

Chem 332  
Exam 3  
2009  
Prof. Fox  
50 minutes  
80 points

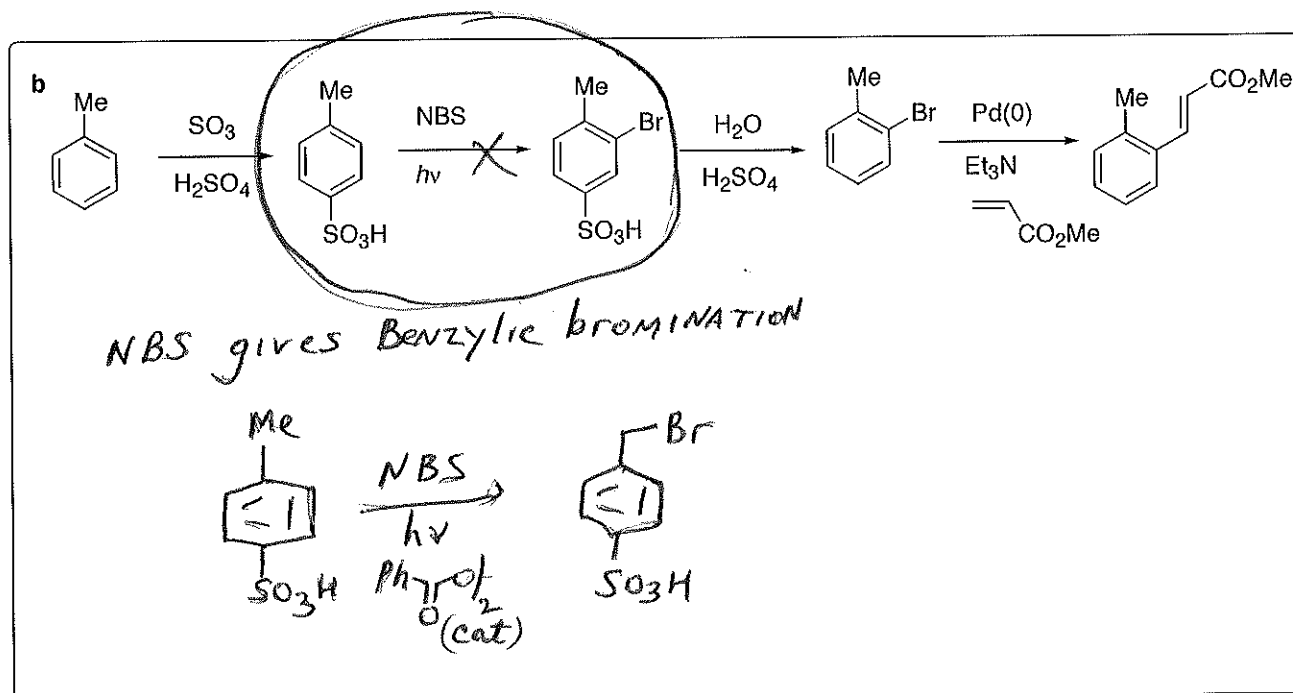
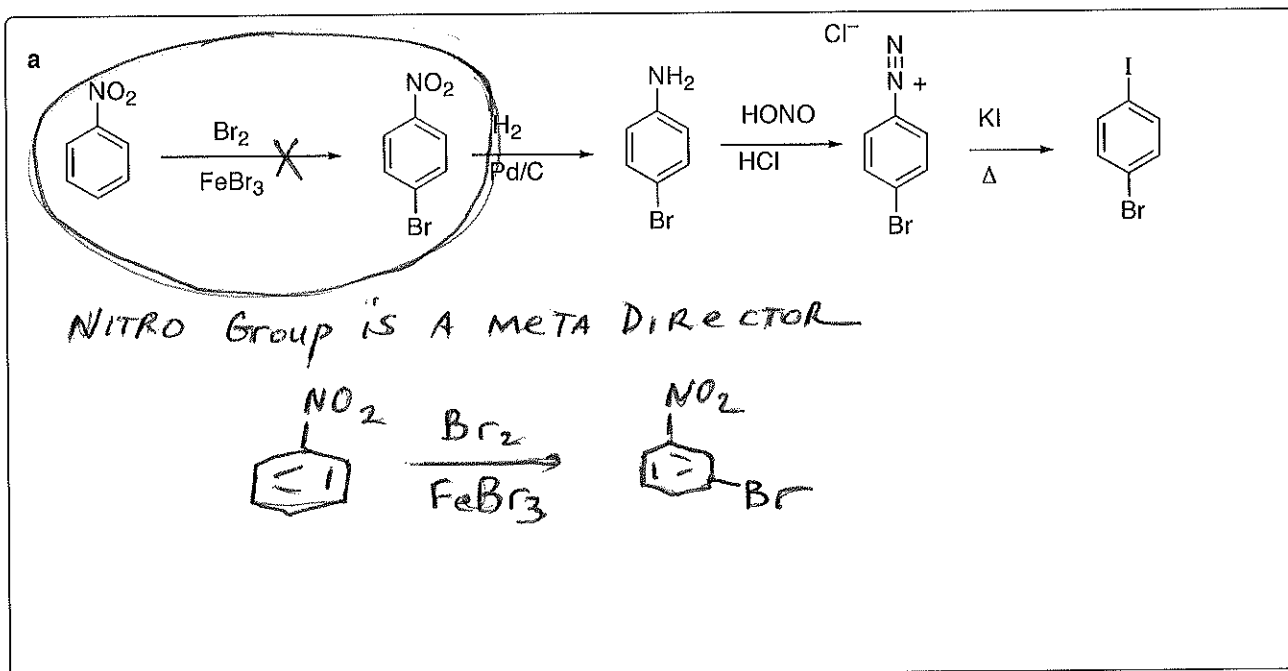
Show your work in detail

WRITE YOUR NAME ON EVERY PAGE

NAME \_\_\_\_\_

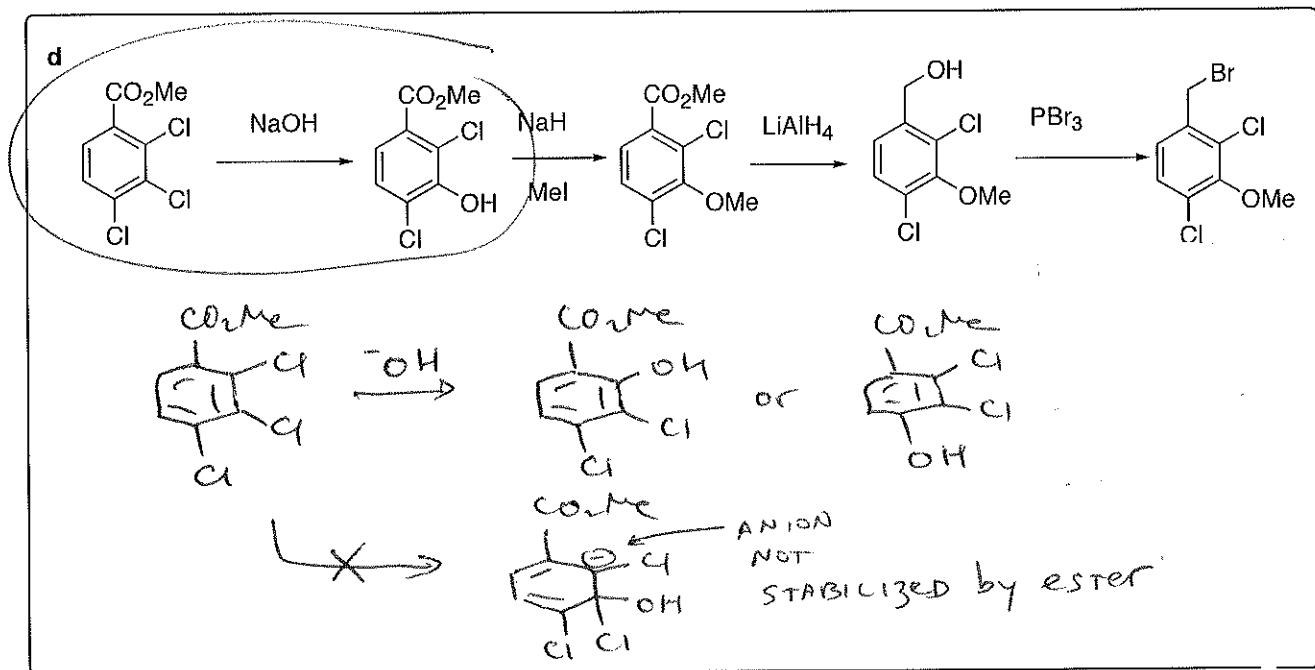
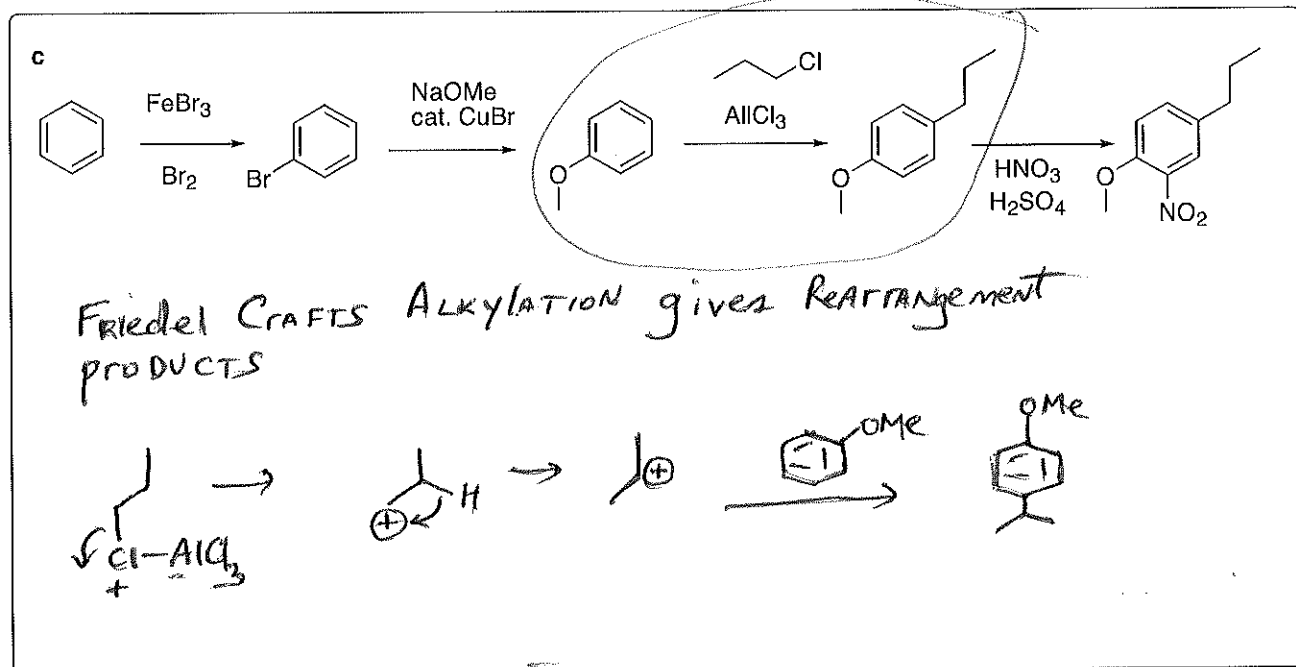
(8 points each)

2. There is a problem with each of the following syntheses.  
CIRCLE the problematic step, and describe the problem in the space below in 30 words or less



2. There is a problem with each of the following syntheses.

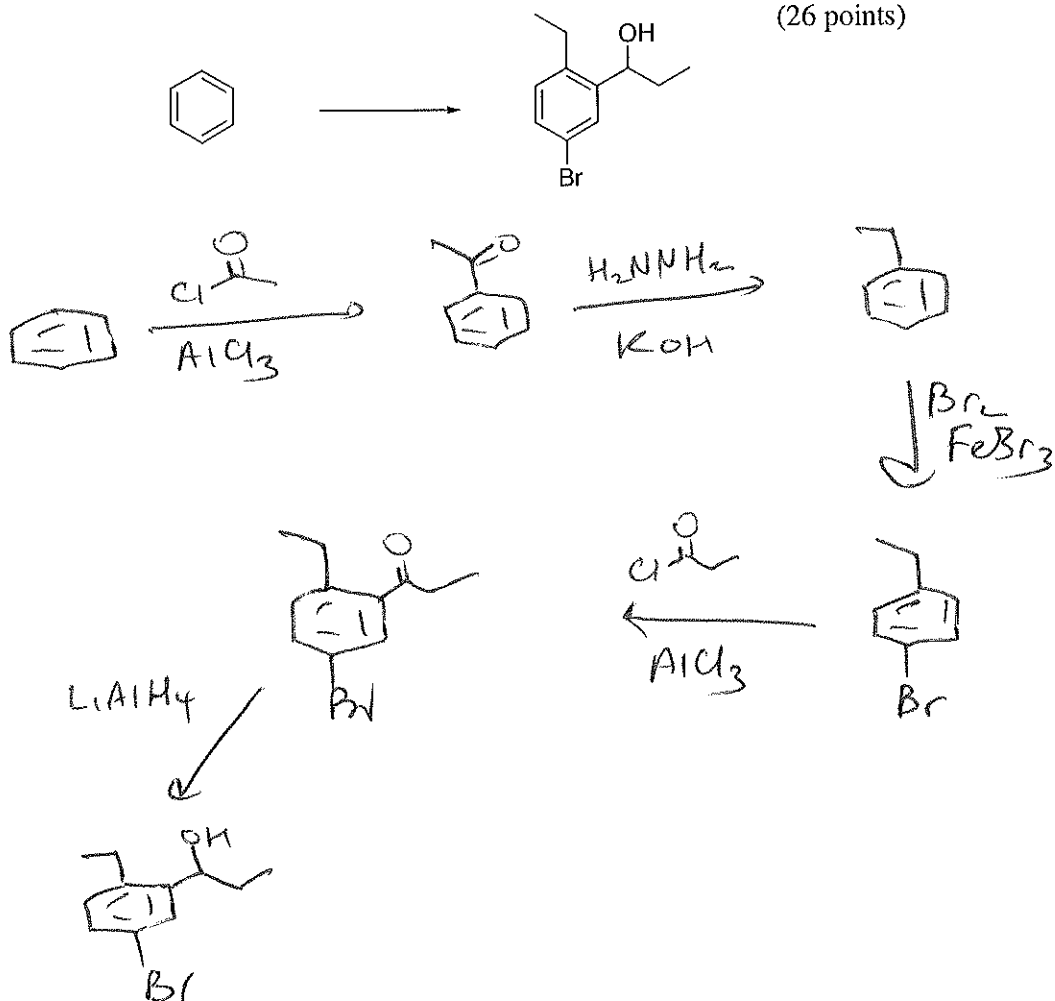
CIRCLE the problematic step, and describe the problem in the space below in 30 words or less



Nucleophilic Aromatic Substitution will take place first at the ortho or para position. Substitution at the meta position will not give a stabilized anion

3. Suggest a multistep synthesis, using **benzene** and any other materials that contain **5 carbons or less**. Reagents that do not end up in the product (e.g.  $\text{PPh}_3$ ) may contain more than 5 carbons.

(26 points)



4. Provide a detailed arrow pushing mechanism. (22 points)

