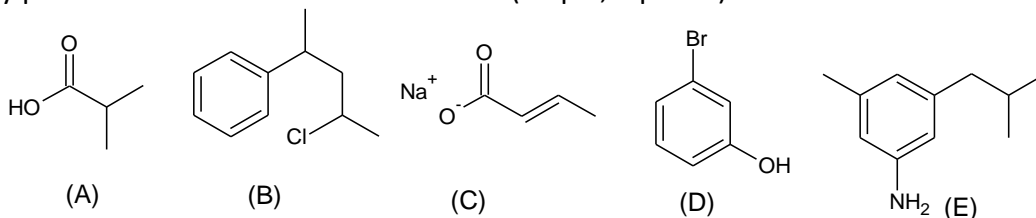


PRACTICE EXAM #3

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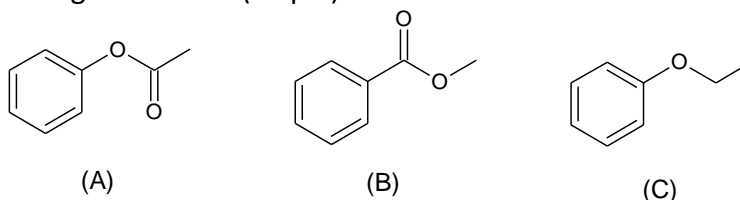
CHEMV12B, Organic Chemistry II

1.) Name the following compounds systematically (IUPAC). If the molecule has a common name, you may provide it in addition for extra credit. (30 pts, 6 pts ea)

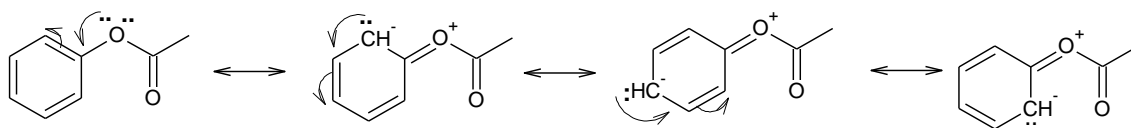


- (A) 2-methylpropanoic acid OR α -methylpropionic acid
- (B) 2-chloro-4-phenylpentane
- (C) E-sodium 2-butenate OR E-sodium α -en-butyrate
- (D) 3-bromophenol OR meta-bromophenol
- (E) 3-isobutyl-5-methylaniline

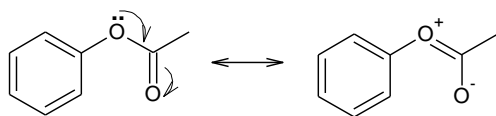
2.) Consider the following structures. (40 pts)



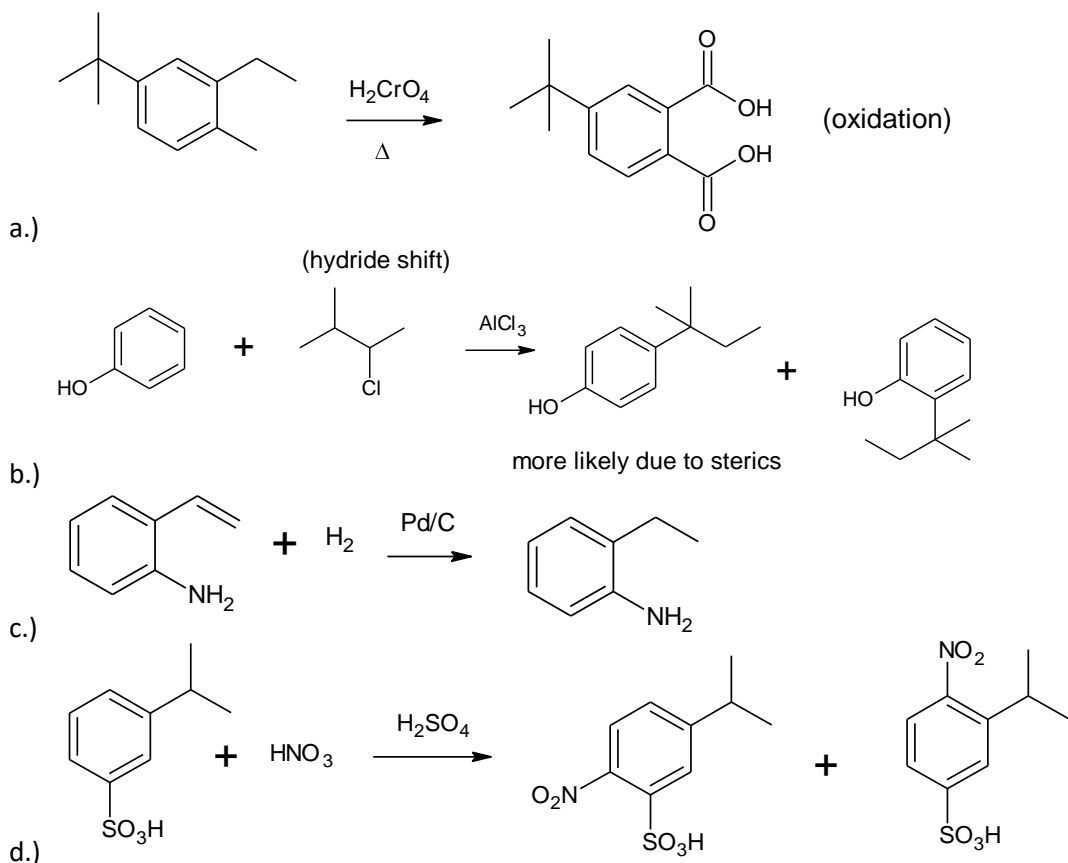
- a.) Which structure (A-C) is *most* reactive? (C), donates
- b.) Which structure(s) (A-C) are meta directors? (B), withdraws
- c.) Which structure(s) (A-C) are ortho/para directors? (A), (C), donates
- d.) For structure (A) ONLY, show all relevant resonance structures to explain your answers in (a-c).
 (A) is activating due to electron donation BUT has some electron withdrawal.
 DONATES in ortho/para positions



WITHDRAWS:

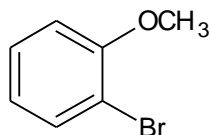


3.) Give the structure of the **major product(s)** formed by each reaction. If more than one product can be formed in approximately equal ratios, show *both*. (48 pts, 12 pts ea)

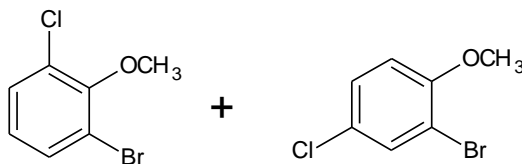


4.) Consider the molecule *o*-bromoanisole. (22 pts)

a.) Draw the structure for *o*-bromoanisole.



b.) A sample of *o*-bromoanisole is mixed with Cl_2 . Will a reaction occur? If so, draw the **structure** of the product and **explain**.



YES. electron donation makes the ring MORE nucleophilic

c.) A second sample of *o*-bromoanisole is mixed with NaOH . Will a reaction occur? If so, draw the **structure** of the product and **explain**.

NO. electron donation makes the ring **LESS** electrophilic.

5.) Design multistep syntheses to convert the following reactants into the indicated products. Include all reagents and reaction conditions necessary. Show each step individually. (60 pts, 30 pts ea)

