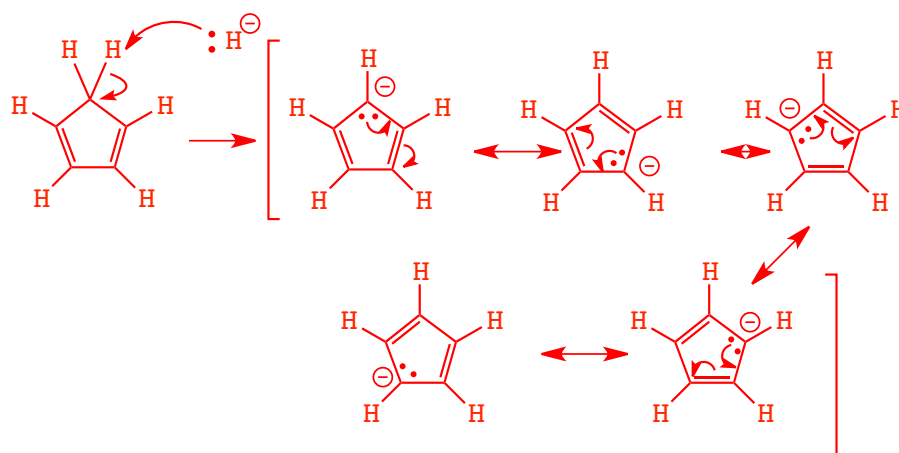
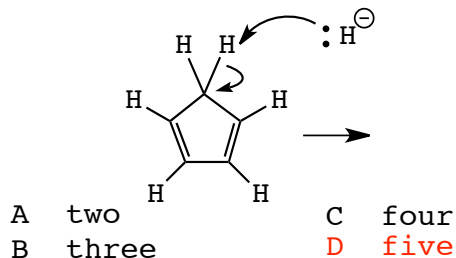


there is no reasonable way to get the other double bond involved in resonance here

QUESTION 6

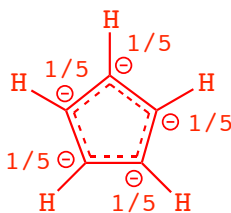
MC30c

What is the TOTAL number of reasonable resonance structures that can be drawn for the product of the following acid/base reaction?



IMPORTANT: This does NOT show the same thing drawn FIVE different times, the different resonance contributors show the negative charge being localized on DIFFERENT carbon atoms

The resonance contributors show that the negative charge is delocalized onto all five carbon atoms, each contributes equally to the structure, and so the "actual" anion can be drawn as follows:

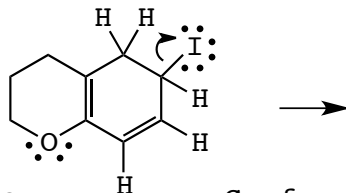


the equal contribution from each contributor shows that there is effectively 1/5 of a negative charge on each carbon atom

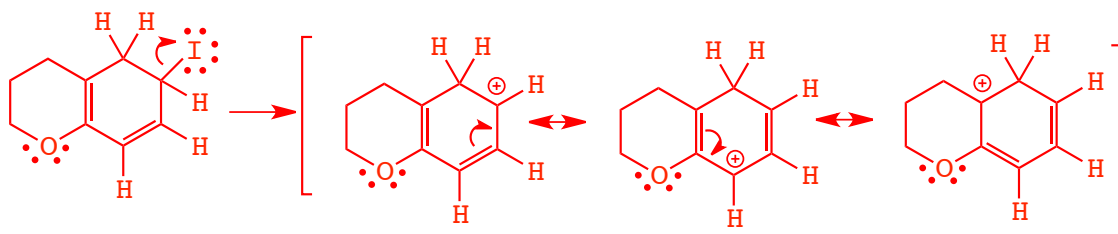
QUESTION 7

MC30d

What is the TOTAL NUMBER of reasonable resonance structures that can be drawn for the first intermediate in the following reaction:



- A two
B three
C four
D five



there is no reasonable way to get the non-bonding electrons on oxygen involved, the formal positive charge is never on the carbon to which the oxygen is attached

QUESTION 8

MC27m

Which best describes the product of the following reaction sequence?

