

Student ID _____

Name _____

TA _____

page

points:

2 _____ (30)

3 _____ (14)

4 _____ (20)

5 _____ (20)

6 _____ (16)

Total _____ (100)

Periodic Table

H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Ha	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac															

Please sit with an empty seat between you and your neighbors.

Unless specifically asked, you do not have to draw mechanisms for reactions.

Feel free to ask questions about the questions, but please don't ask questions about your answers, it distracts your neighbors.

1. Draw the structure of each of the following molecule (4 pts each).

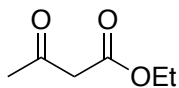
a) 3-(carboxymethyl)hexanedioic acid

b) *N*-butyl-3-methylpentanamide

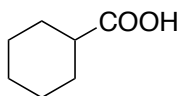
c) isopropyl acetoacetate

2. Provide the pKa value for each of the following molecule. (3pts each)

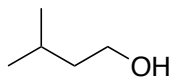
a)



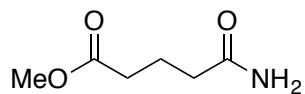
b)



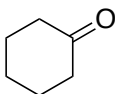
c)



d)



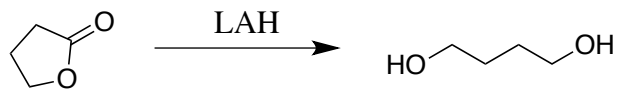
e)



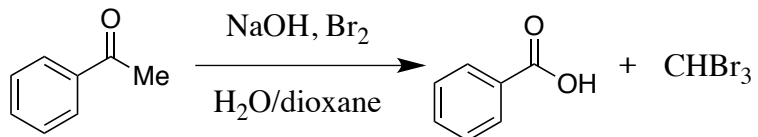
f) ^tPr₂NH

3. Use curved arrow or fishhook notation to draw the mechanism for each of the following reactions.

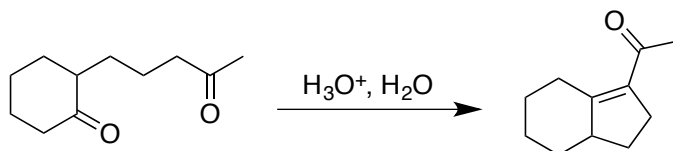
a) 6pts



b) 8 pts

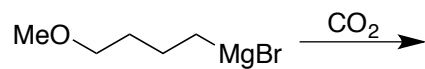


c) 8 pts

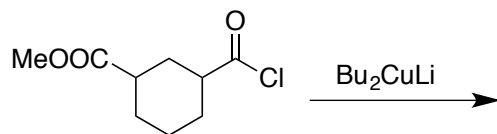


4. Provide the major product of the following reaction. If the reaction produces a racemic mixture as the major products, draw only one enantiomer. (4 pts each)

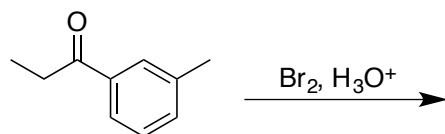
a)



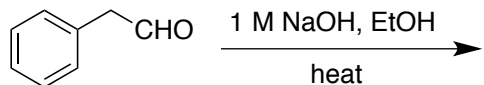
b)



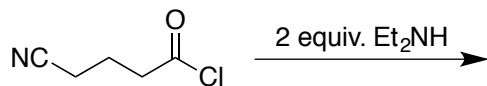
c)



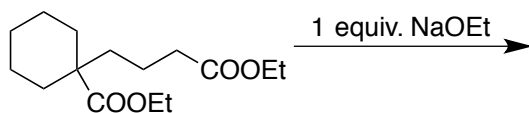
d)



e)

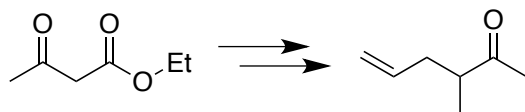


f)

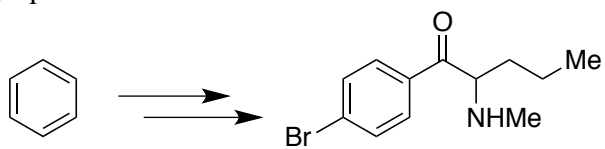


5. Complete the following syntheses using any organic molecule of 4 carbons or less and any inorganic reagents you need. You do not have to show the synthesis of the 4-carbon or less molecule you use. If your synthesis requires more than one step, provide the product after each step. All chiral products are racemic mixtures.

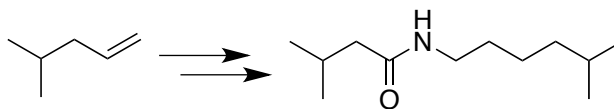
a) 8 pts



b) 8ps



c) 8 pts



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