Description / Instructions: Kap. 14 og 15.

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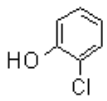
1. Testbank Question 1

The correct name for the compound shown below is:

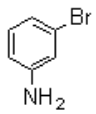


a. m-chorophenol
b. o-chorophenol
c. p-chorophenol
d. o-chorobenzyl alcohol
e. 2-chlorophenyl alcohol

Answer: _____

2. Testbank Question 2

The correct name for the compound shown below is:



a. m-bromoaniline
b. o-bromoaniline
c. p-bromoaniline
d. o-bromobenzyl amine
e. 3-bromophenyl amine

Answer: _____

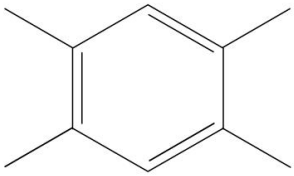
3. Prelecture, Question 6

Draw the structural formula of p-dimethylaminobenzoic acid

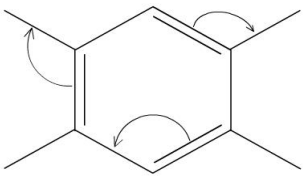
Click on the drawing box above to activate the Marvinsketch drawing tool and then draw your answer to this question.

4. Skill Building Exercise: Resonance and charge delocalization/ Problem 5

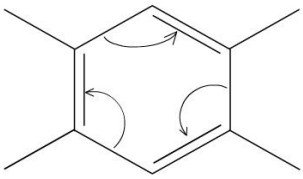
This compound has an important resonance structure. Choose the correct resonance structure.



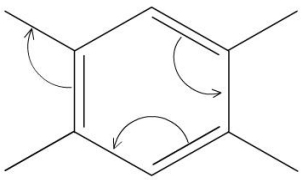
a.



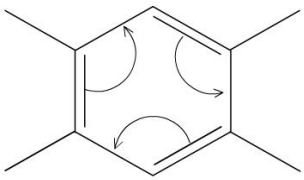
b.



c.



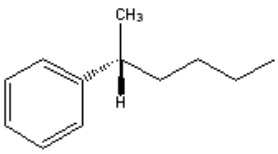
d.



Answer: _____

5. Testbank Question 33

The complete name for the following compound is:

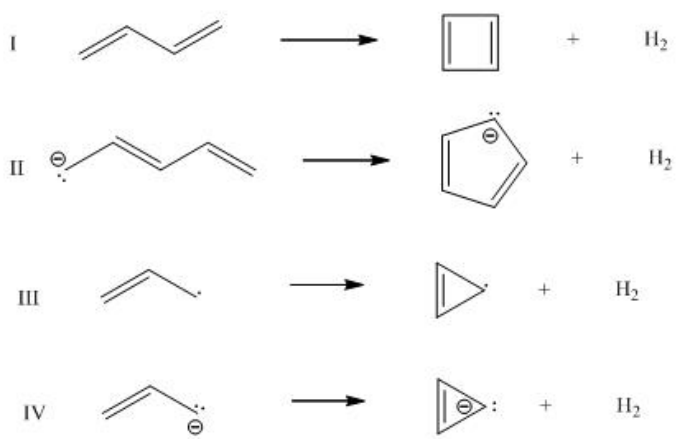


a. Butylmethylphenylmethane
b. (R)-2-Phenylhexane
c. sec-Hexylbenzene
d. 2-Phenylhexane
e. (S)-2-Phenylhexane

Answer: _____

6. Testbank Question 53

Which cyclization(s) should occur with a decrease in π electron energy?



a. I
b. II
c. III
d. IV
e. All of these choices.

Answer: _____

7. Testbank Question 102

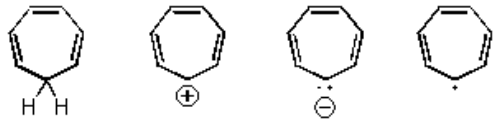
Which of the following would you expect to be aromatic?

a. I
b. II
c. III
d. IV
e. All of these choices.

Answer: _____

8. Testbank Question 98

Which of the following would you expect to be aromatic?



I II III IV

a. I
b. II
c. III
d. IV
e. None of these choices.

Answer: _____

9. Testbank Question 96

Which of the following would you expect to be aromatic?

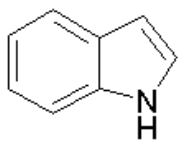
I II III IV V

a. I
b. II
c. III
d. IV
e. V

Answer: _____

10. Prelecture, Question 7

Would you expect the following species to be aromatic, antiaromatic, or neither?

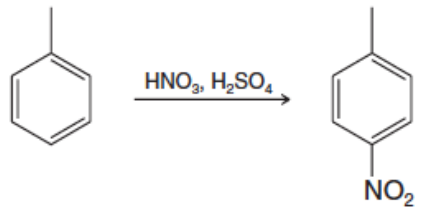


a. antiaromatic
b. aromatic
c. neither aromatic nor antiaromatic

Answer: _____

11. Problem 15.22a

Provide a mechanism that explains formation of the following products.



Draw step one of this mechanism. Include lone pairs and formal charges in the mechanism. Draw out explicitly only the **ONE** hydrogen removed from the H_2SO_4. Use equilibrium arrows in this mechanistic step.

Draw step two of this mechanism (formation of NO_2^+). Include lone pairs and formal charges in the mechanism. Do NOT draw out any hydrogen explictly in this step. Do not include the HSO_4^- ion in your step. Use equilibrium arrows in this mechanistic step.

Draw step three of this mechanism, which forms a resonance stabilized carbocation. Do not draw the resonance structures in your mechanistic steps. Include all lone pairs and formal charges in the mechanism. Use equilibrium arrows in this mechanistic step.

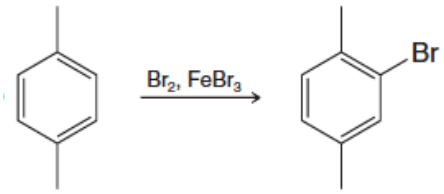
To show regiochemistry of the addition of NO_2. First draw a mechanism arrow from double bond of benzene to the carbon that will add the NO_2. Next, draw an arrow from that carbon to the NO_2 along with any other arrows you may need.

The product of the above mechansism step has two resonance structure. Draw the two resonance structure of that molecule that delocalize the carbocation around the ring. Include lone pairs (if necessary) and formal charges in the structures, and add a resonance arrow between the structures.

Draw step 4 of this mechanism, which forms the final product. Include all lone pairs and formal charges in the mechanism. Draw out explicitly only the **ONE** hydrogen that is removed in the elimination step. Do NOT include any of the above resonance structures in your mechanism. Use regular reaction arrows for this mechanistic step. Use H_2O as the base.

12. Problem 15.22b

Provide a mechanism that explains formation of the following products.



Draw step one of this mechanism. Include lone pairs and formal charges in the mechanism. Draw out explicitly all of the Bromine atoms. Use equilibrium arrows in this mechanistic step.

Draw step two of this mechanism, which forms a resonance stabilized carbocation. Do not draw the resonance structures in your mechanistic steps. Include all lone pairs and formal charges in the mechanism. Use regular reaction arrows in this mechanistic step.

To show regiochemistry of the addition of Br. First draw a mechanism arrow from double bond of benzene to the carbon that will add the Br. Next, draw an arrow from that carbon to the Br along with any other arrows you may need.

The product of the above mechansism step has two resonance structure. Draw the two resonance structure of that molecule that delocalize the carbocation around the ring. Include lone pairs (if necessary) and formal charges in the structures.

Draw step 3 of this mechanism, which forms the final product. Include all lone pairs and formal charges in the mechanism. Draw out explicitly only the **ONE** hydrogen that is removed in the elimination step. Do NOT include any of the above resonance structures in your mechanism. Use regular reaction arrows for this mechanistic step. Use Br^- as the base.

13. Problem 15.28b

Draw the major product (or products) that would be obtained when anisole (methoxybenzene) reacts with Cl_2 and $FeCl_3$. If two structures exist, draw them both.

14. Problem 15.28c

Draw the major product (or products) that would be obtained when fluorobenzene reacts with Cl_2 and $FeCl_3$. If two structures exist, draw them both.

15. Problem 15.28d

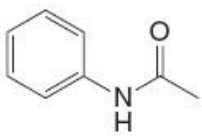
Draw the major product (or products) that would be obtained when benzoic acid reacts with Cl_2 and $FeCl_3$. If two structures exist, draw them both.

16. Problem 15.28h

Draw the major product (or products) that would be obtained when ethyl phenyl ether is subjected to ring chlorination with Cl_2 and $FeCl_3$. If two structures exist, draw them both.

17. Problem 15.29a

Predict the major product (or products) formed when acetanilide reacts with a mixture of concentrated HNO_3 and H_2SO_4. If two structures exist, draw them both.



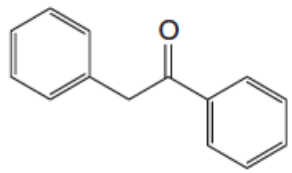
Acetanilide

18. Problem 15.29d

Predict the major product (or products) formed when 3-chlorobenzoic acid reacts with a mixture of concentrated HNO_3 and H_2SO_4. If two structures exist, draw them both.

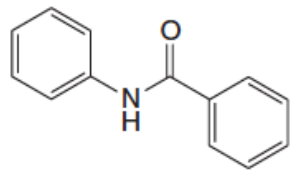
19. Problem 15.30a

What monobromination product (or products) would you expect to obtain when the following compound undergoes ring bromination with Br_2 and $FeBr_3$?



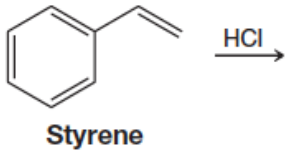
20. Problem 15.30b

What monobromination product (or products) would you expect to obtain when the following compound undergoes ring bromination with Br_2 and $FeBr_3$?



21. Problem 15.31a

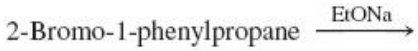
Draw the structure of the major product of the following reaction.



Styrene

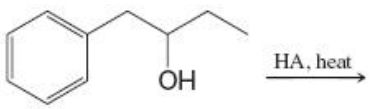
22. Problem 15.31b

Draw the structure of the major product of the following reaction.



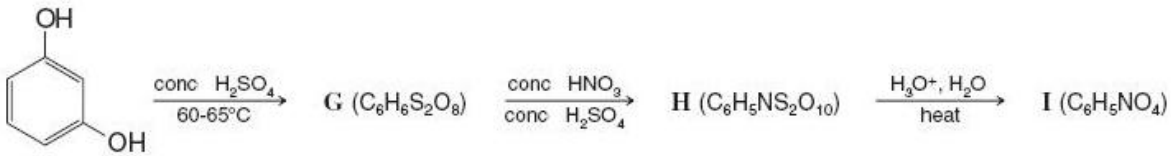
23. Problem 15.31c

Draw the structure of the major product of the following reaction.



24. Problem 15.37

Propose structures for compounds **G-I:**



Compound **G:**

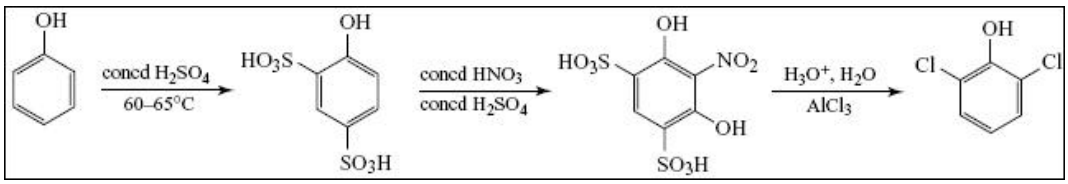
Compound **H:**

Compound **I:**

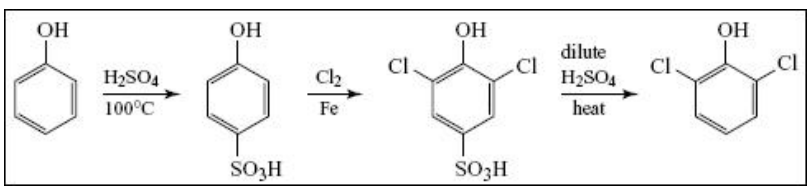
25. Problem 15.38

2,6-Dichlorophenol has been isolated from the females of two species of ticks (*Amblyonna americanum* and *A. maculatum*), where it apparently serves as a sex attractant. Each female tick yields about 5 ng of 2,6-dichlorophenol. Assume that you need larger quantities than this and outline a synthesis of 2,6-dichlorophenol from phenol.

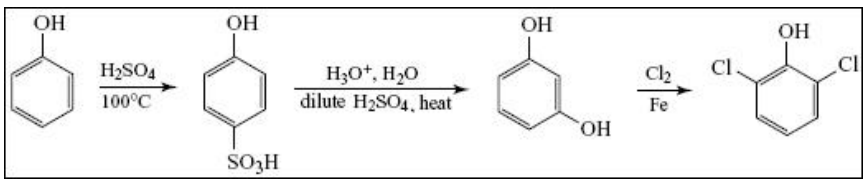
a.



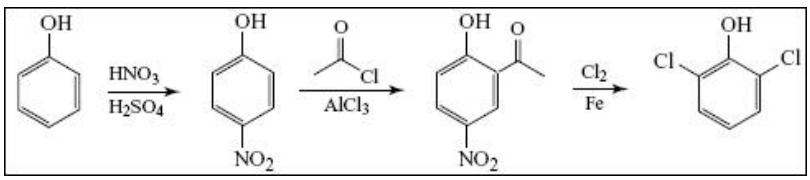
b.



c.



d.



Answer: _____