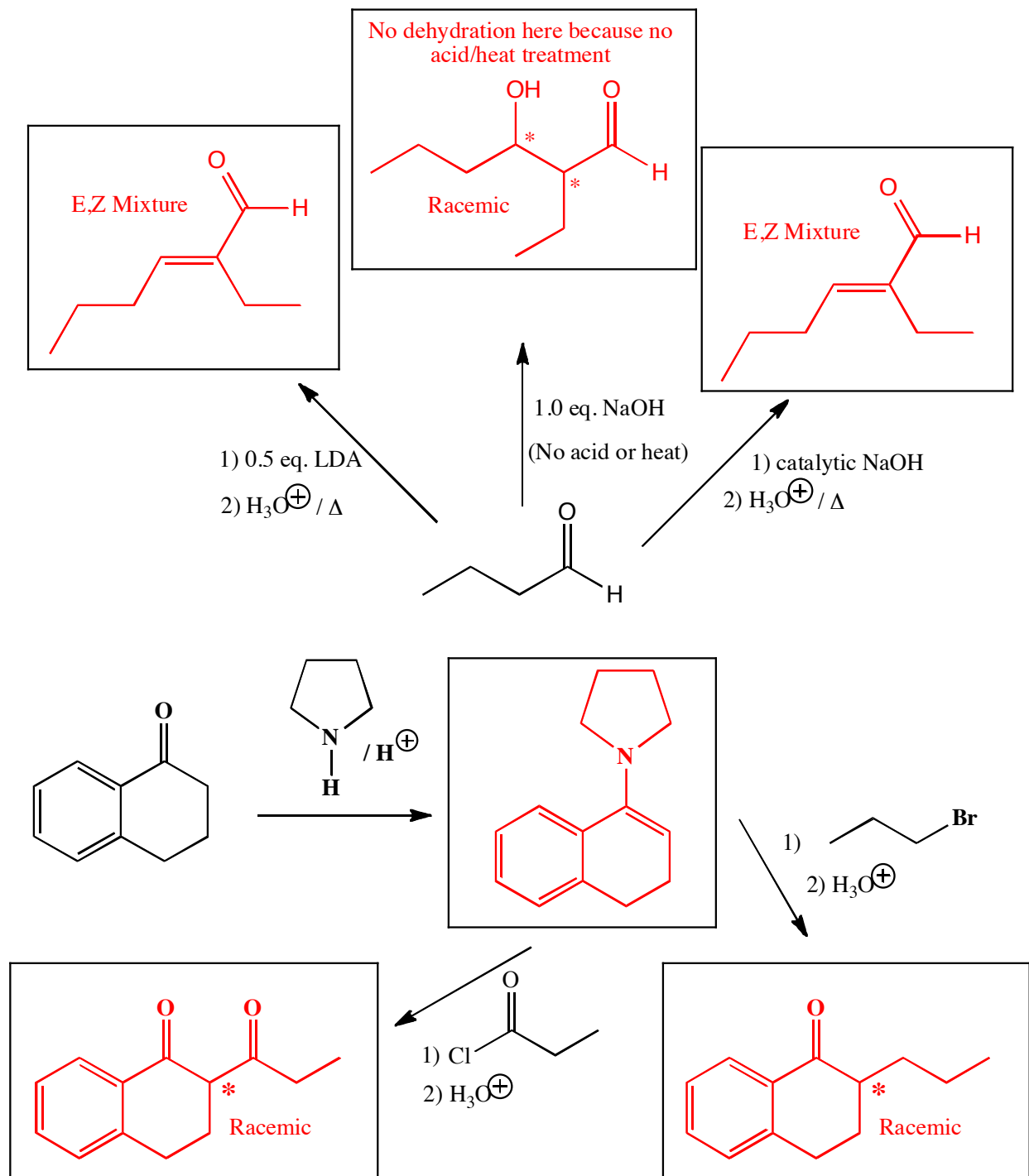
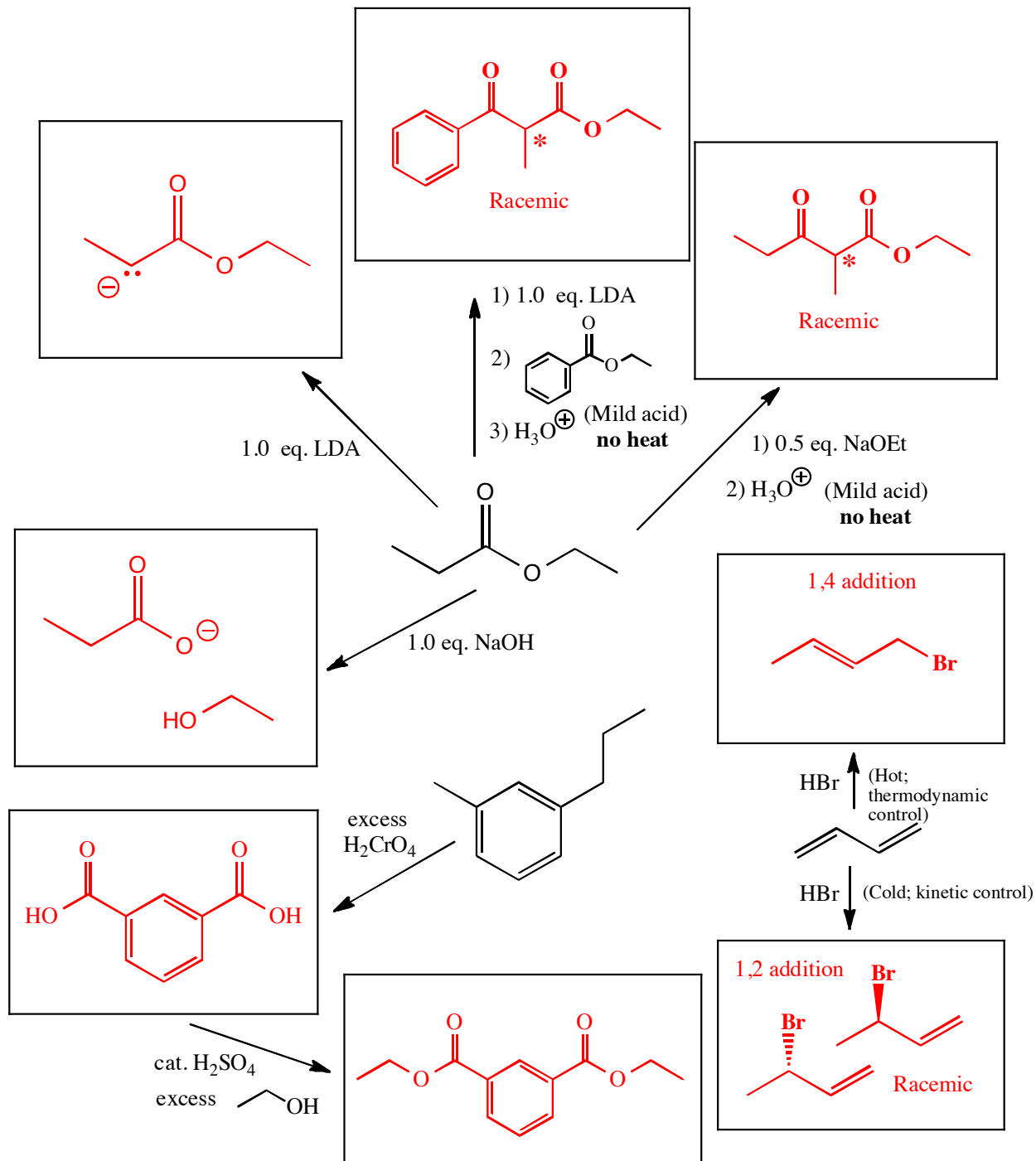


Homework 5
Organic Chemistry MCAT Review
Summer 2012
Brent Iverson

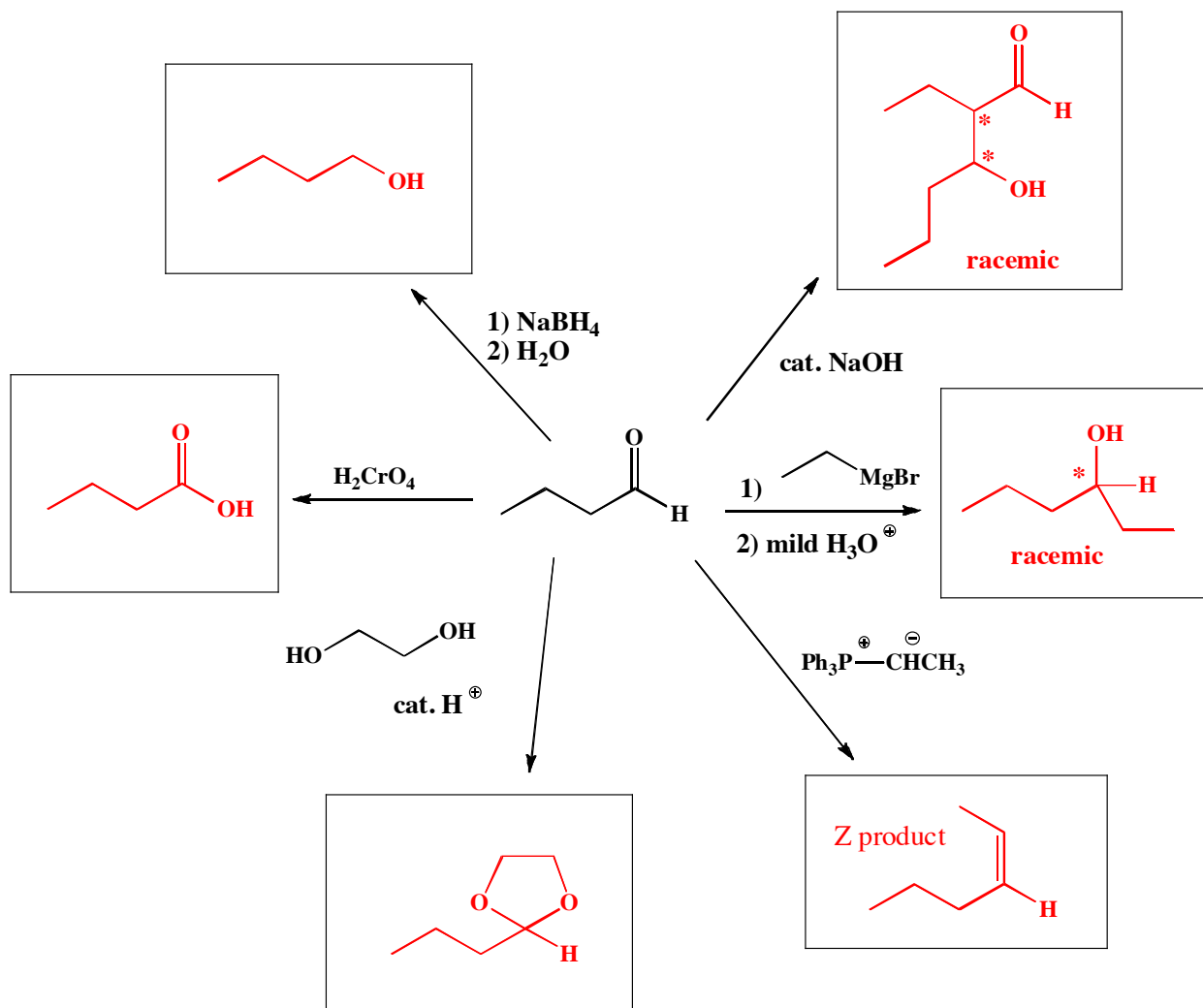
1. For the following reactions, draw the predominant product or products. When a new chiral center is created, mark it with an asterisk (*) and if a racemic mixture is produced, you must write "racemic" under your structure. If an E,Z mixture is produced as the result of a dehydration step, write E,Z mixture, but you only have to draw one isomer, not both. These directions are different than you may have seen before, and are intended to make it easier for you. You should read them again so you know what we want.



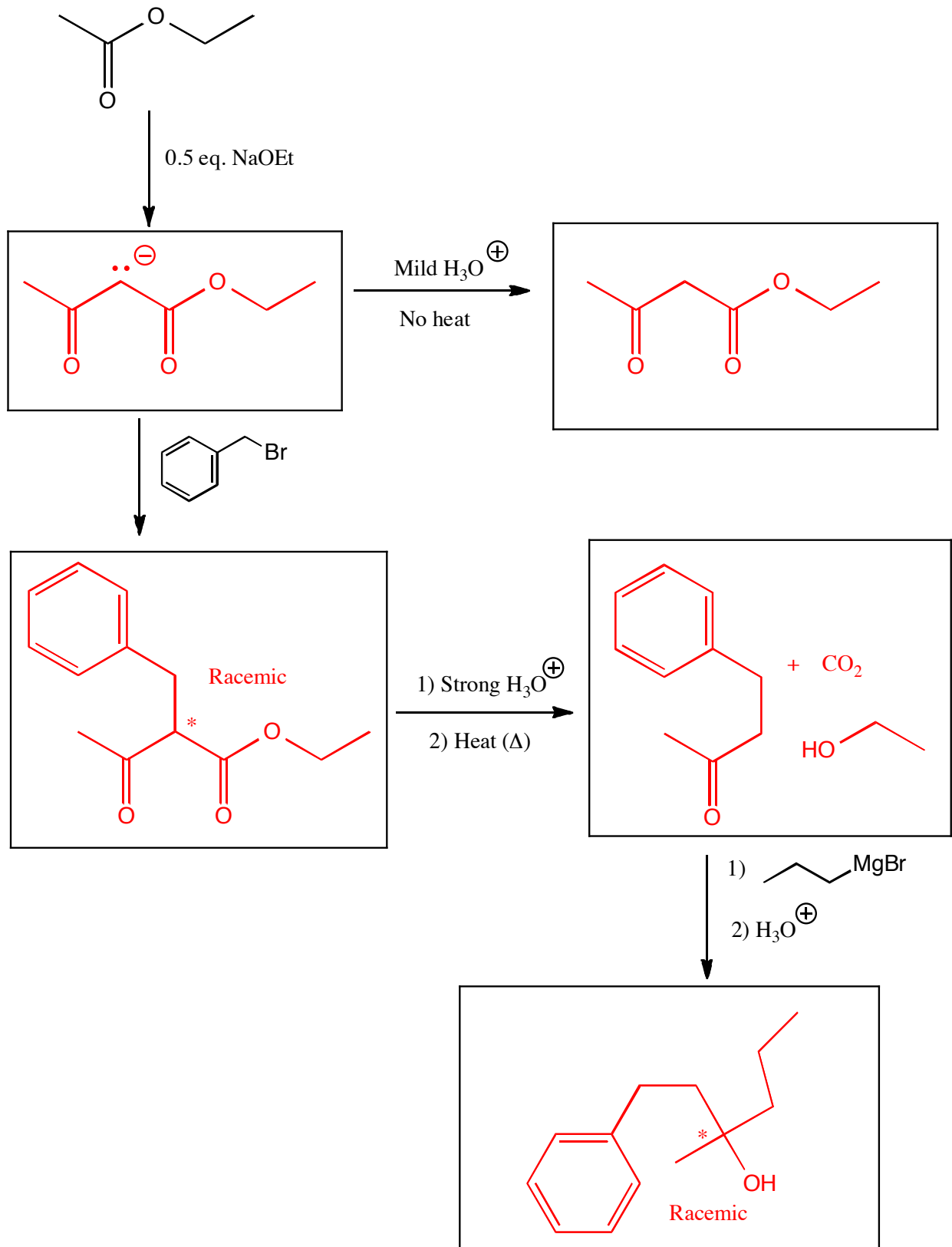
2. For the following reactions, draw the predominant product or products. When a new chiral center is created, mark it with an asterisk (*) and if a racemic mixture is produced, you must write "racemic" under your structure. If an E,Z mixture is produced as the result of a dehydration step, write E,Z mixture, but you only have to draw one isomer, not both. These directions are different than you may have seen before, and are intended to make it easier for you. You should read them again so you know what we want.



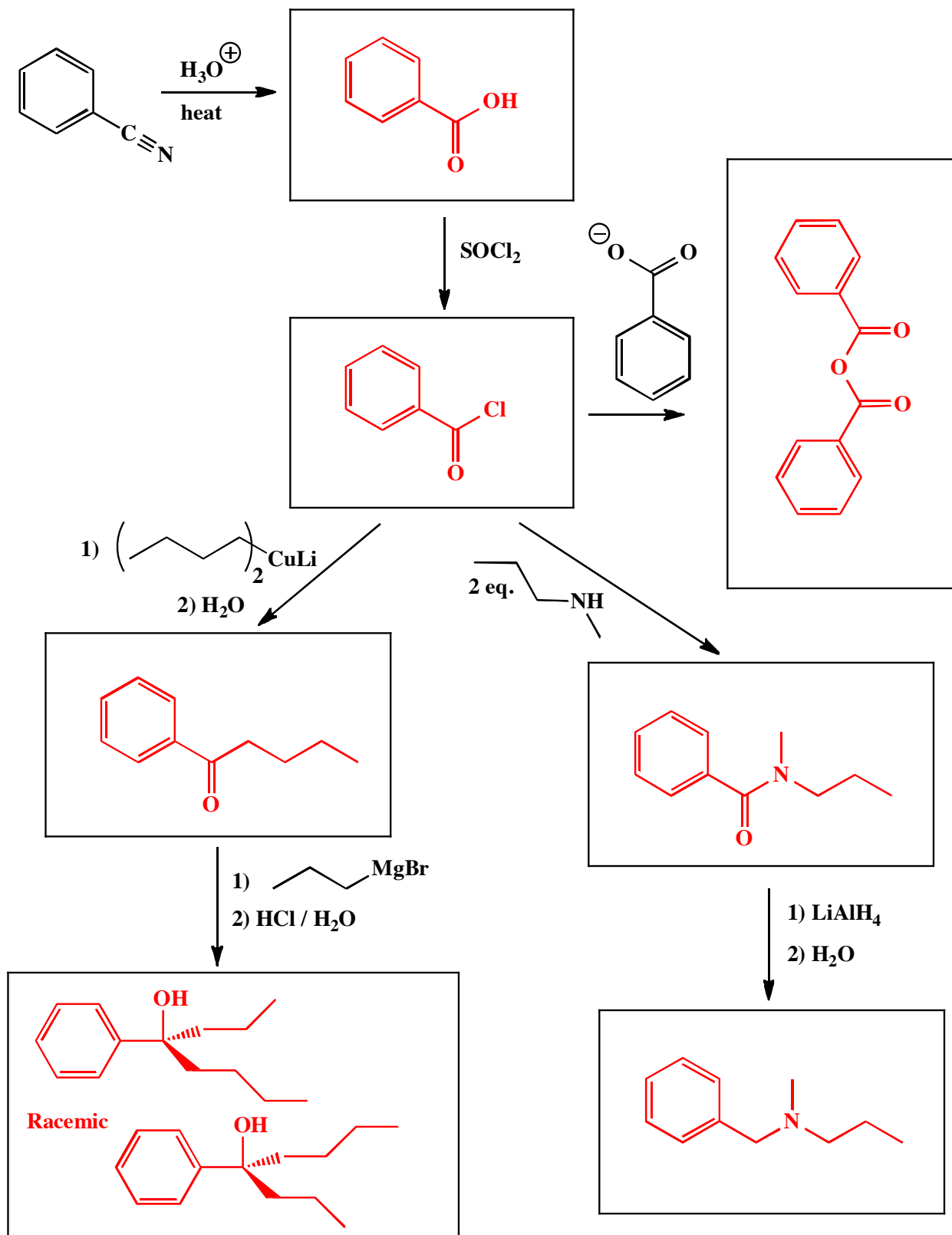
3. Fill in the boxes with the predominant product formed under the reaction conditions. If a new chiral center is formed in a racemic mixture, put an asterisk (*) next to it and write "racemic". If there is an aldol reaction on this page DO NOT DEHYDRATE IT!!!



4. Fill in the boxes with the predominant product formed under the reaction conditions. If a new chiral center is formed in a racemic mixture, put an asterisk (*) next to it and write "racemic".

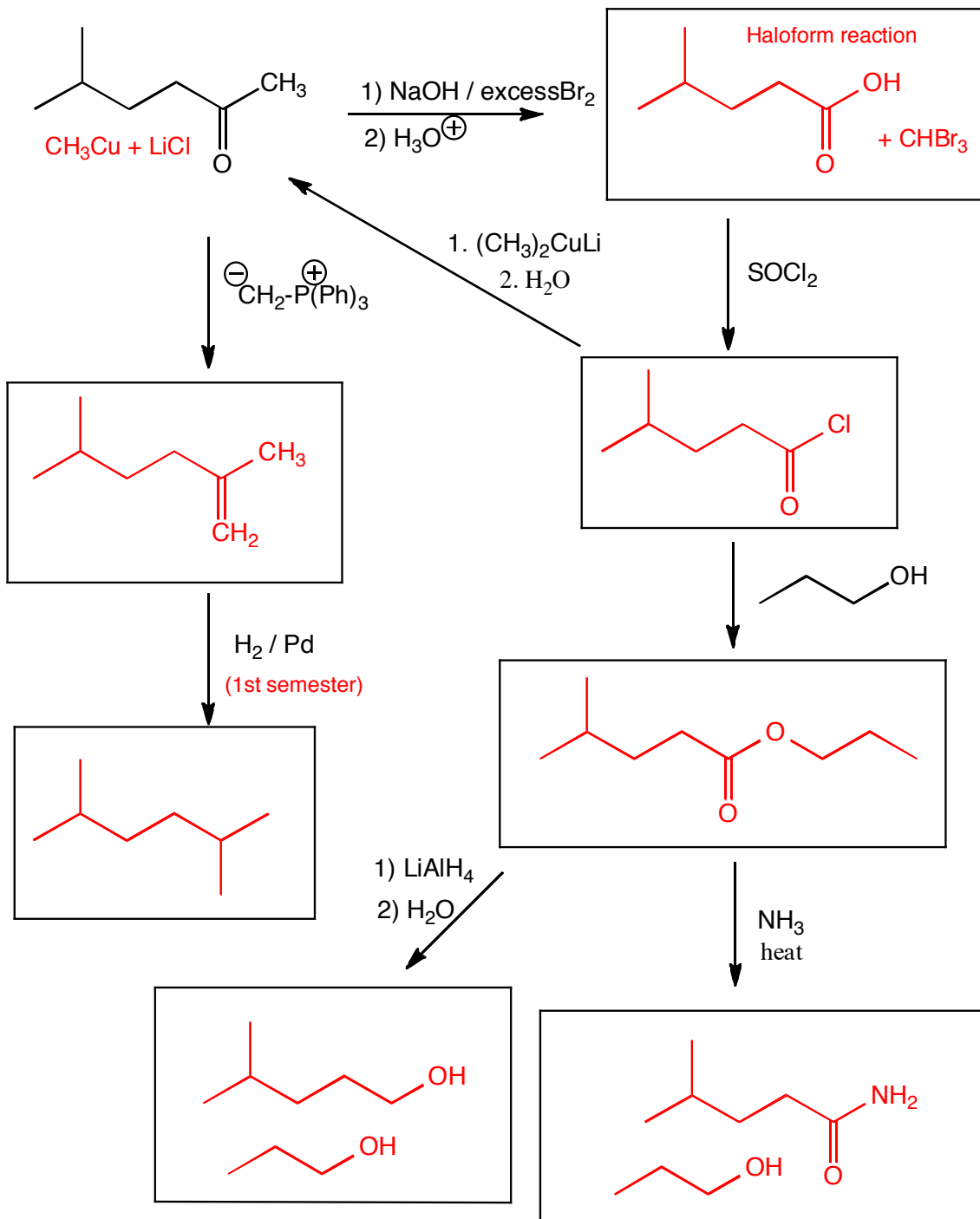


5. Fill in the box with the product or products that are missing from the following chemical reaction equations. When a racemic mixture is formed, you must write "racemic" under both structures EVEN THOUGH YOU DREW BOTH STRUCTURES.

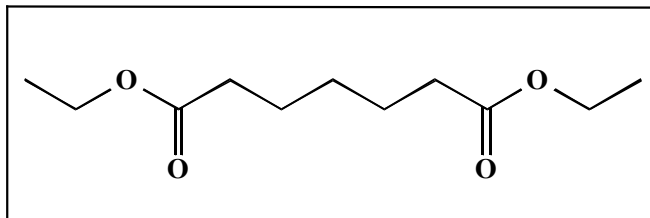


6. Fill in the box with the product or products that are missing from the following chemical reaction equations. When a racemic mixture is formed, you must write "racemic" under both structures EVEN THOUGH YOU DREW BOTH STRUCTURES.

Note: in principle, this could react on either side of the carbonyl, but due to accessibility, i.e. the methyl group is more accessible, reaction is always observed at the methyl group in these reactions.

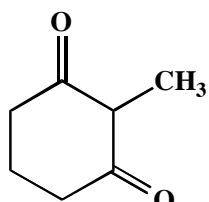
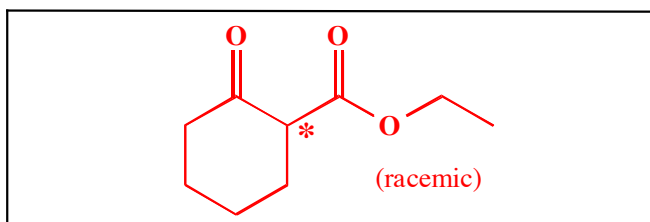
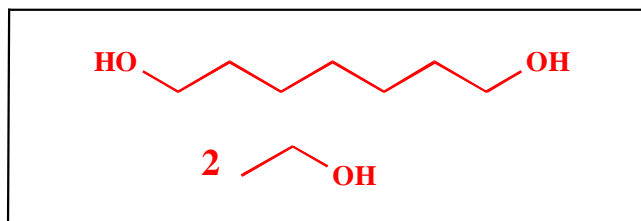


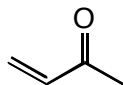
7. For the following reactions, draw the predominant product or products. When a new chiral center is created, mark it with an asterisk (*) and if a racemic mixture is produced, you must write "racemic" under your structure. If an E,Z mixture is produced as the result of a dehydration step, write "E,Z mixture", but you only have to draw one isomer, not both. These directions are different than you may have seen before, and are intended to make it easier for you. You should read them again so you know what we want.

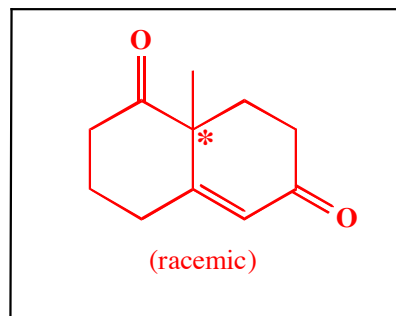


1) 1.0 eq. NaOEt
2) H_3O^+
(mild acid, no heat)

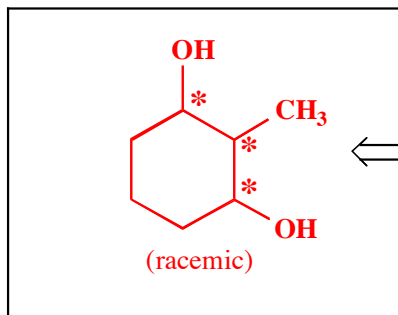
1) excess LiAlH_4
2) H_2O



1) 1.0 eq. NaOEt
2) 
3) H_3O^+
(stronger acid, with heat)



1) excess LiAlH_4
2) H_2O

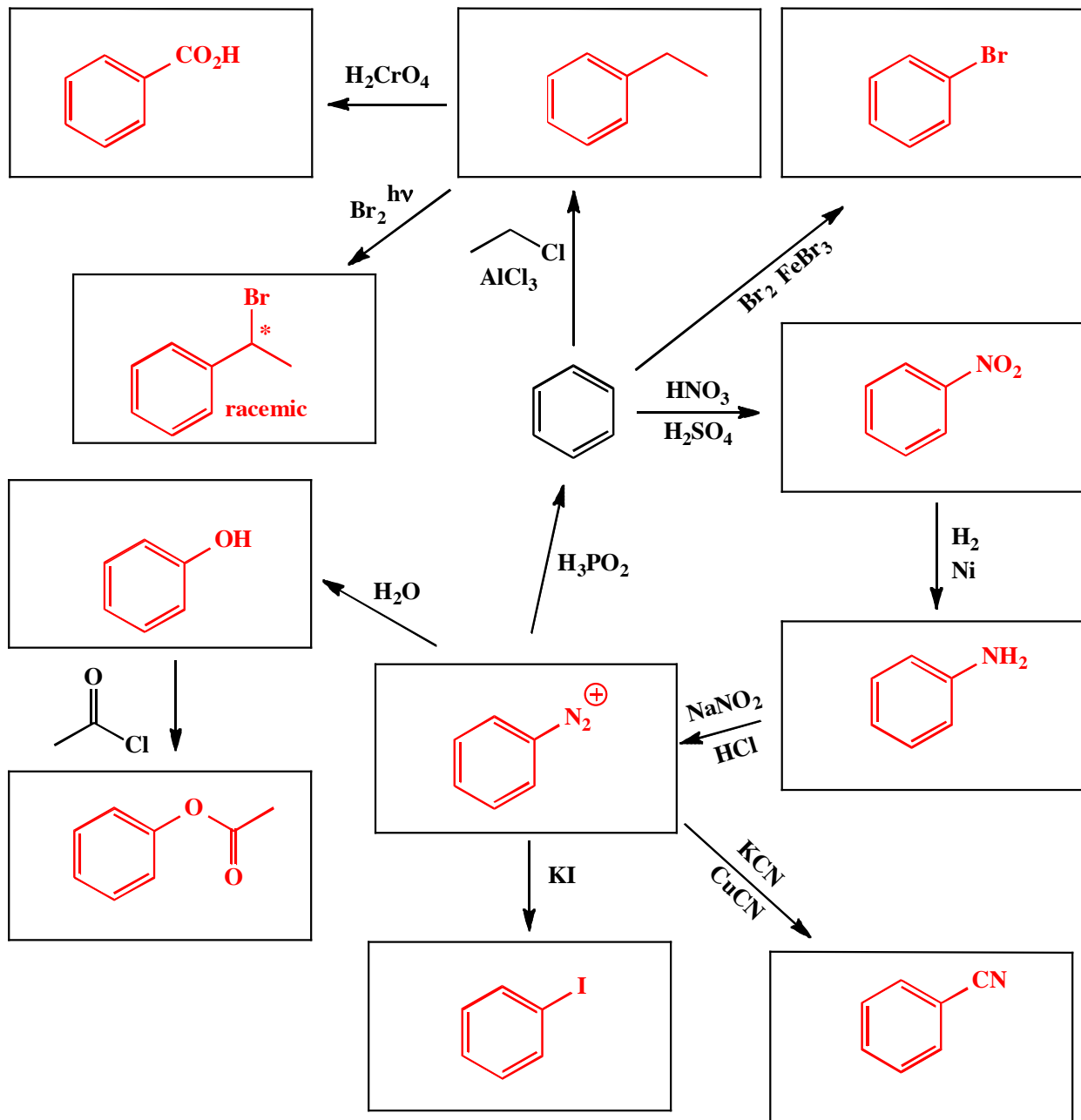


Hardest problem: How many different stereoisomers are created in this reaction?

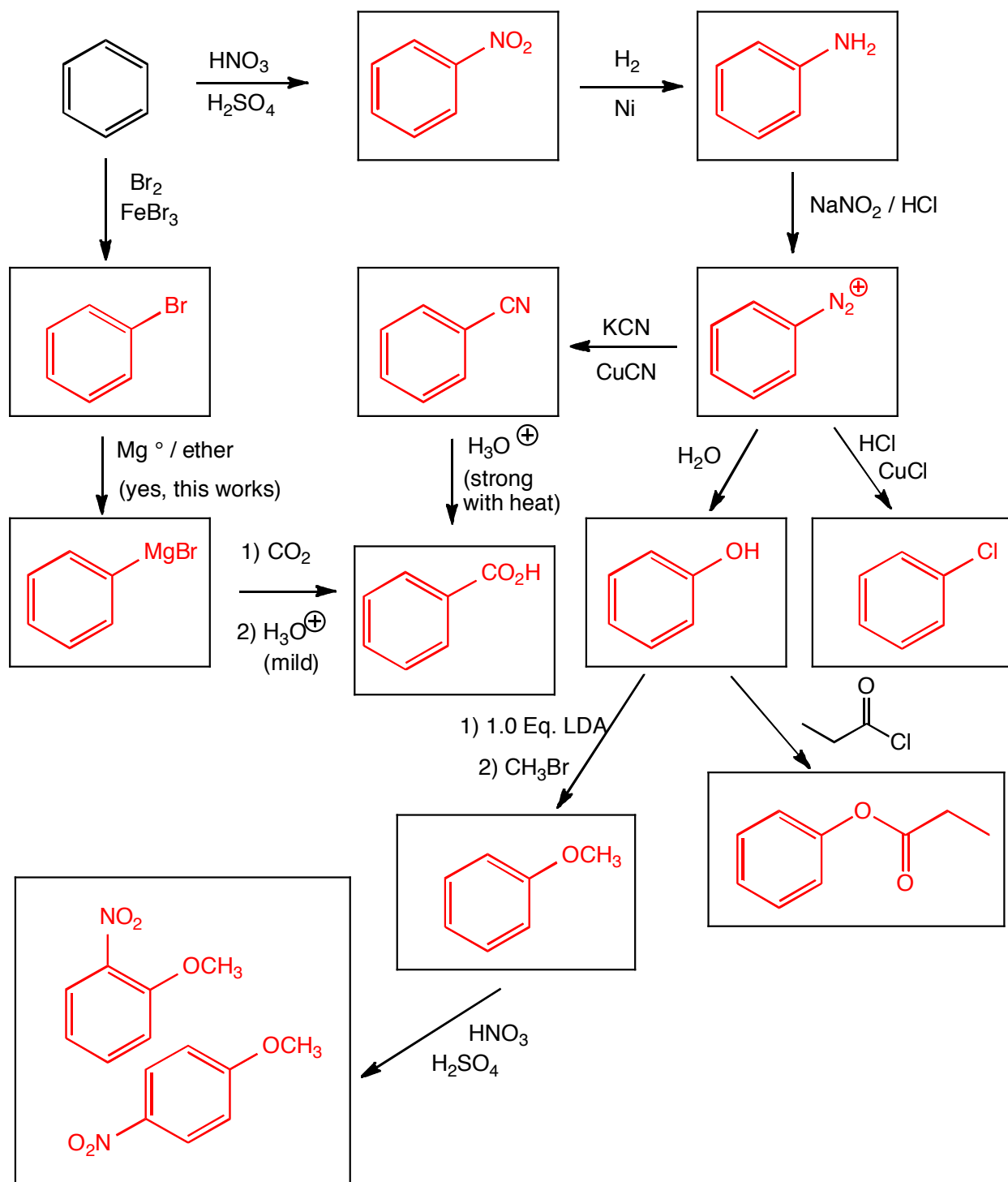
6

(There are two meso compounds)

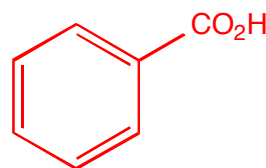
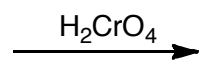
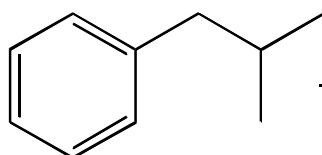
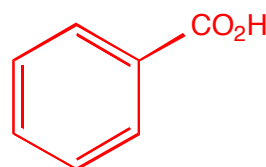
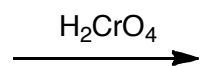
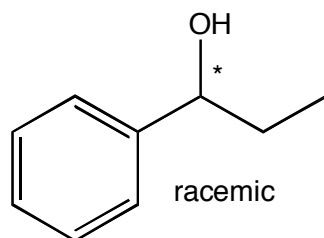
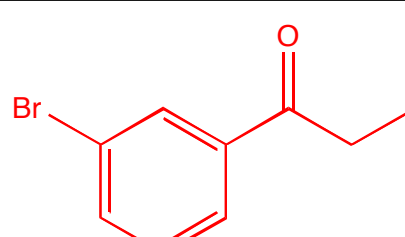
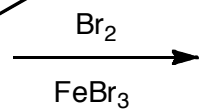
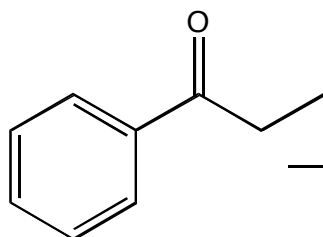
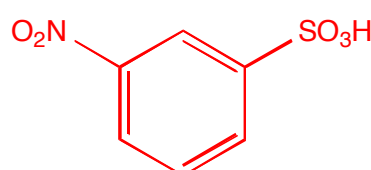
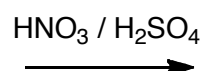
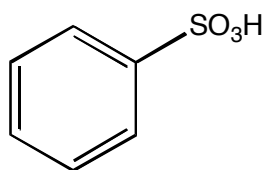
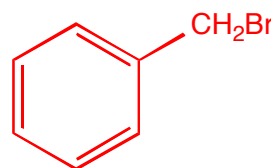
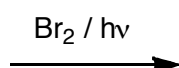
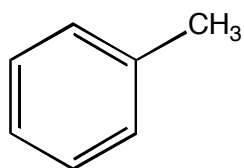
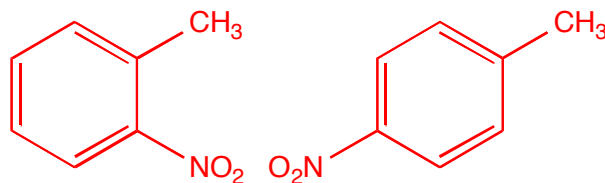
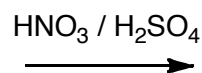
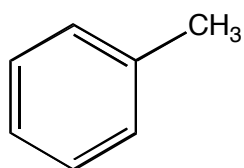
8. Fill in the boxes with the predominant product formed under the reaction conditions. If a new chiral center is formed in a racemic mixture, put an asterisk (*) next to it and write "racemic". If ortho/para products are created, you must draw both.



9. For the following reactions, fill in the boxes with the predominant product or products. When ortho/para products are both produced, you must draw both. When a new chiral center is produced, put an asterisk (*) next to it. If a racemic mixture is produced, you must write racemic.



10. For the following reactions, fill in the boxes with the predominant product or products. When ortho/para products are both produced, you must draw both. When a new chiral center is produced, put an asterisk (*) next to it. If a racemic mixture is produced, you must write racemic.



11. For the following reactions, fill in the boxes with the predominant product or products. When ortho/para products are both produced, you must draw both. When a new chiral center is produced, put an asterisk (*) next to it. If a racemic mixture is produced, you must write racemic.

