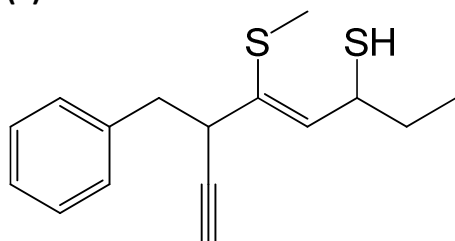
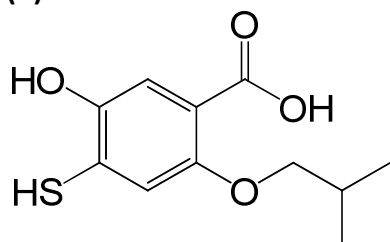


1. Name the following compounds (3 x 6 = 18 pts)

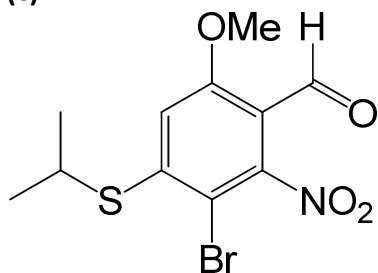
(a)



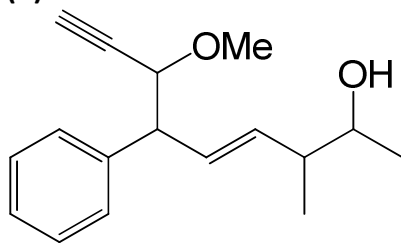
(b)



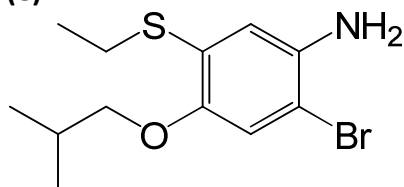
(c)



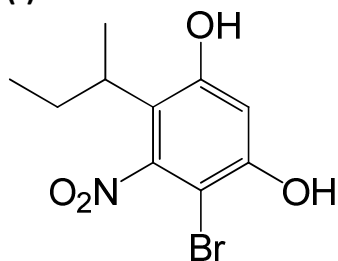
(d)



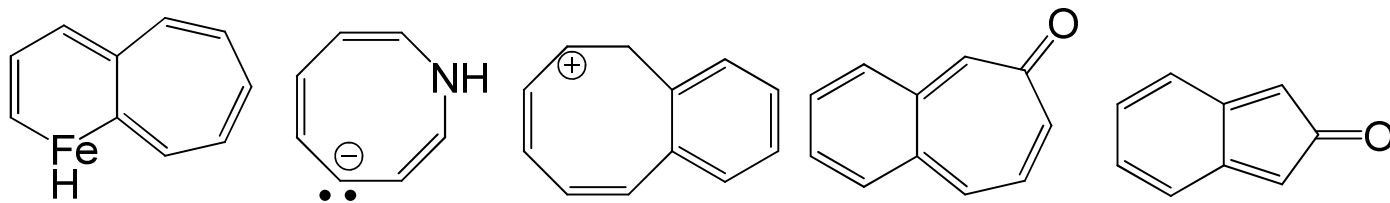
(e)



(f)



2. Classify the following molecules as aromatic, anti-aromatic or non-aromatic (5 pts)

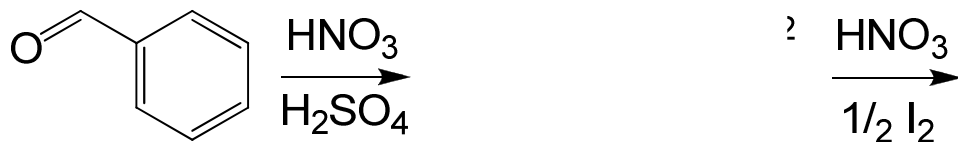


3. Predict the major product(s) expected from the following reaction sequences (3 x 14 = 42 pts)

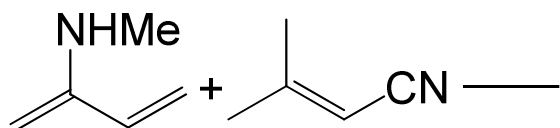
(a)



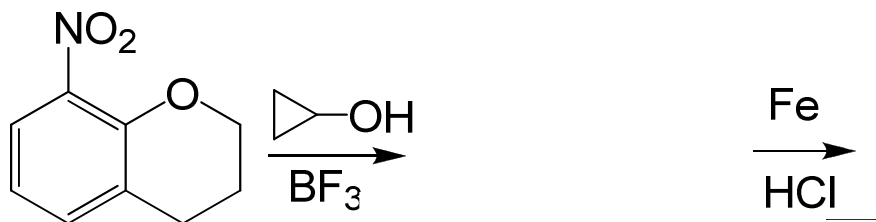
(b)



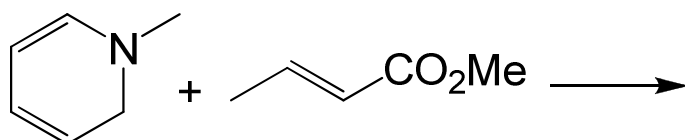
(c)



(d)



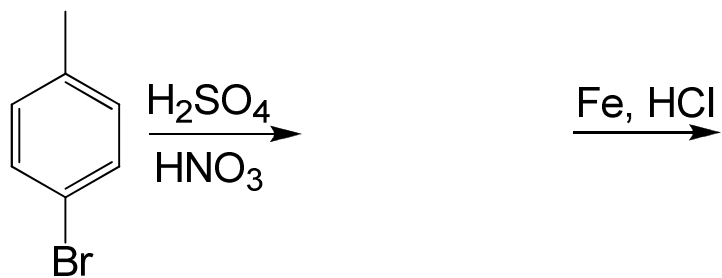
(f)



(g)



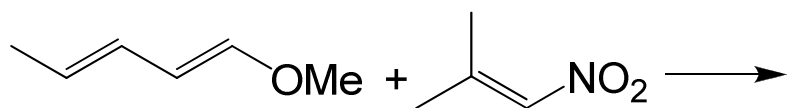
(h)



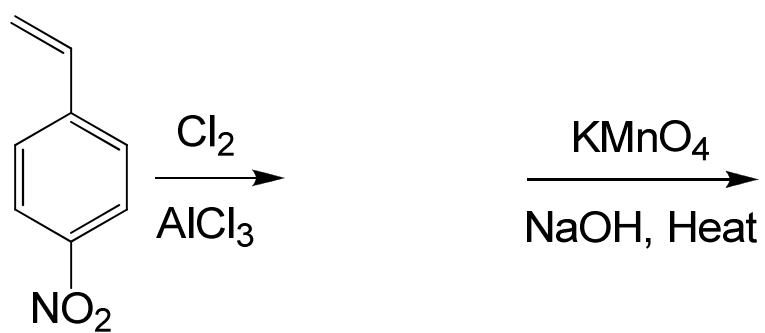
(i)

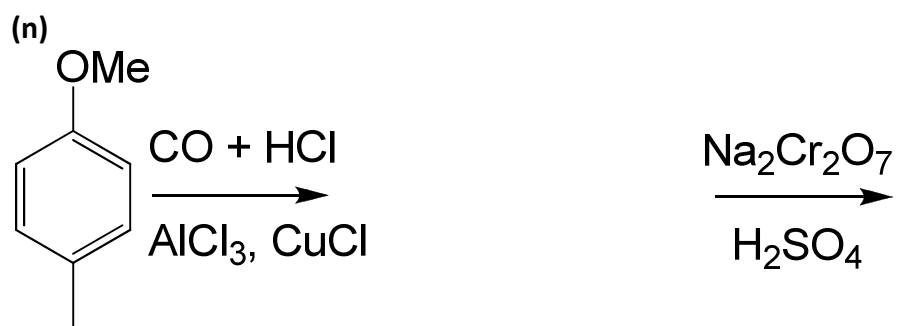
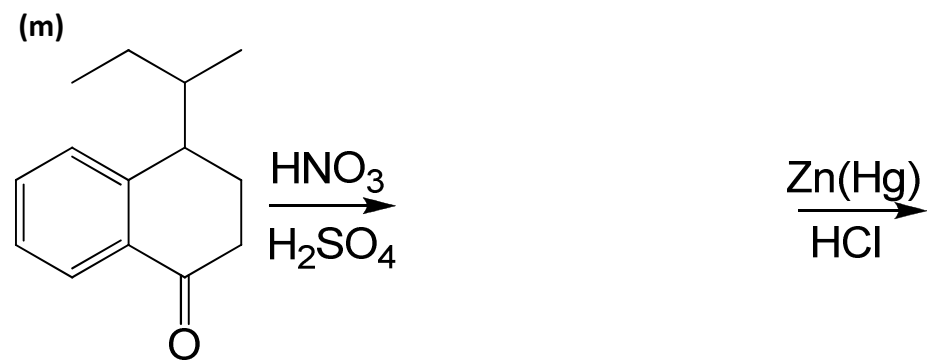
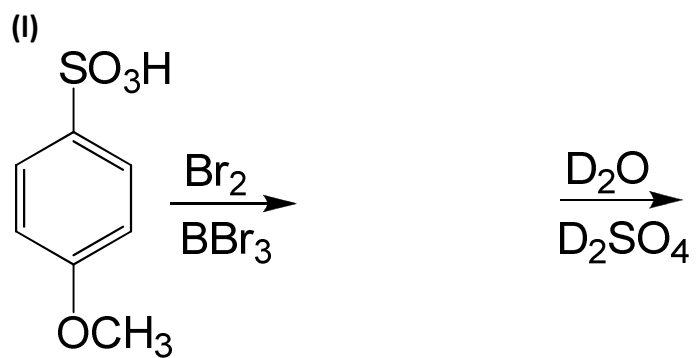


(j)



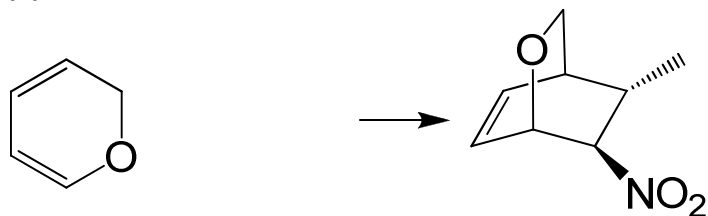
(k)



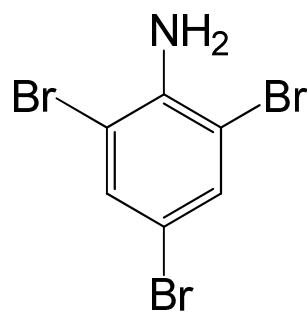
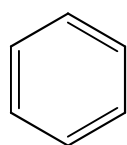


4. Show how you would synthesize each of the following compounds from the given starting material(s).
You must draw all key intermediates to receive full credit (3 x 6 = 18 pts)

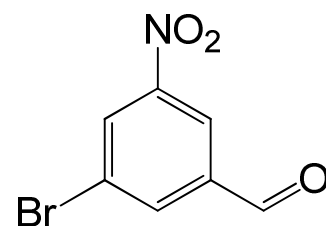
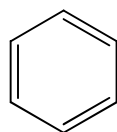
(a)



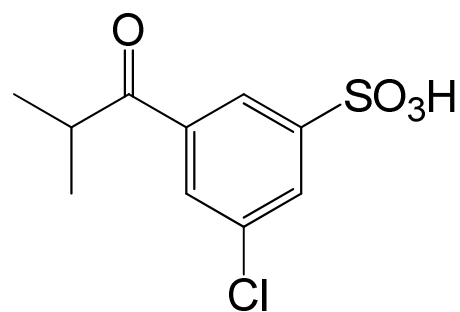
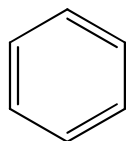
(b)



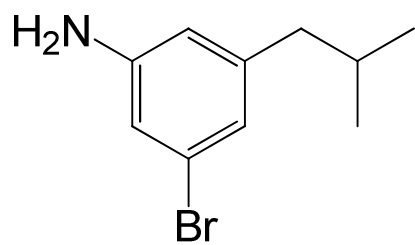
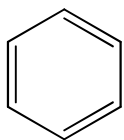
(c)



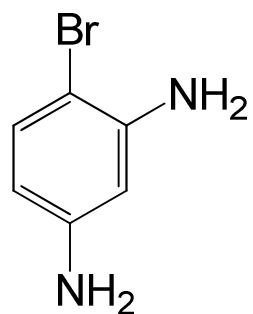
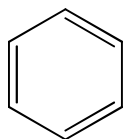
(d)



(e)



(f)



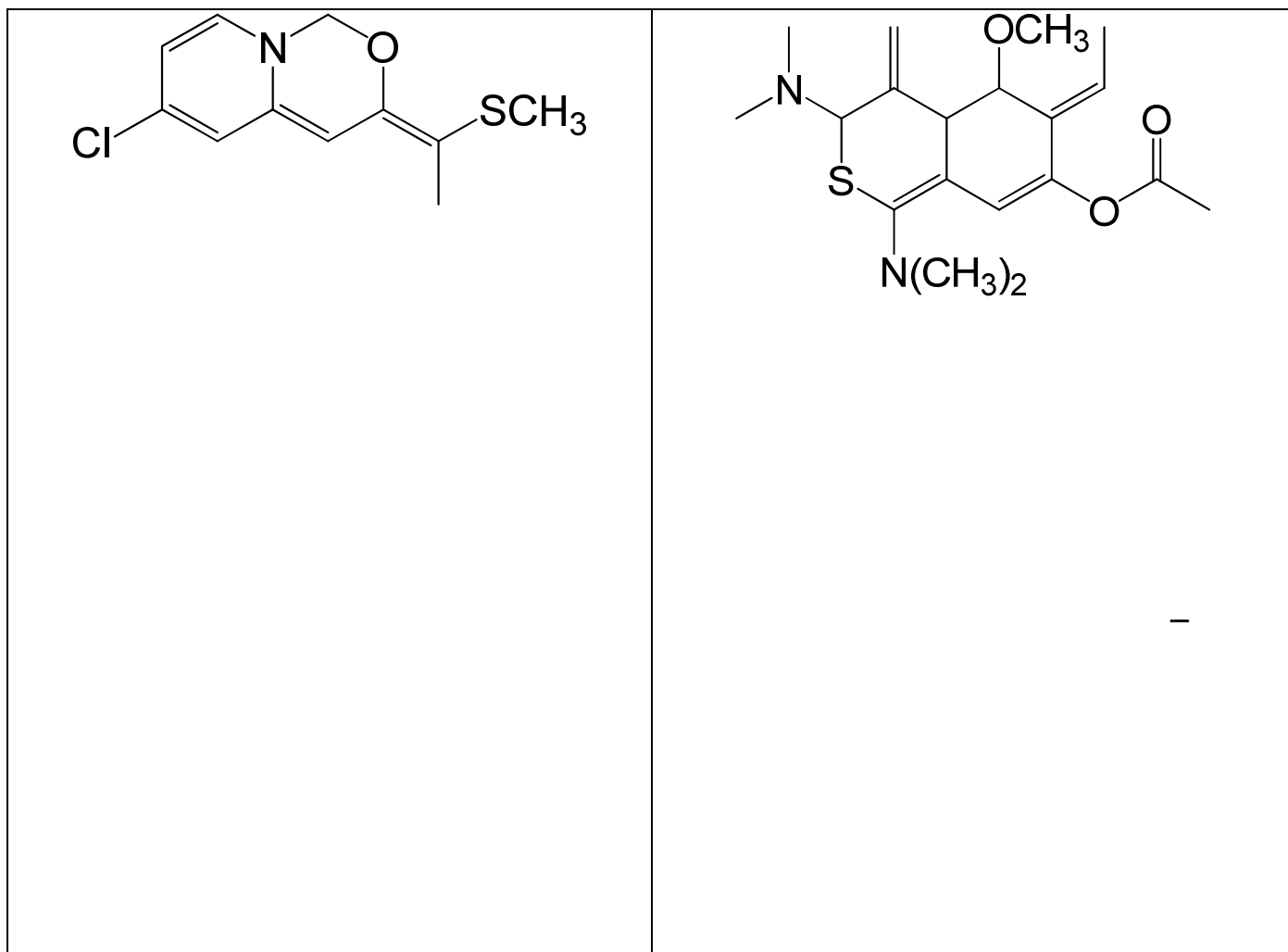
5. Propose a mechanism consistent with the following reactions (you must show all the intermediates to receive full credit) (3 x 3 = 9 pts)


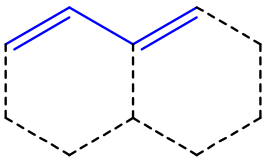
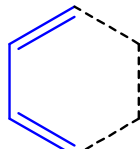
(a)

(b)

(c)

6. Use the Woodward-Fieser table to estimate the λ_{max} observed in a UV spectra of the following cross-conjugated systems (8 pts)



Acyclic 	217 nm
Heteroannular 	214 nm
Homoannular 	253 nm

For each additional conjugated double bond	+ 30 nm
For each exocyclic double bond	+ 5 nm
For each substituent	
C-substituent	+ 5 nm
Cl	+ 5 nm
Br	+ 5 nm
O-Alkyl	+ 6 nm
OCOCH ₃	+ 0 nm
N(alkyl) ₂	+ 60 nm
S-alkyl	+ 30 nm
Solvent correction	+ 0 nm