

**EXAM 3
CHEM 342-75
SPRING 2015
RICHTER**

NAME _____

	SCORE	PTS POSSIBLE
Q1	_____	6
Q2	_____	4
Q3	_____	5
Q4	_____	14
Q5-15	_____	32
Q16	_____	24
Q17	_____	15
TOTAL	_____	100

Name _____

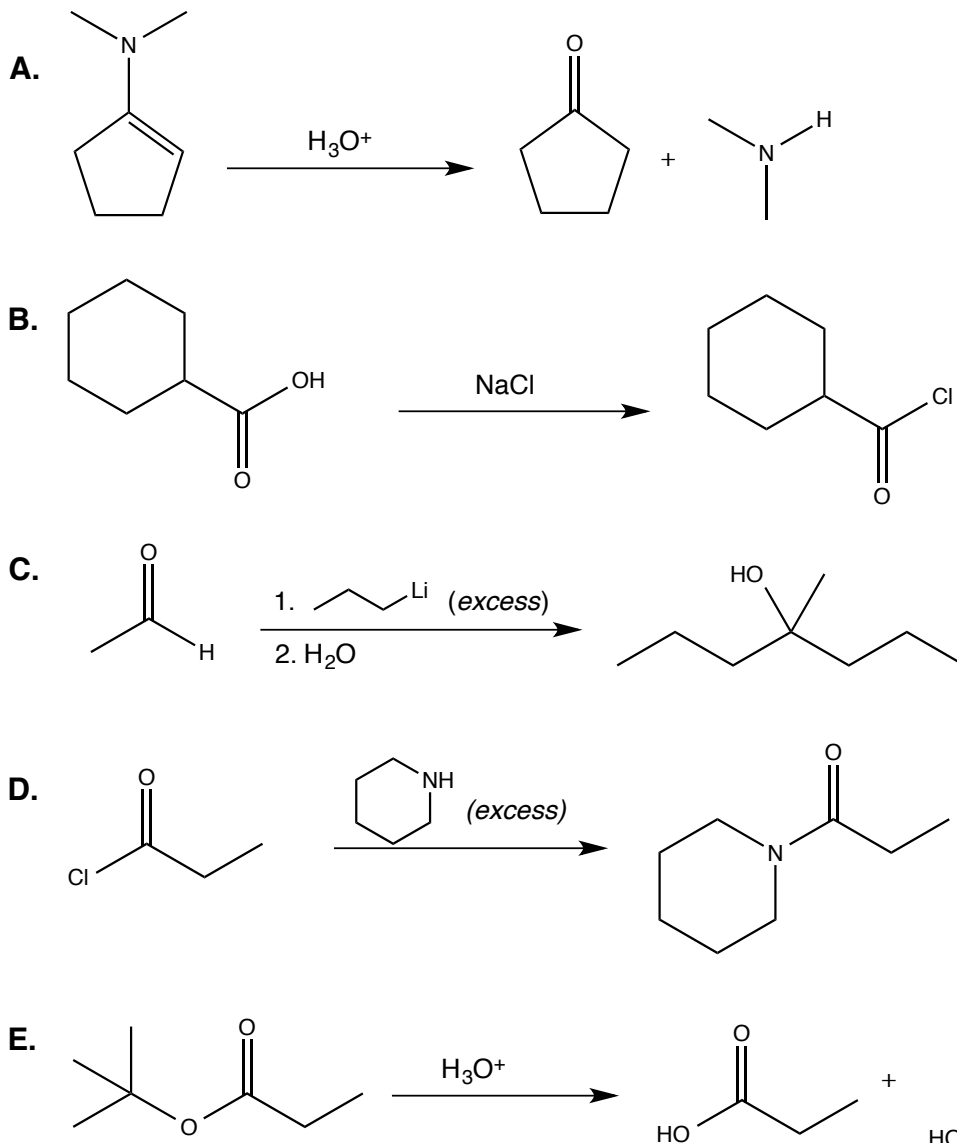
Signature _____

You are required to answer all question sets. Please note that some of the question sets offer you a choice of questions - do only the number of questions asked for. Please write legibly and draw clearly. Points will be deducted for illegible and unclear answers. The point total for this exam is 100 and the value of each question set is shown in parenthesis beside that set. **READ ALL QUESTIONS CAREFULLY AND APPORTION YOUR TIME ACCORDINGLY.**

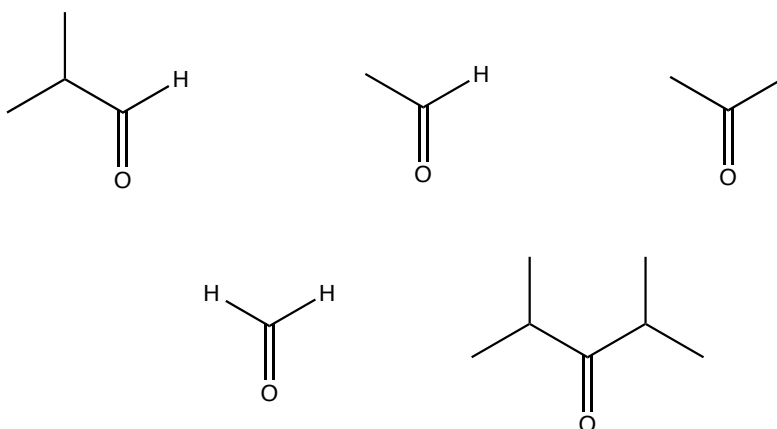
PART ONE: STRUCTURE, REACTIVITY, AND MECHANISM

1. Which reaction(s) (A-E) below **would NOT** occur as written? *Circle all that apply.*

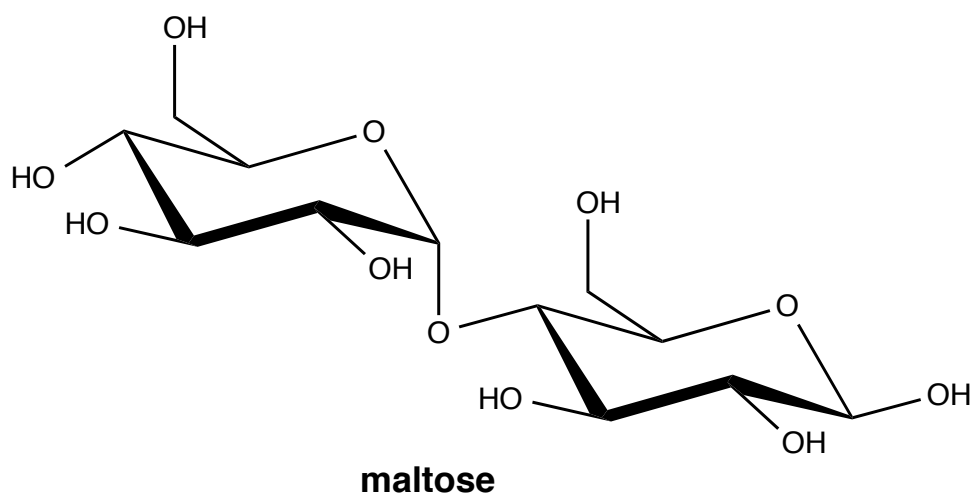
(6)



2. Of the five structures below, circle the **one** structure that you would expect to have the lowest % hydrate at equilibrium after treatment with catalytic OH^- in water. (4)



3. Consider the D-glucose disaccharide below, maltose.



On the structure of maltose (above) **circle and label** each of the following:

(5)

- A. The glycosidic bond. Which of the following correctly describes the bond? *Check your answer.*

_____ α 1 \rightarrow 3

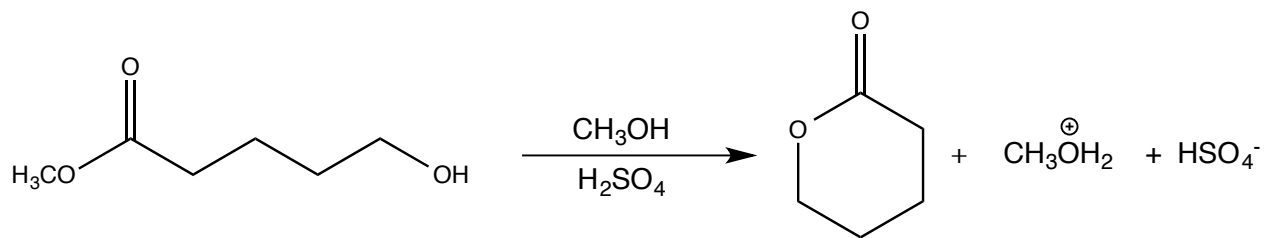
_____ β 1 \rightarrow 3

_____ α 1 \rightarrow 4

_____ β 1 \rightarrow 4

- B. An anomeric carbon atom.
 C. An acetal functionality.
 D. A hemiacetal functionality.

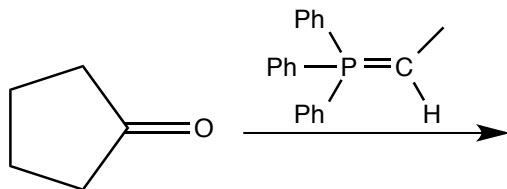
4. A trans-esterification reaction follows essentially the same mechanism as a Fischer esterification, only with a different leaving group. Use what you know about Fischer esterification, and the behavior of acid-catalyzed mechanisms in general, to draw the stepwise mechanism for the following trans-esterification. You must account for the formation of all products to receive full credit. **(14)**



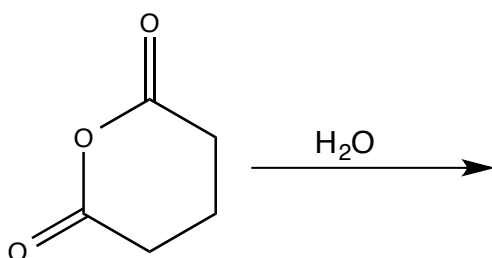
PART TWO: PREDICT THE PRODUCT - For **eight (8)** of the following questions 5-15 predict the **major** organic product(s) showing stereochemistry where appropriate. **(32)**

Check the corresponding boxes for the **EIGHT** answers that you want graded, otherwise **5-12** will be graded automatically.

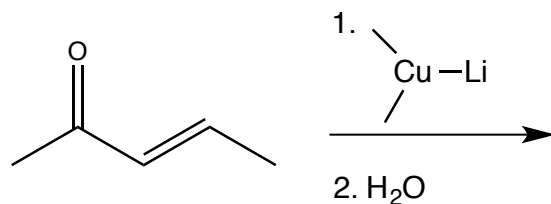
5.



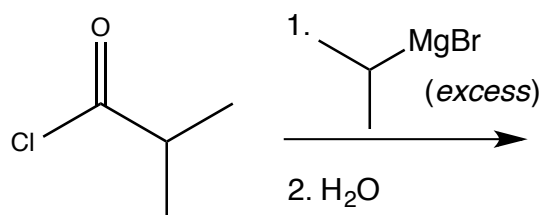
6.



7.



8.



9.

