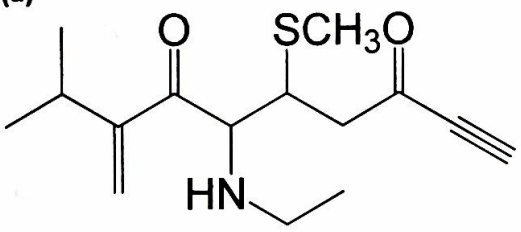
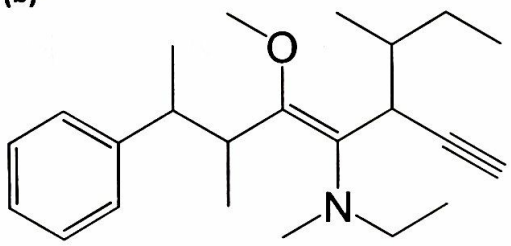
CHEM 266 – Exam-3 **Name**_____
(April 24th, 2017)

1. Name the following compounds (3 x 8 = 24 pts)

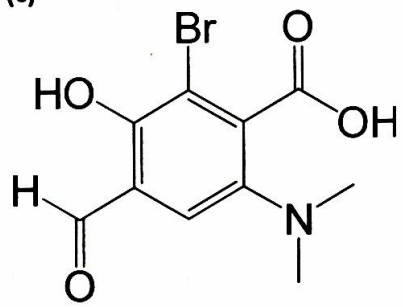
(a)



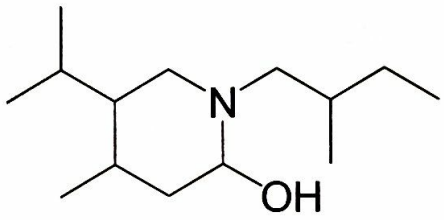
(b)



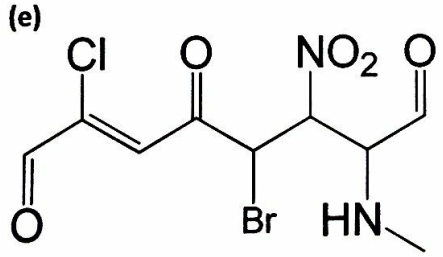
(c)



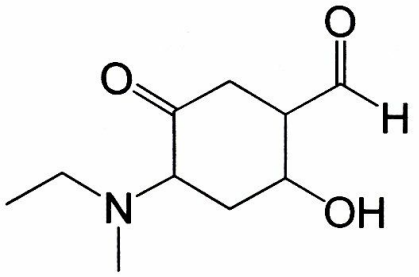
(d)



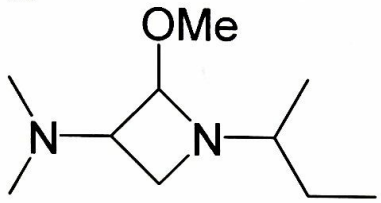
(e)



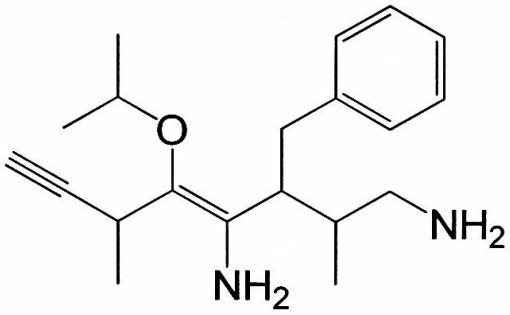
(f)



(g)

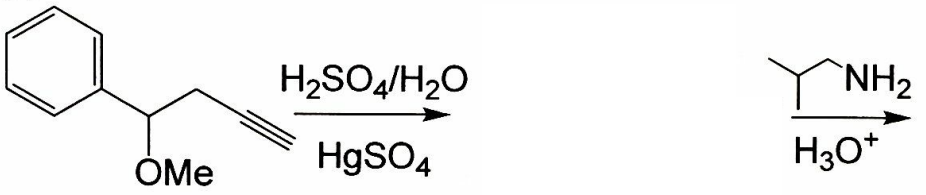


(h)

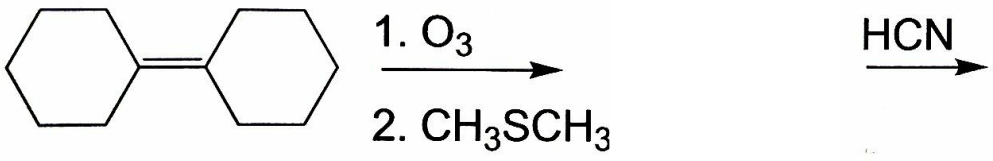


2. Predict the major product(s) expected from the following reaction sequences (3 x 15 = 45 pts)

(a)



(b)



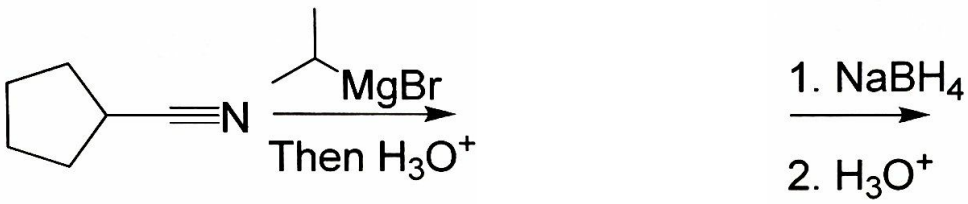
(c)


Br
NaCN
N
Br
1.
MgBr
2. H_3O^+

(d)


OH
O
Li
H_2N-NH_2
H_3O^+

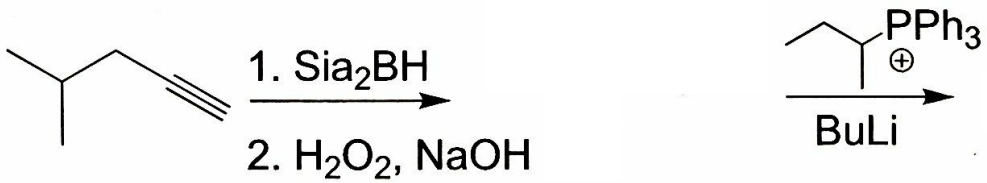
(f)


N
MgBr
Then H_3O^+
1. $NaBH_4$
2. H_3O^+

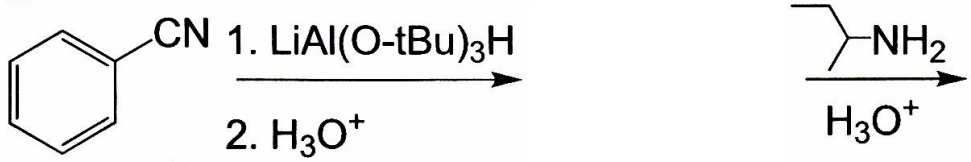
(g)


Cl
O
NH_3
Br_2, NaOH
Heat

(h)


1. Sia_2BH
2. H_2O_2, NaOH
PPh_3
⊕
BuLi

(i)


CN
1. $LiAl(O\text{-}tBu)_3H$
2. H_3O^+
NH_2
H_3O^+

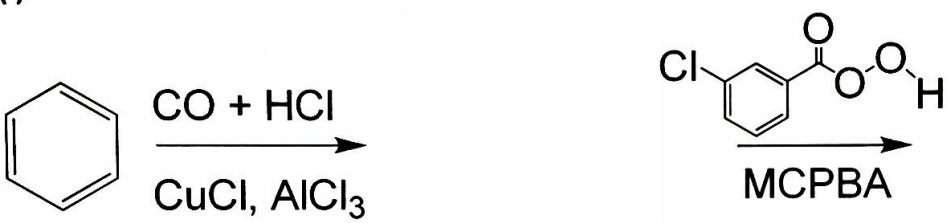
(j)


O
Cl
AlCl3
H2NNH2
NaOH

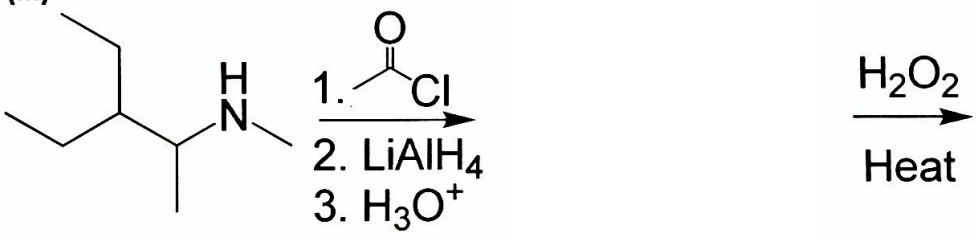
(k)


Br
HNO3
N
Br
H2SO4
NaSCH3

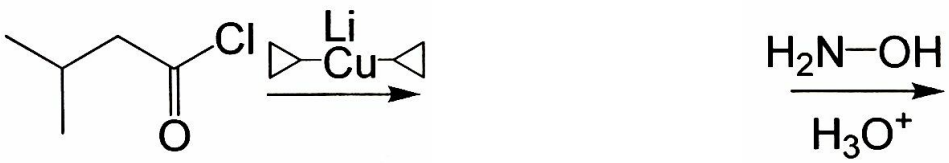
(l)


CO + HCl
CuCl, AlCl3
Cl
O
O
O
H
MCPBA

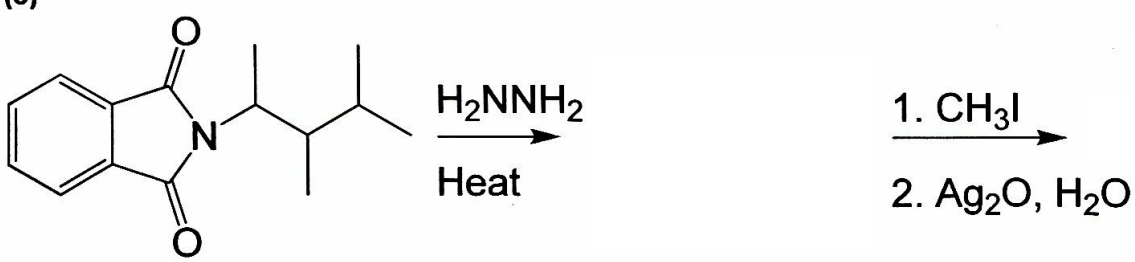
(m)


H
N
O
1.
Cl
2. LiAlH4
3. H3O+
H2O2
Heat

(n)


Cl
O
Li
Cu
H2N—OH
H3O+

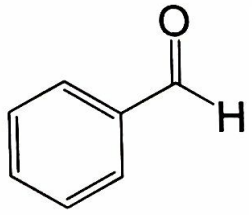
(o)

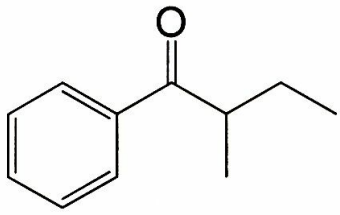

O
N
O
H2NNH2
Heat
1. CH3I
2. Ag2O, H2O

(p)

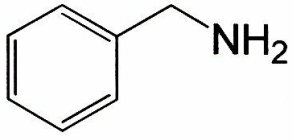
3. Show how you would synthesize each of the following compounds from the given starting material(s). You must draw keys intermediates to receive full credit (3.25 x 6 = 19.5 pts)

(a) Two possible ways

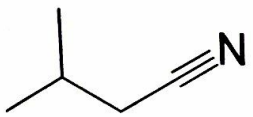


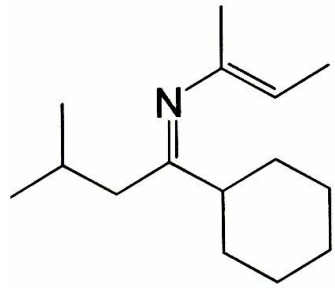


(b)

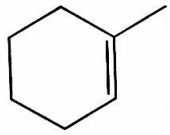


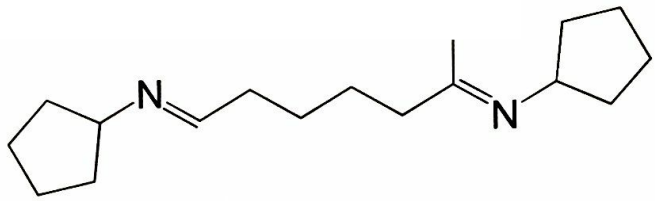
(c)



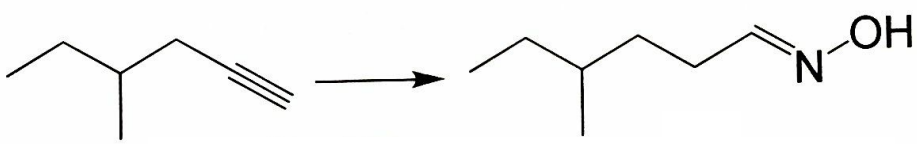


(d)

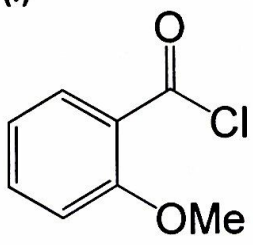


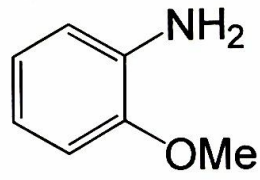


(e)



(f)





4. Propose a mechanism consistent with the following reactions (you must show all the intermediates to receive full credit) (4 x 3 = 12 pts)

(a)

(b)

(c)