Fourth Exam
CHEM 256 – Organic Chemistry II
Prof. Bastin
Spring 2016

Name _____ Section _____

1. DO NOT START this exam until you are instructed to begin.
2. There are ELEVEN pages including this cover sheet - make sure they are all here!
3. Provide *CLEAR, CONCISE* answers using unambiquous, carefully drawn structures and mechanisms. *Be sure to read each question VERY CAREFULLY.*
4. Do not provide mechanisms for synthesis and product prediction problems.
5. You may only use a pen or pencil and the materials provided in this packet on this exam.
6. If you have papers and/or books with you, they are to be left on the floor **AT THE FRONT OF THE ROOM**. If you need scrap paper please ask.
7. Cell phones must be **OFF and placed on the table at the FRONT of the ROOM**.
8. Any talking, gesturing, or other inappropriate actions will result in the immediate confiscation of your exam. The offending student(s) will receive a zero on the exam, a letter grade reduction in the course, and be reported to the Associate Provost office.

1) _____/12 pts

2) _____/13 pts

3) _____/20 pts

4) _____/18 pts **Total: _____/100 pts**

5) _____/15 pts

6a) _____/11 pts

6b) _____/11 pts

1) (12 pts) Provide structures for the following compounds.

a) hexyl formate

b) maleic anhydride

c) methanoyl chloride

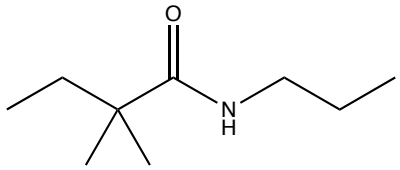
d) dipentylamine

e) Succinic acid

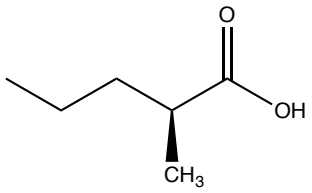
f) Benzonitrile

2) (13 pts) Provide either common or IUPAC names for the following compounds?

a)



b)



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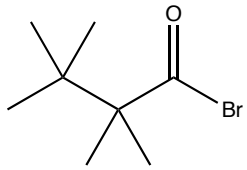

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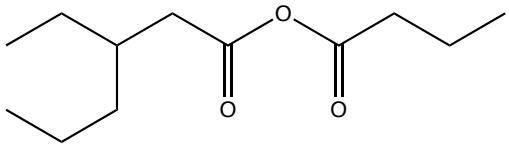

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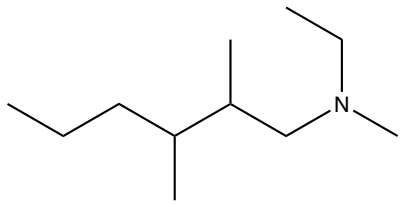

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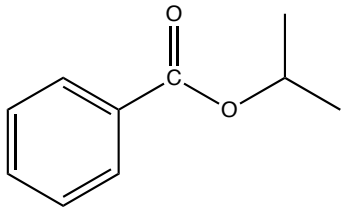
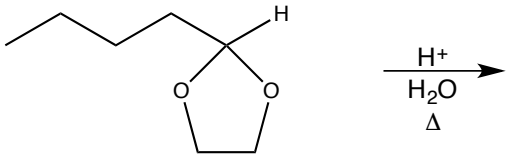


3) (20 pts) Draw the organic product(s), if any, of the following reactions. Indicate stereochemistry where relevant.

a)



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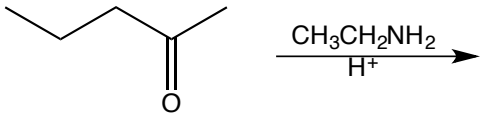

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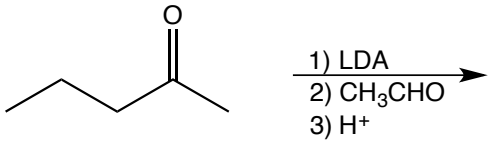

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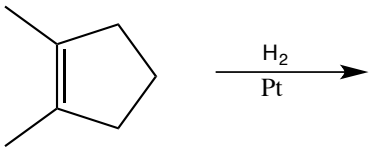

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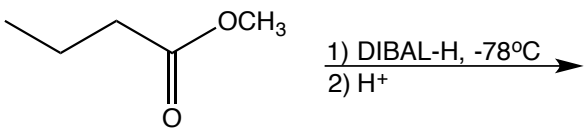

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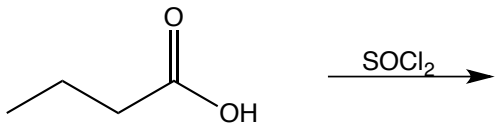
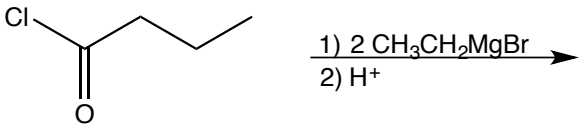
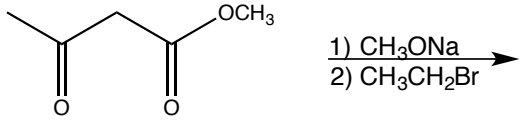


g)

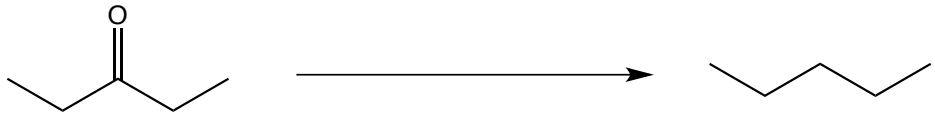


h)



4) (18 pts) Provide the reagents needed to bring about the following transformations.

a)



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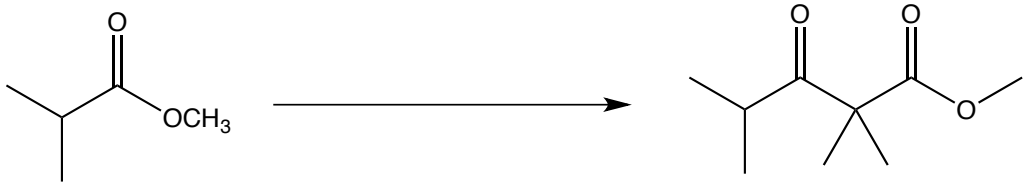

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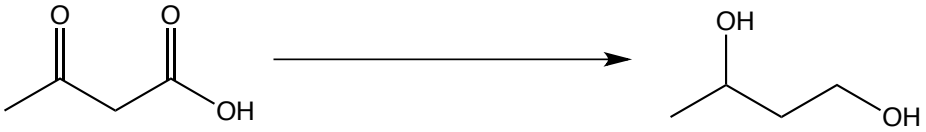

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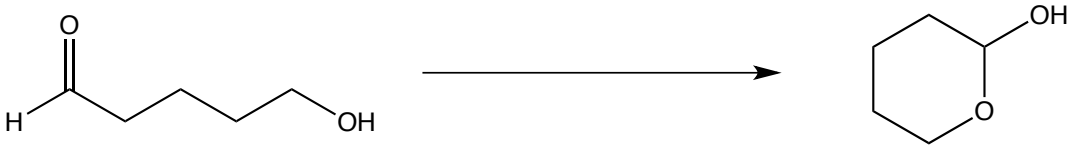

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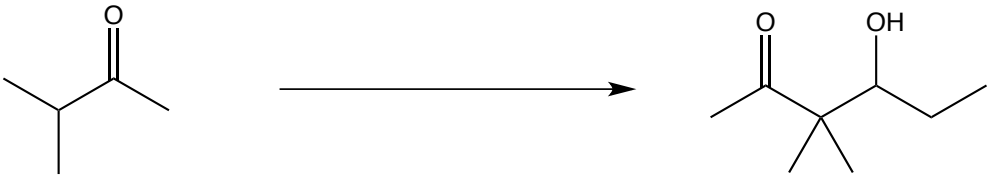
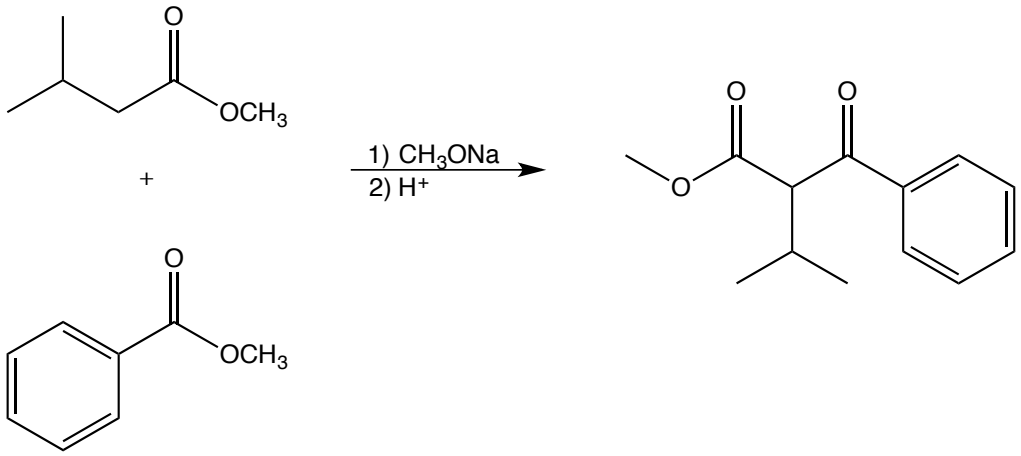
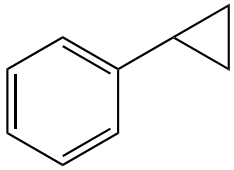


5) (15 pts) Draw the complete, detailed mechanism for the following reaction.

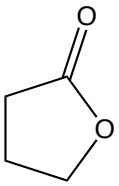


6) (22 pts) Propose the best synthesis for each of the following molecules. You can only use those organic molecules found in the Toolbox below and any inorganic reagents.

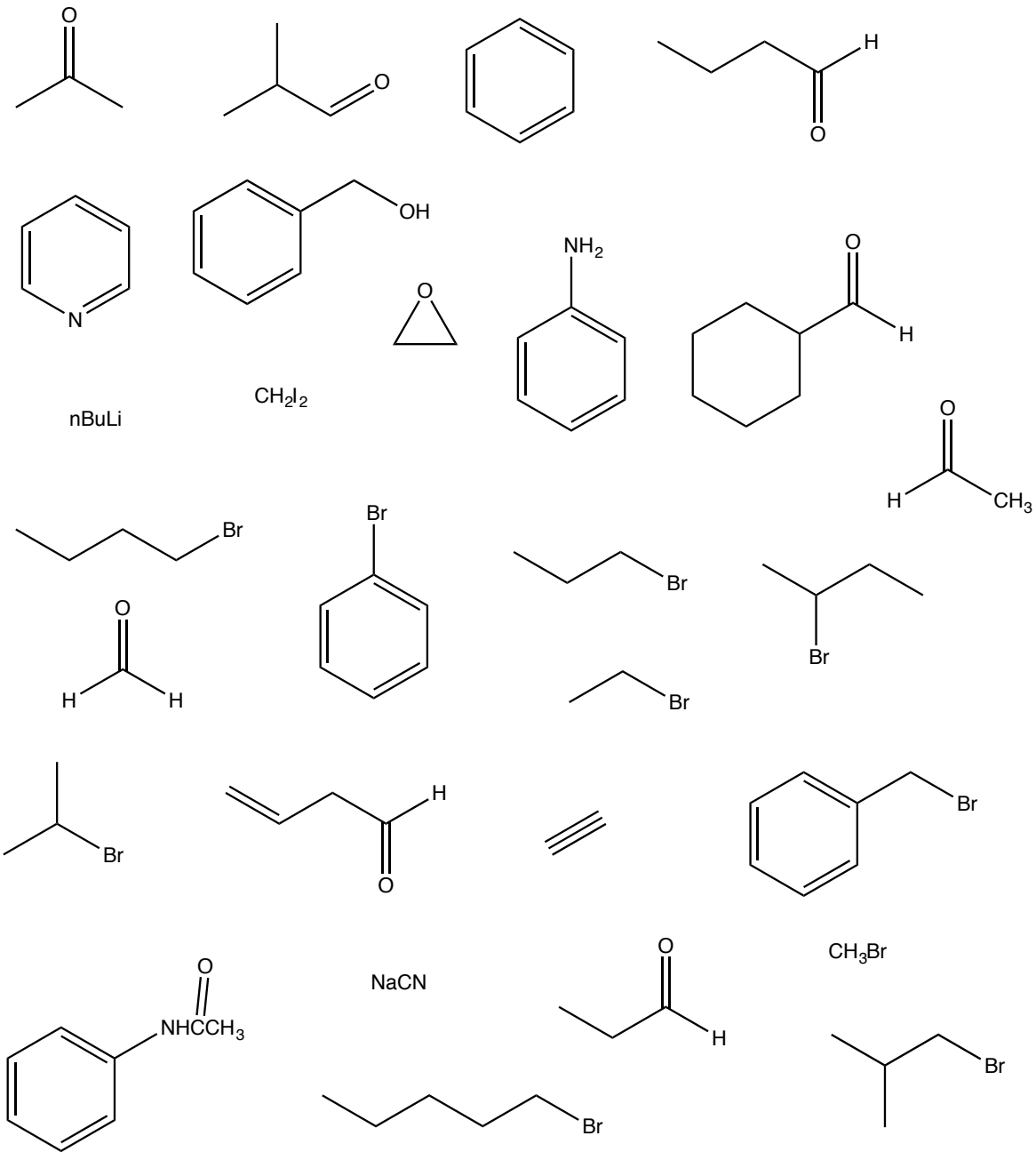
(a)



(b)



Toolbox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O
H
O
OH
N
O
NH2
O
H
nBuLi
CH2I2
O
H
CH3
Br
Br
Br
Br
O
H
H
Br
Br
H
O
Br
NaCN
CH3Br
O
NHCCH3
O
H
Br
Br