

# Exam 1 Review

## Two parts

1<sup>st</sup> part - mandatory

7-8 questions

⇒ Nomenclature

Single reactions

Short synthesis

Syntheses → Synthetic equivalent

Scheme

Resonance (Free radical)

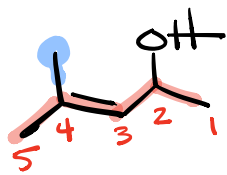
2<sup>nd</sup> part - Choose 3 out of 7-8 options

Longer synthesis

Longer schemes

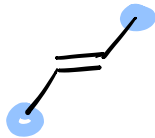
Mechanisms

Puzzles



4-methylpent-3-en-2-ol

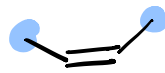
4-methyl  
3-en  
2-ol  
pent



trans

⇒ (E)

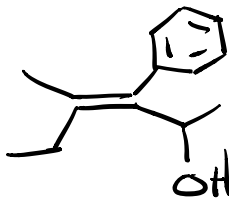
Entgegen ⇒ "opposite"



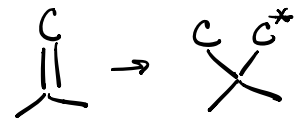
cis

(Z)

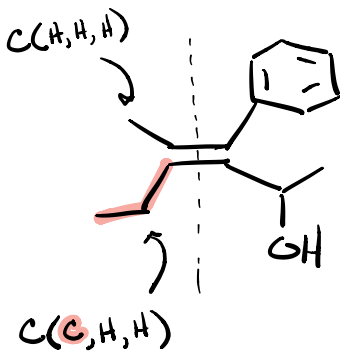
Zusammen ⇒ "together"



?

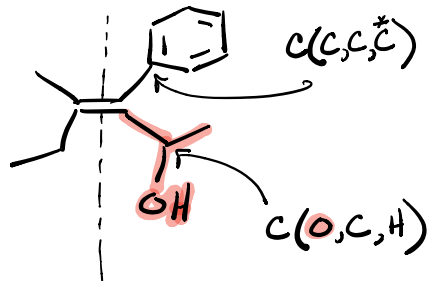
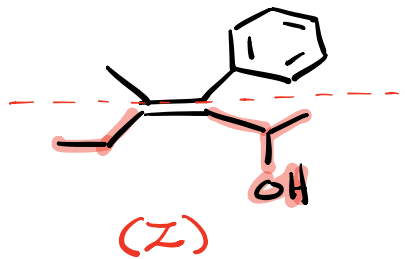


Left

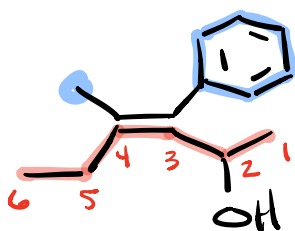


Highest atomic #  
at 1st point of  
difference

Right



(Z)

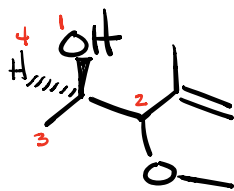
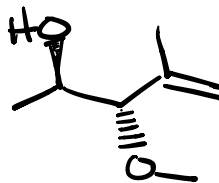
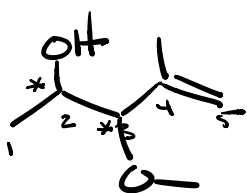


(3Z)  
 3-phenyl  
 4-methyl  
 3-en  
 2-ol  
 hex

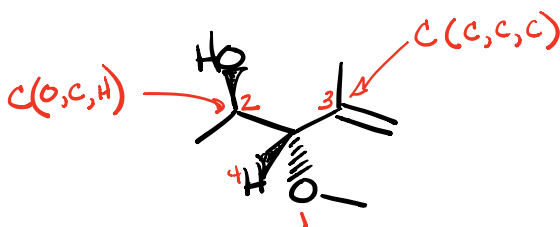
(3Z)-4-methyl-3-phenylhex-3-en-2-ol

ene  
 or  
 ⇒ en

(2R,3S)-3-methoxy-4-methylpent-4-en-2-ol



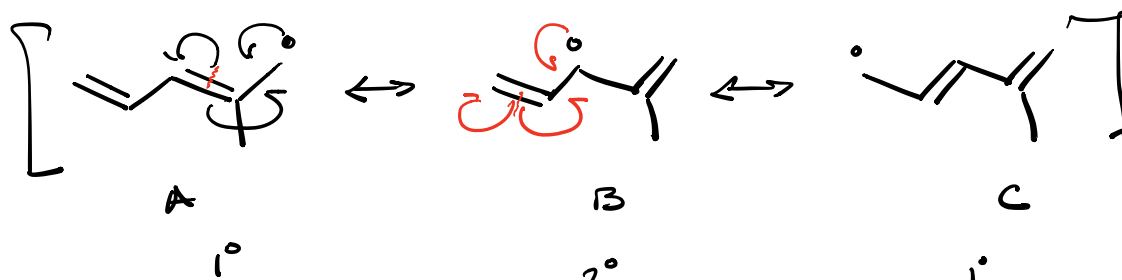
1  
 3 → 2  
 R



2 → 3  
 1  
 R

Reverse H  
 move forward  
 & R converts to S

Resonance - Draw all resonance contributors & label the major contributor



A

B

C

1°

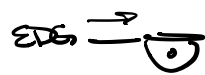
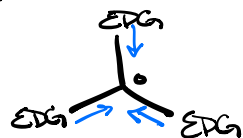
2°  
=

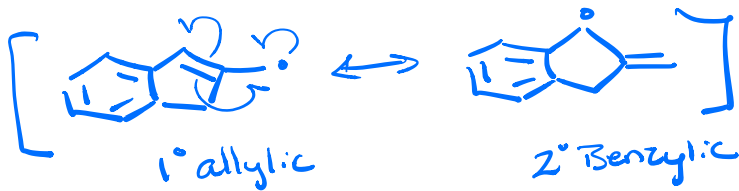
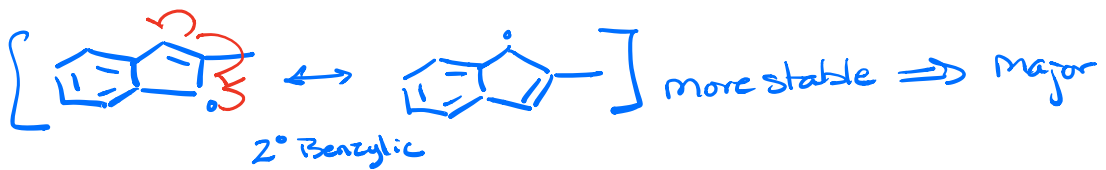
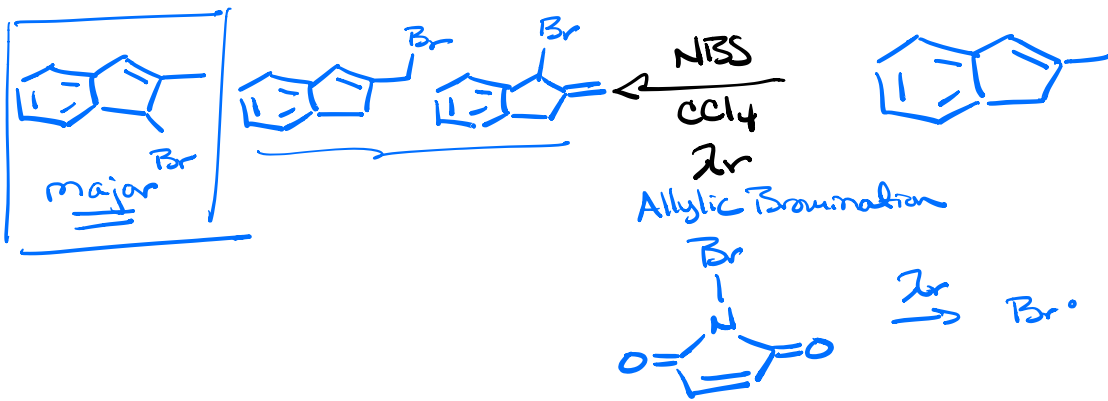
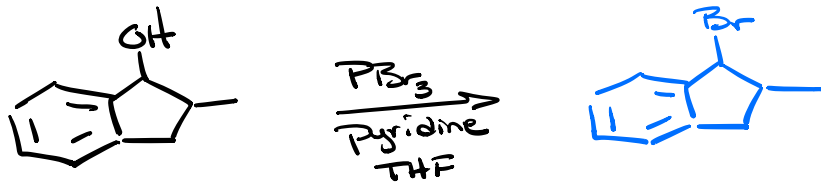
1°

major

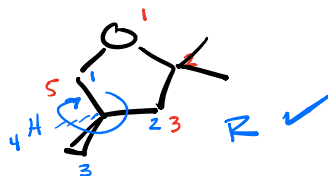
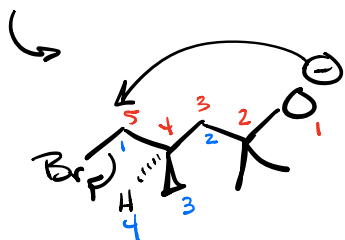
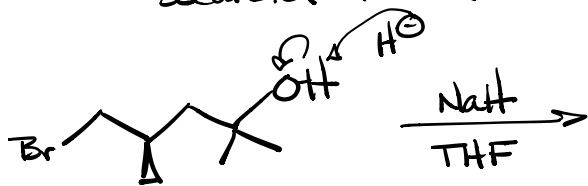
more substituted  
= more stable

R = EDG

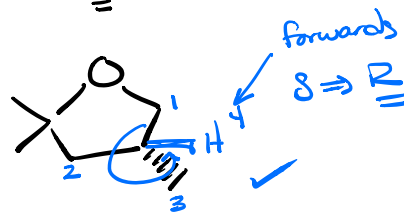


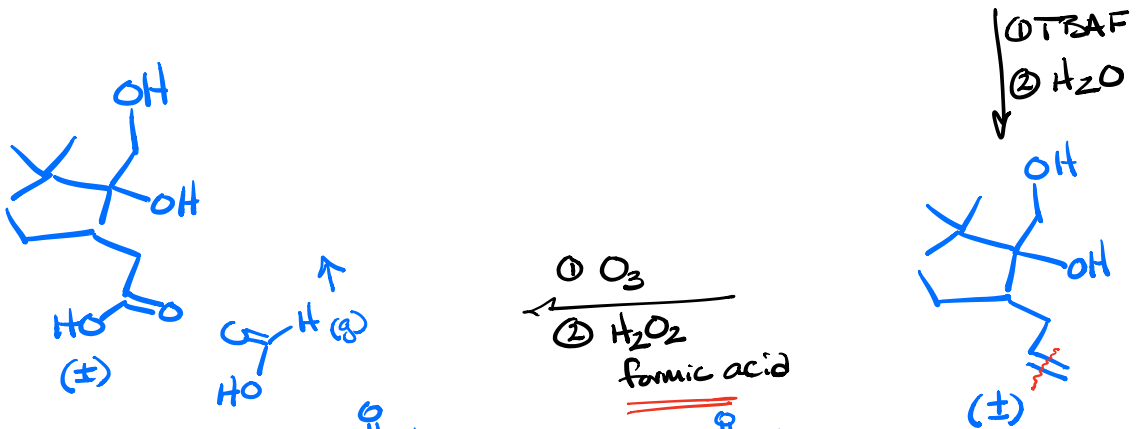
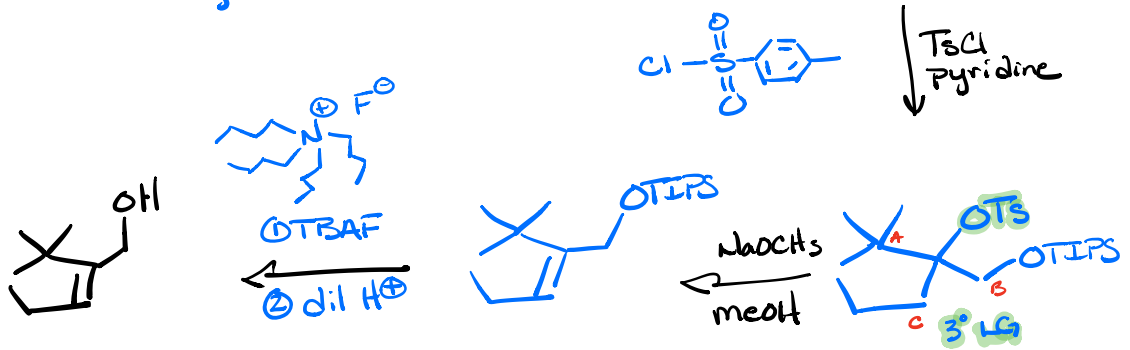
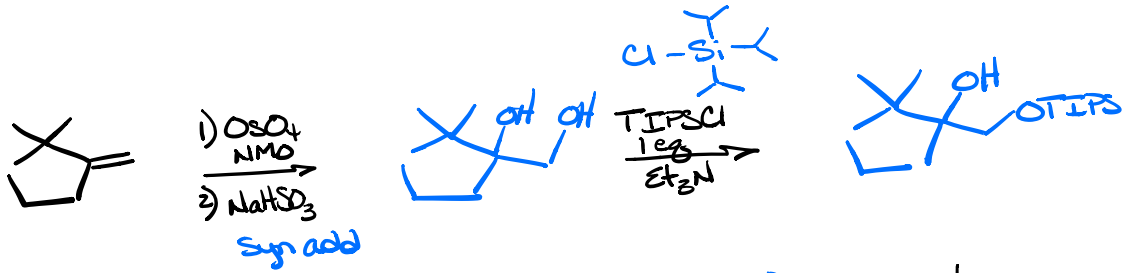


Give the product of the following reaction.  
Be careful to draw the stereochemistry properly.



or



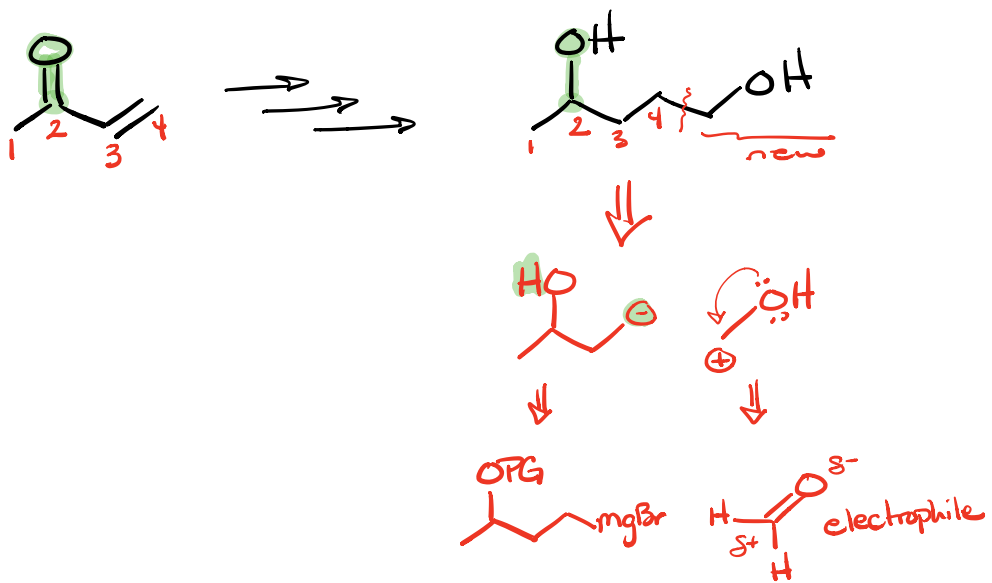


Reductive

① Zn, H<sub>2</sub>O  
 ② SMe\_2 or (CH\_3)\_2S

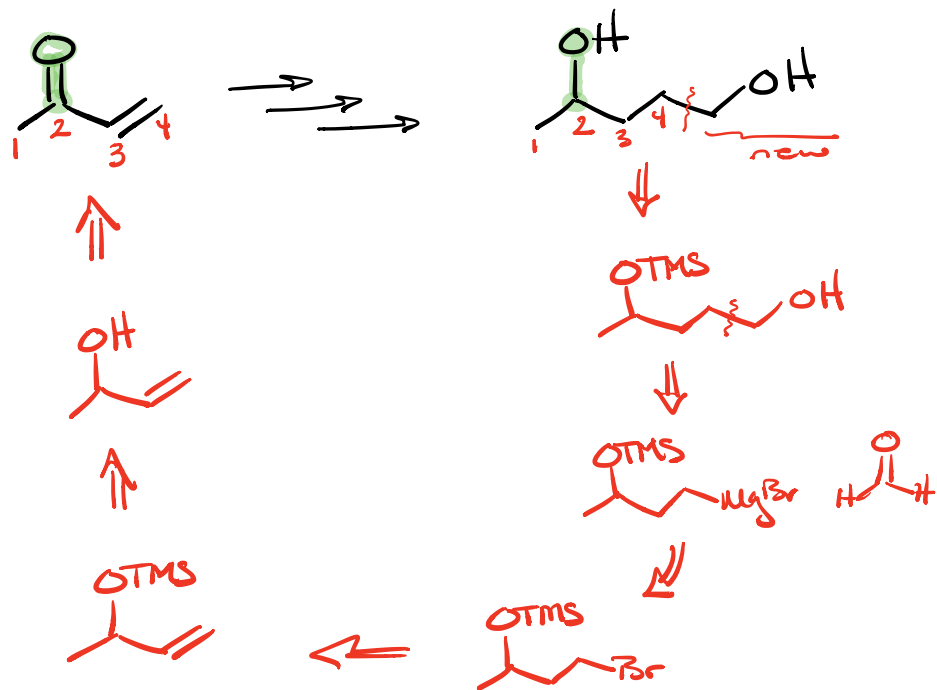
Oxidative

① NaOH, H<sub>2</sub>O<sub>2</sub> ② dil H<sup>+</sup>  
 ≅ H<sub>2</sub>O<sub>2</sub>, formic acid



① Planning Stage

② Sequencing / Retrosynthesis  
1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, ...





# Forwards

