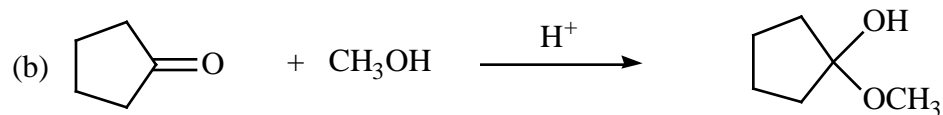
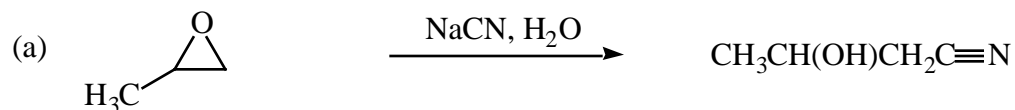


**Chemistry 2522, Spring Semester 2000**  
**Sample Midterm 1 Exam**  
*Chapters 10-15 of Brown & Foote text*

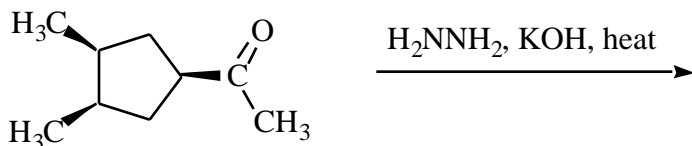
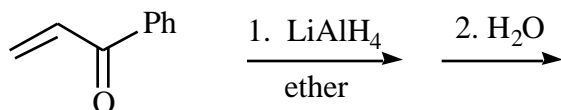
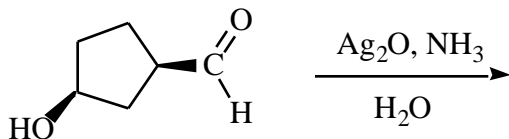
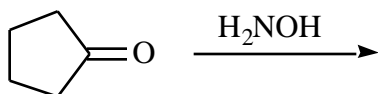
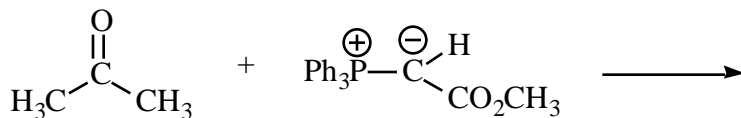
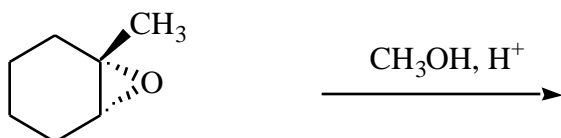
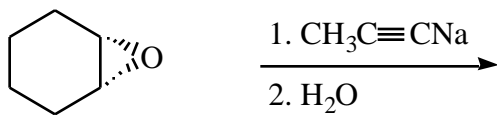
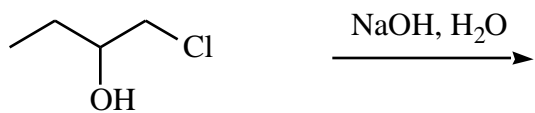
This exam has 5 problems on 4 pages. Make sure your copy is complete and correct.

**Answer key is available in PDF format at: [www.d.umn.edu/~vzhdanki/2522/](http://www.d.umn.edu/~vzhdanki/2522/)**

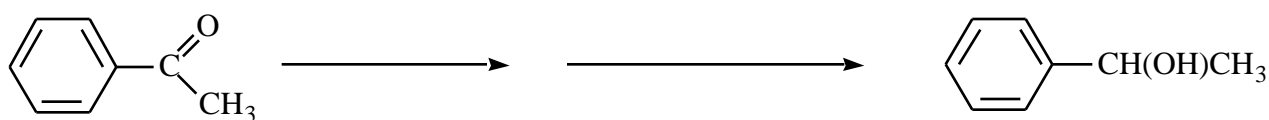
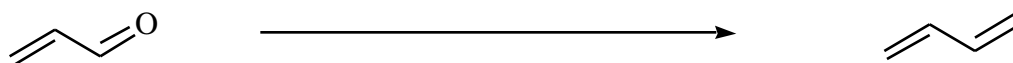
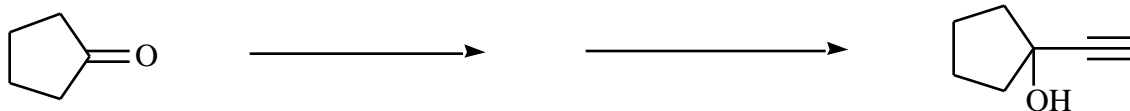
**1. (20)** Using **curved arrows** and showing the structure of the **intermediates**, write **mechanisms** that account for the products in the following reactions (10 pts each):



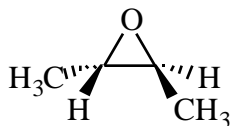
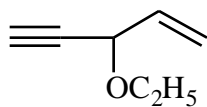
2. (30; 3 pts each) Complete the following equations, showing the **stereochemistry** of the product(s) when appropriate.



3. (12) Give the **reagents on the arrow** that can be used to convert the reactant to the indicated product in high yield (4 pts each).



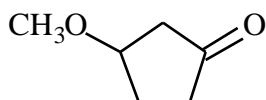
4. (18) Give either the **IUPAC name** or the **correct structure** for each of the following compounds (3 pts each).



3-Phenyl-1,2-epoxycyclohexane

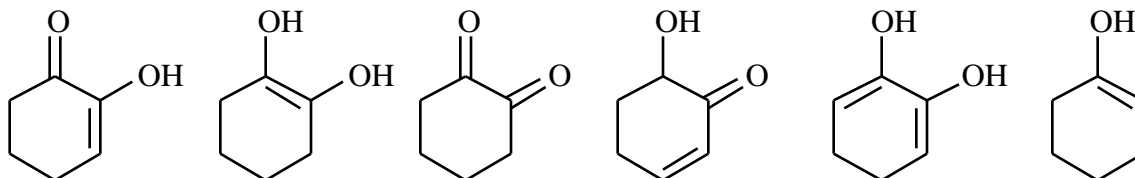
Benzaldehyde

5-Hydroxy-2-oxopentanal



5. (20, 5 pts each) For each of the following questions (a)-(d) **circle** the item that is the correct answer.

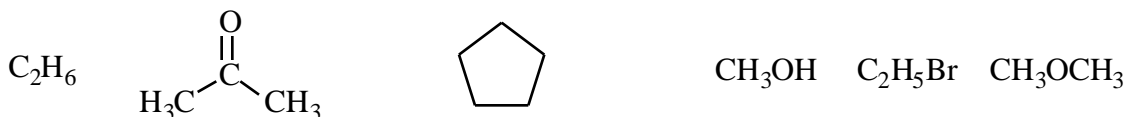
(a) Which of the following compounds is the **enol** form of **2-hydroxycyclohexanone**?



(b) How many signals will be present in the  $^1\text{H}$  NMR spectrum of  $\text{CH}_3\text{OCH}_2\text{C}(\text{CH}_3)_2\text{CH}_2\text{Br}$ ?

thirteen   eleven   nine   eight   seven   six   five   four   three   two

(c) Which of the following compounds will have the most **deshielded** carbon atoms?



(d) Which of the following compounds will have the *characteristic IR* peak at about  $1700\text{ cm}^{-1}$  and a signal in  $^1\text{H}$  NMR spectrum at about 12 ppm?

