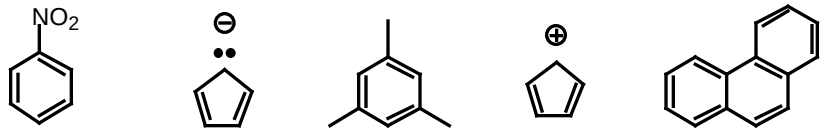
CHE 173
Winter, 2005
Quiz 4 Answer Key

Name_____

Section: 201 202 203 204 205 206
M T W Th F Th nt.
(circle one)

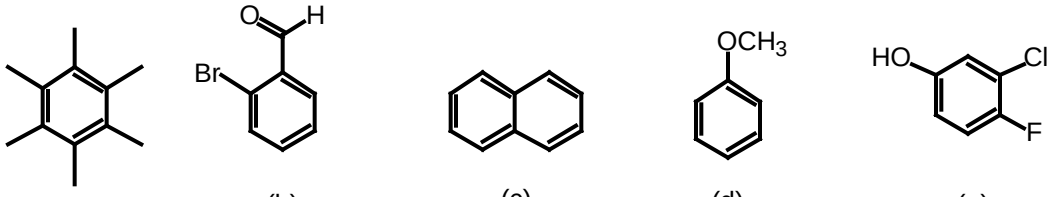
1. Identify each of the following compounds as aromatic, anti-aromatic, or not aromatic and explain your answer for each. (10 pts)



(a) (b) (c) (d) (e)

(a) *Aromatic; this compound is cyclic, planar and has 6 conjugated π electrons*
(b) *Aromatic; this compound is cyclic, planar and has 6 conjugated π electrons*
(c) *Aromatic; this compound is cyclic, planar and has 6 conjugated π electrons*
(d) *Anti-aromatic; this compound is cyclic and planar but has only 4 π electrons*
(e) *Aromatic; this compound is cyclic, planar and has 14 conjugated π electrons*

2. Give an IUPAC or common name for each of the following compounds. (10 pts)



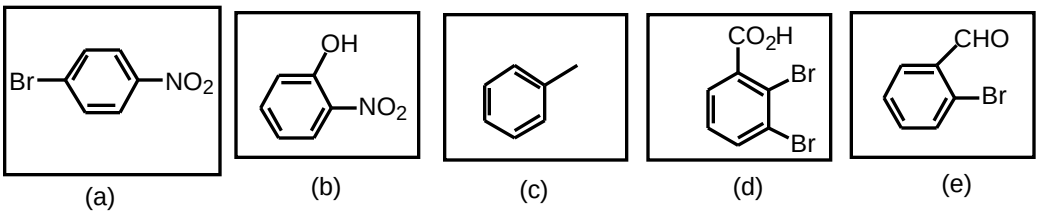
(a) (b) (c) (d) (e)

(a) *hexamethylbenzene*
(b) *o-bromobenzaldehyde or 2-bromobenzaldehyde*
(c) *naphthalene*
(d) *anisole or methoxybenzene (or methyl phenyl ether)*
(e) *3-chloro-4-fluorophenol*

3. Draw the structure for each of the compounds named below. (10 pts)

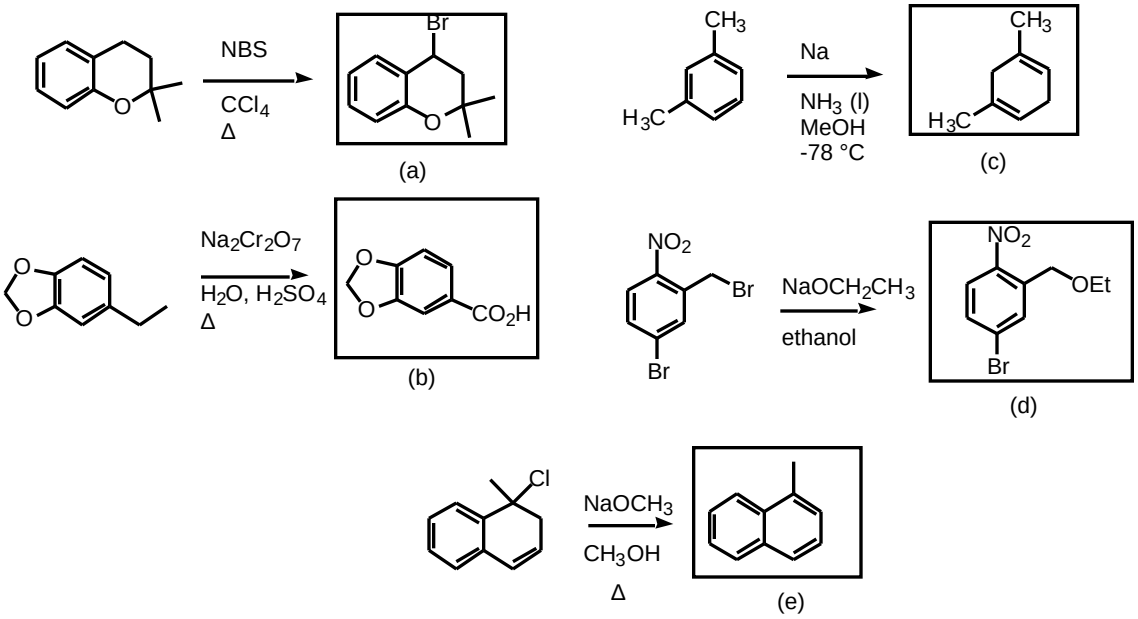
(a) p-bromonitrobenzene (c) toluene (e) o-bromobenzaldehyde

(b) o-nitrophenol (d) 2,3-dibromo benzoic acid

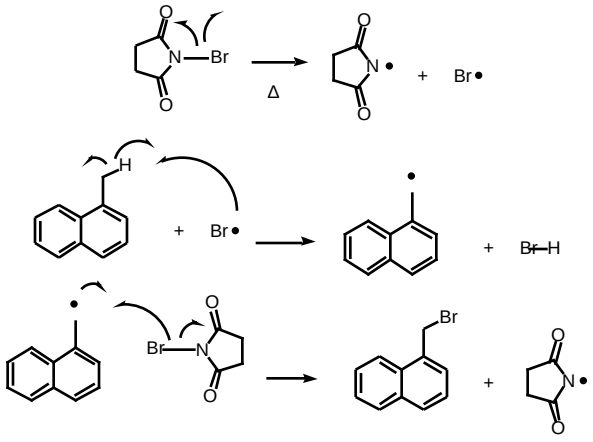


(a) (b) (c) (d) (e)

4. Show the organic product(s) that would form from the following reactions. (10 pts)

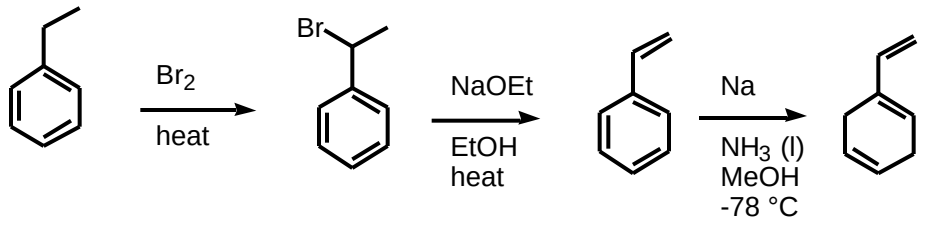


5. Show a detailed mechanism for the reaction shown below. (5 pts)



6. Show how you could you carry out the following multi-step synthesis. (5 pts)

This synthesis may be accomplished by the 3-step sequence of reactions shown below; selective benzylic halogenation followed by an E2 elimination to give styrene. Birch reduction of styrene gives the target compound:



*__Bonus__ (+2 pts): Show the product that would form from the Diels-Alder dimerization of the product from question 6 above.