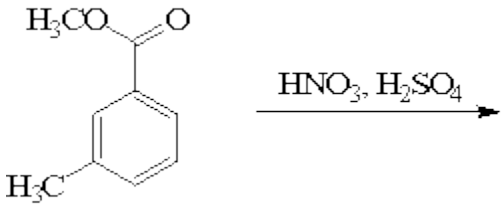
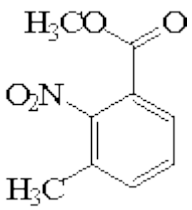
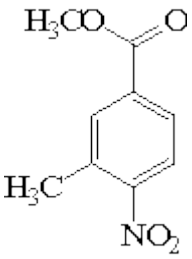
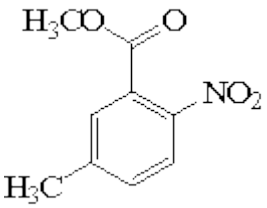
Vollhardt-Schore, Organic Chemistry 5e Ch 16

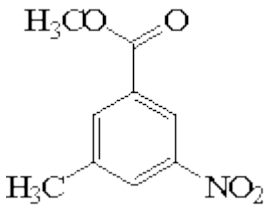
1. What would be the *major* product of the following reaction?



A. 

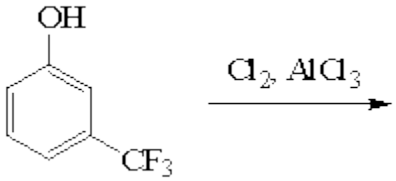
B. 

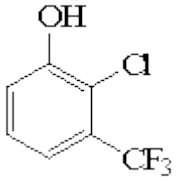
C. 

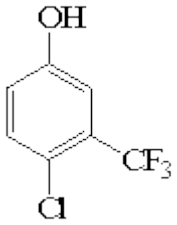
D. 

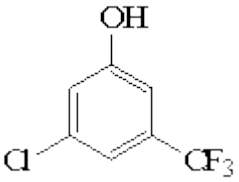
E. More than one of the above.

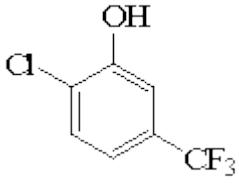
2. Predict the *major* product of the following reaction.



A. 

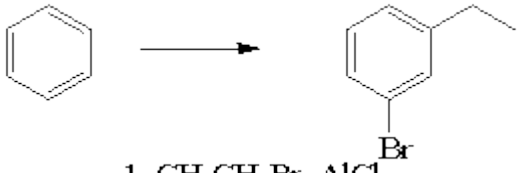
B. 

C. 

D. 

E. Two of the above are correct.

3. What combination of reagents would be required to produce 3-bromoethylbenzene from benzene?



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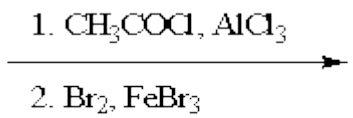
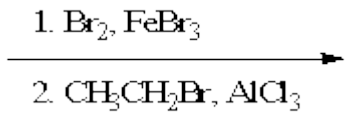
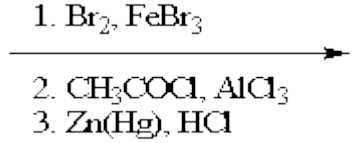
B. 

C. 

D. 

E. None of the above would work.

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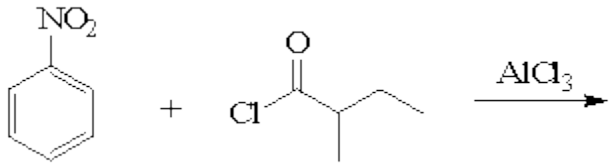
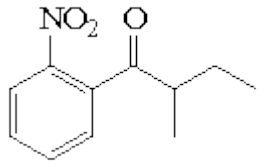
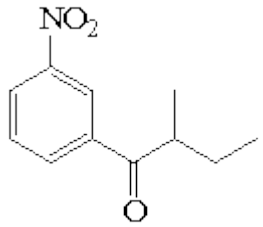
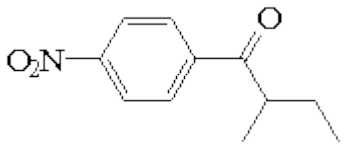
4. Predict the *major* product of the following reaction.



A. 

B. 

C. 

D. Two of the above are correct.

E. This reaction will not proceed as written.

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5. Which of the following statements most accurately describes why the halogens are deactivating yet are *ortho/para* directors in terms of electrophilic aromatic substitution reactions on halobenzenes?

A. Halogens are electron-withdrawing in an inductive sense.

B. Halogens are electron-donating in a resonance sense.

C. Halogens are electron-donating in an inductive sense.

D. Halogens are electron-withdrawing in a resonance sense.

E. Two of the above responses are correct.

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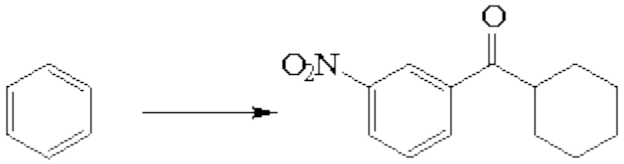
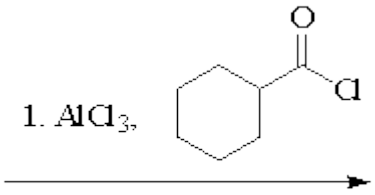
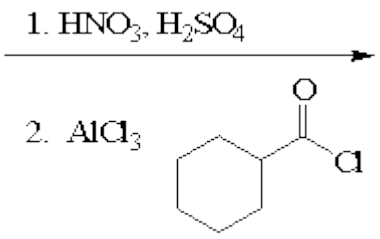
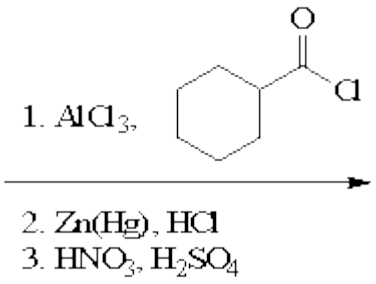
6. What set of reaction conditions is necessary to effect the following transformation?



A. 

B. 

C. 

D. 

E. Two of these are correct.

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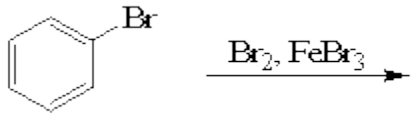
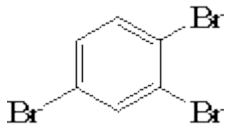
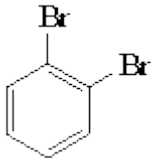
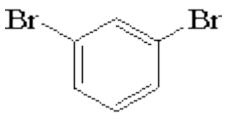
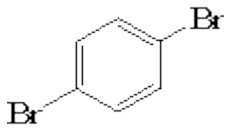
7. What would be the *major* product(s) expected from the following reaction?



A. 

B. 

C. 

D. 

E. Both B and D.

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8. Why do electron-withdrawing groups on a benzene ring direct substitution to mostly the *meta* positions?

A. The *meta* positions are always more reactive.

B. The intermediate from *meta* attack has three reasonably stable resonance structures while *ortho* or *para* attack yields one especially unstable resonance structure.

C. The intermediate from *meta* attack has one especially stable and two reasonably stable resonance structures, while *ortho/para* attack yields three reasonably stable resonance structures.

D. The intermediate from *meta* attack has two especially stable and one reasonably stable resonance structures, while *ortho/para* attack yields three reasonably stable resonance structures.

E. The intermediate from *meta* attack has two especially stable and one reasonably stable resonance structures, while *ortho/para* attack yields two reasonably stable and one especially unstable resonance structures.

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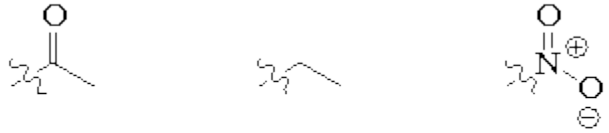
9. Rank the following functional groups in order of decreasing reactivity in electrophilic aromatic substitution (i.e., decreasing electron-donating ability to an aromatic ring). Rank them as most reactive to least reactive.



A B C

A. B > D > A > E > C

B. C > A > E > B > D

C. D > A > E > C > B

D. E > C > A > B > D

E. D > B > E > A > C

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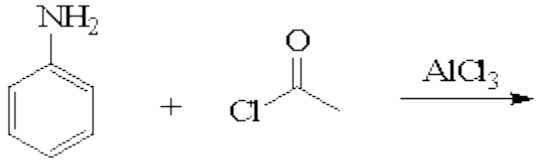
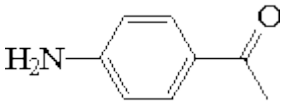
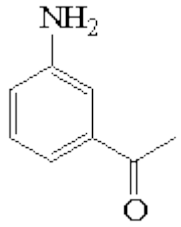
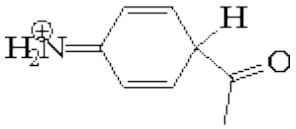
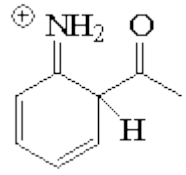
10. Consider carefully the mechanism of the reaction shown below. Which of the following intermediates or products will *not* be formed during the course of the reaction?

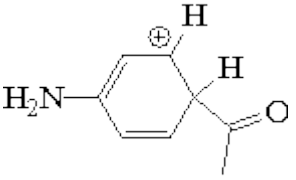


A. 

B. 

C. 

D. 

E. 

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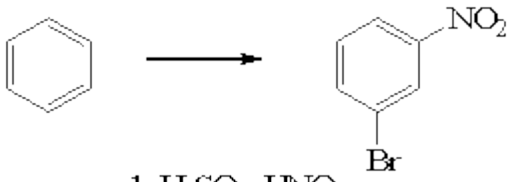
11. Indicate the reagents required to perform the following transformation.



A. $\xrightarrow[2.\ Br_2,\ FeBr_3]{1.\ H_2SO_4,\ HNO_3}$

B. $\xrightarrow[2.\ H_2SO_4,\ HNO_3]{1.\ Br_2,\ FeBr_3}$

C. $\xrightarrow[2.\ HNO_3]{1.\ Br_2,\ HBr}$

D. $\xrightarrow[2.\ FeBr_3]{1.\ HNO_3}$

E. More than one method would work.

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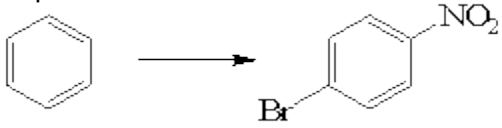
12. Indicate the reagents that would be required for the transformation shown.



A. $\xrightarrow[2.\ Br_2,\ FeBr_3]{1.\ H_2SO_4,\ HNO_3}$

B. $\xrightarrow[2.\ H_2SO_4,\ HNO_3]{1.\ Br_2,\ FeBr_3}$

C. $\xrightarrow[2.\ HNO_3]{1.\ Br_2,\ HBr}$

D. $\xrightarrow[2.\ FeBr_3]{1.\ HNO_3}$

E. More than one method would work.

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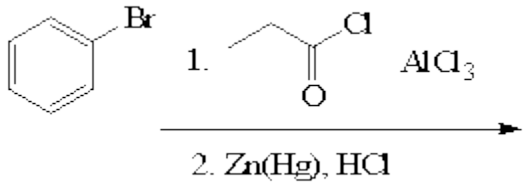
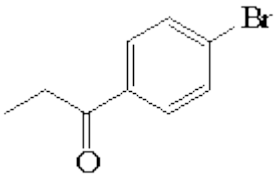
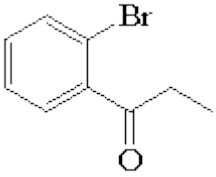
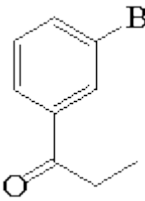
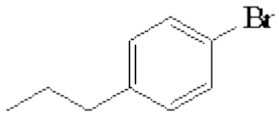
13. Predict the product of the following reaction.

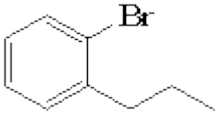


A. 

B. 

C. 

D. 

E. 

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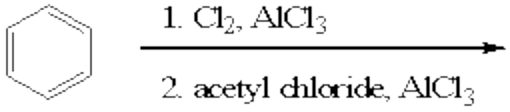
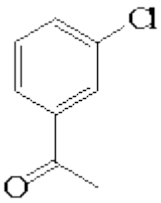
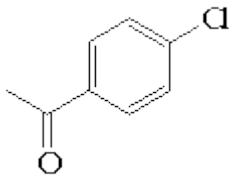
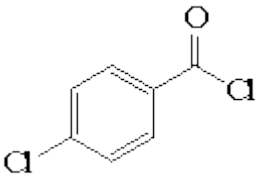
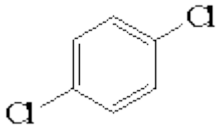
14. Predict the product of the following reaction.



A. 

B. 

C. 

D. 

E. None of these are the correct product.

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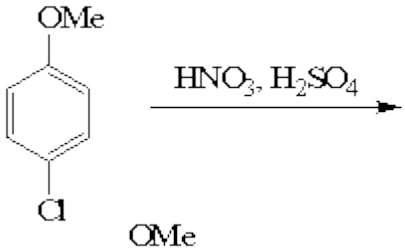
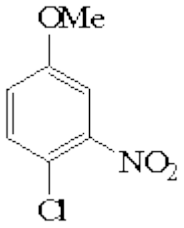
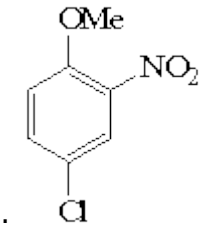
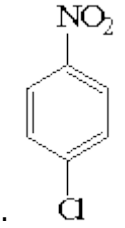
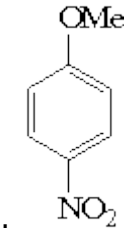
15. Predict the product of the following reaction.

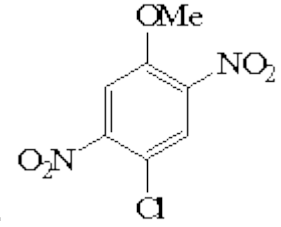


A. 

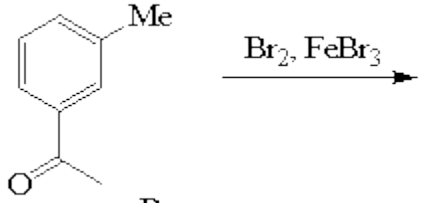
B. 

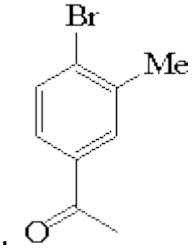
C. 

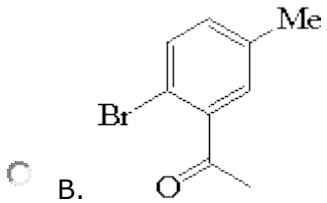
D. 

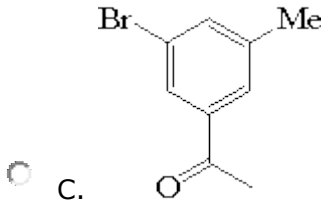
E. 

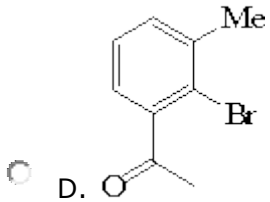
16. Predict the product of the following reaction.



A. 

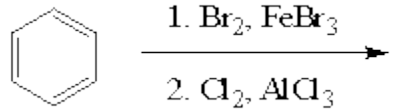
B. 

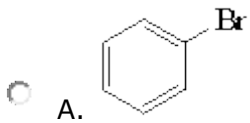
C. 

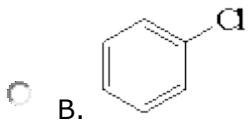
D. 

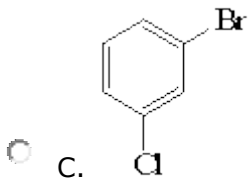
E. More than two products are correct.

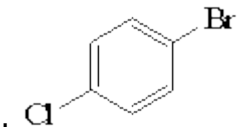
17. Predict the product of the following reaction.

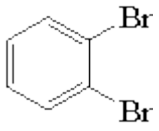


A. 

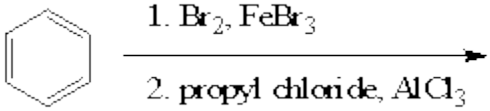
B. 

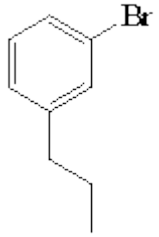
C. 

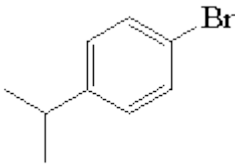
D. 

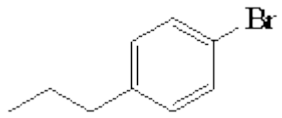
E. 

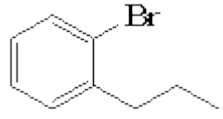
18. Predict the product of the following reaction.

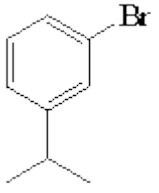


A. 

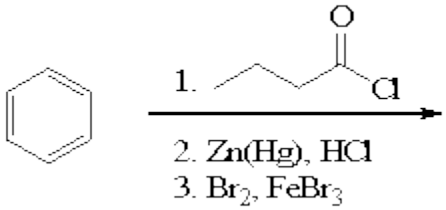
B. 

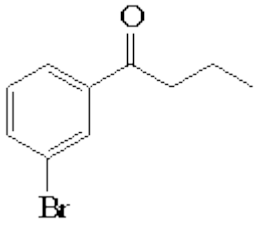
C. 

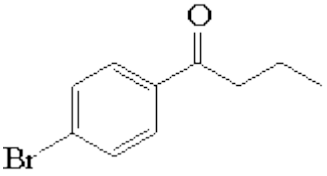
D. 

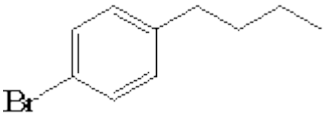
E. 

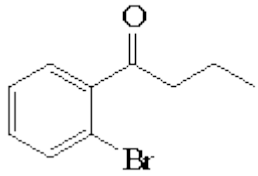
19. Predict the product of the following reaction.

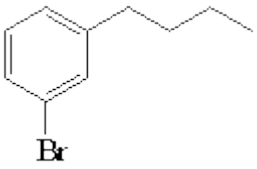


A. 

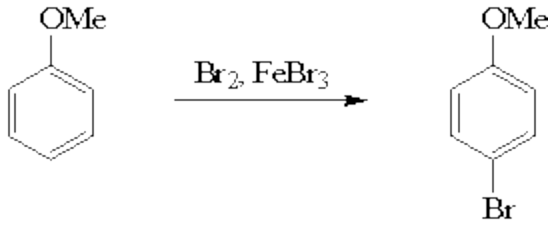
B. 

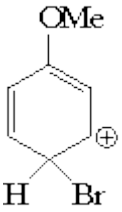
C. 

D. 

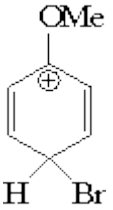
E. 

20. Which is not a resonance structure of the intermediate of the following reaction

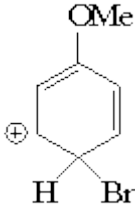




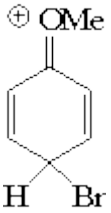
A.



B.



C.



D.

E. All of the above are resonance structures of the intermediate.