

Topics 1 and 2 Study Guide

1. How do you add OH across a double bond? (**H₂SO₄, H₂O**)
2. What ways give you Markovnikov addition of an OH group to a double bond? (**Acid catalyzed hydration, Oxymercuration-demercuration, etc**)
3. T/F You can add Br₂ to a benzene ring just as Br₂? (**F**)
4. T/F Ortho is the position at the carbon immediately adjacent to the substituent? (**T**)
5. T/F Para is the position at the carbon two carbons away from the substituent? (**F**)
6. Which of these is a meta director: NO₂, NH₂, NHMe, CH₃, SO₃H, and Cl? (**NO₂, SO₃H**)
7. Which of these is electron withdrawing: NO₂, NH₂, NHMe, CH₃, SO₃H, and Cl (**NO₂, SO₃H, and Cl**)
8. T/F Electron donating groups direct substituents to the ortho and para positions. (**T**)

9. What is/are the major product(s) of the following reaction?

A B C D E

(C and E)

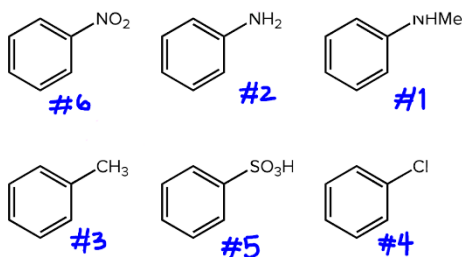
10. T/F In the Diels Alder reaction, the exo product is the major product. (**F**)
11. T/F The nitrogens in a benzene ring with electrons part of the conjugated ring are very nucleophilic. (**F**)

Rank the compounds below from most to least reactive in EAS. Justify your rankings.

12.

A	B	C
D	E	F

Rank the compounds below from most to least reactive in EAS. Justify your rankings



Answer:

13. T/F In NAS reactions, a the benzene ring's electrons attack a positively charged molecule. (F)
14. What are the problems with aromatic amines? (results in multiple substitutions if adding X₂, results in no substitutions if adding with an acid catalyst, and results in no substitutions if doing a Friedel Craft.)