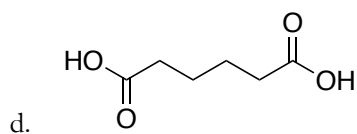
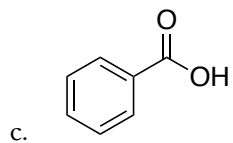
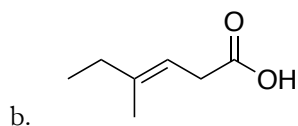
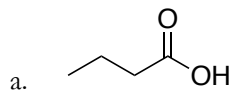


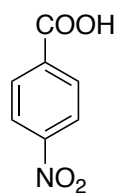
Chem 202 Chapter 20 Carboxylic Acids and Nitriles

Naming, Substituent Effects on Acidity & Reactions of Carboxylic Acids

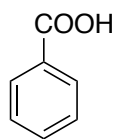
1. Name the following molecules using IUPAC rules.



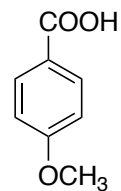
2. Rank the following compounds from least acidic to most acidic.



A



B



C



<



<

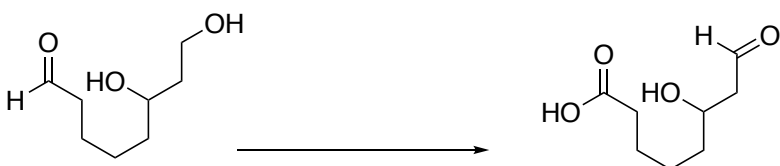


Propose a synthesis for the following transformation using any reagents you have learned.

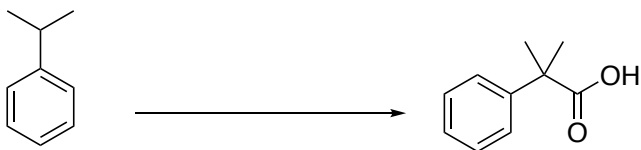
3.

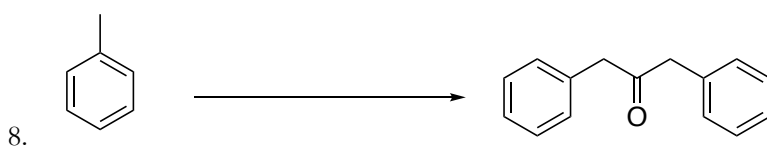
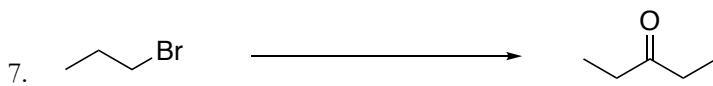


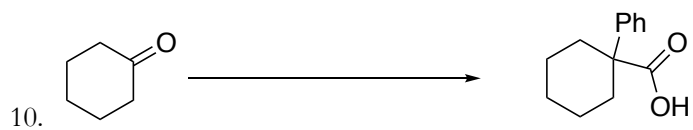
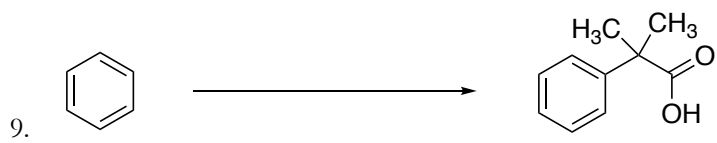
4.



5.



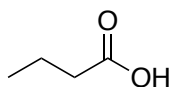




Chem 202 Chapter 20 Carboxylic Acids and Nitriles **KEY**

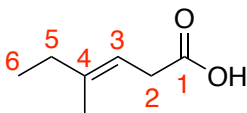
Naming, Substituent Effects on Acidity & Preparing Carboxylic Acids Worksheet

1. Name the following molecules using IUPAC rules.



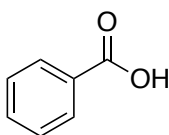
In order to name a carboxylic acid, we substitute -ane with -oic acid

- a. **butanoic acid**



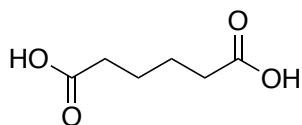
We start by finding the longest chain and determine carbon our substituent is on. Then we determine whether the double has a *Z*- or *E*-configuration

- b. **E-4-methyl-hex-3-enoic acid**



Although we would name it using IUPAC rules, such as adding carboxylic acid as the parent name, this compound is an exception as it is more commonly referred to as its 'special name'

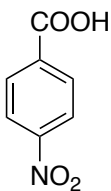
- c. **benzoic acid**



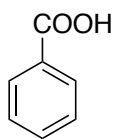
We determine the longest chain and since there are two carboxylic groups we simply add -dioic acid

- d. **hexanedioic acid**

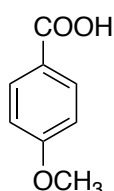
2. Rank the following compounds from least acidic to most acidic.



A



B



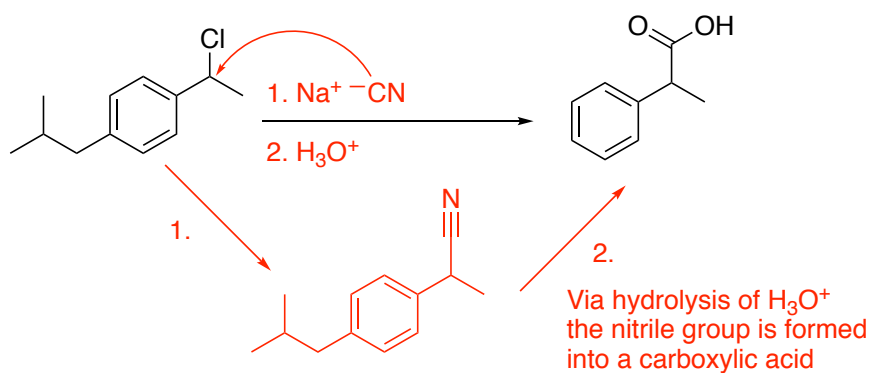
C

Acidity of carboxylic acids is determined by how stable the negative on its oxygen will be. Adding an electron donating group would destabilize the charge. On the other hand, an electron withdrawing group would stabilize the negative charge as it pulls the negative towards it via resonance.

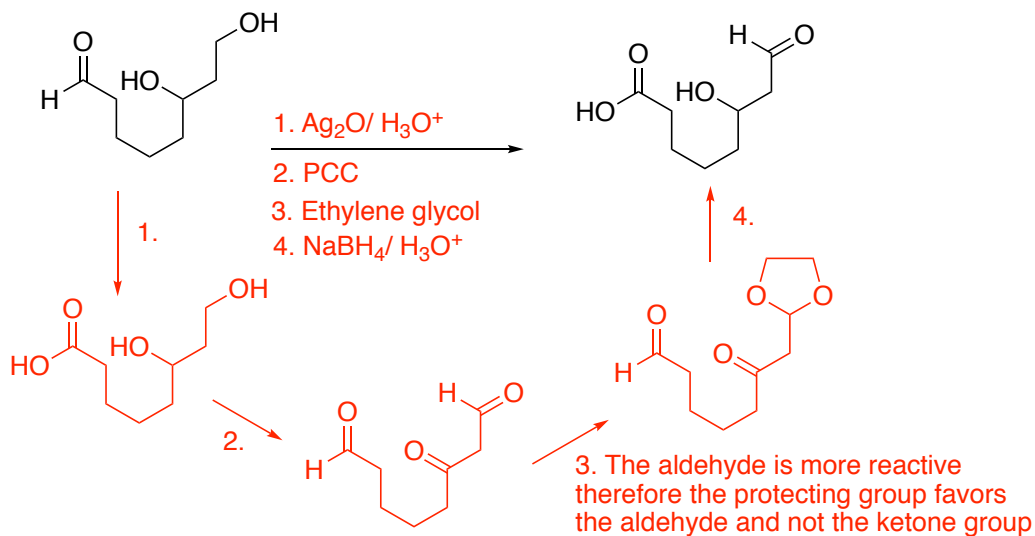


Propose a synthesis for the following transformation using any reagents you have learned.

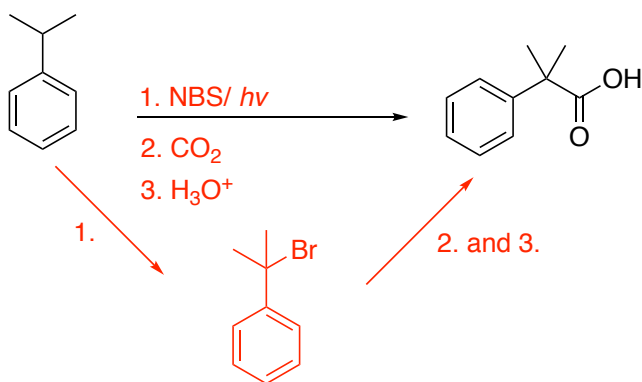
3.



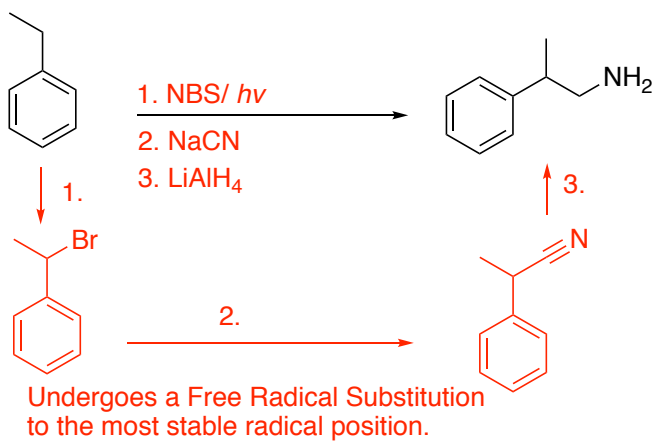
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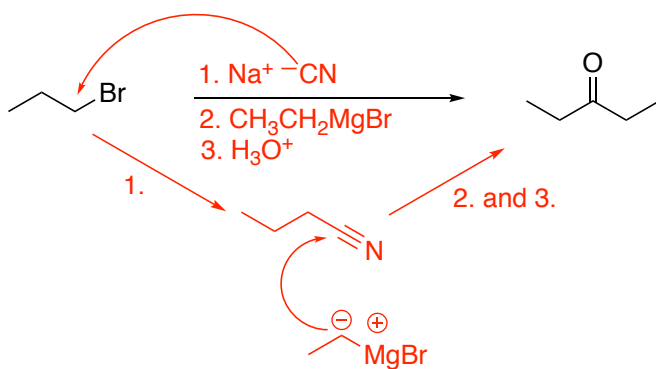
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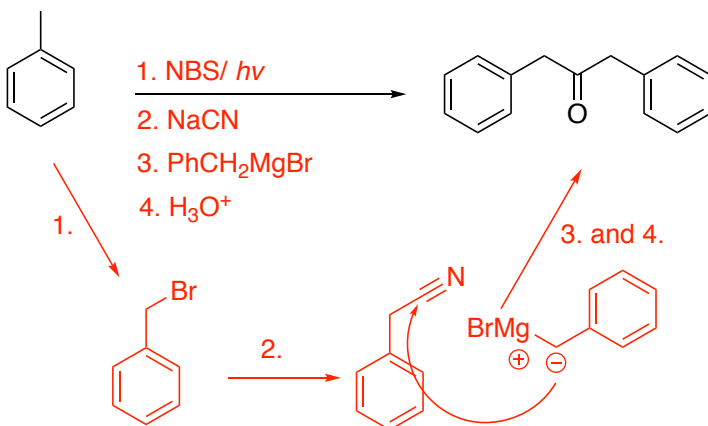
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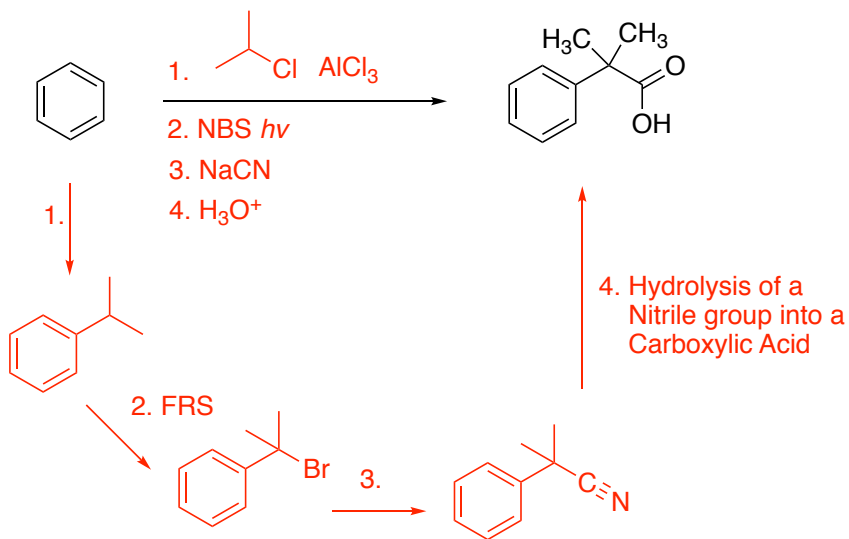
7.



8.



9.



10.

