Organic Chemistry II CHM 3150
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Exam III Review (Chapters 21 and 17/18) – Practice Problems

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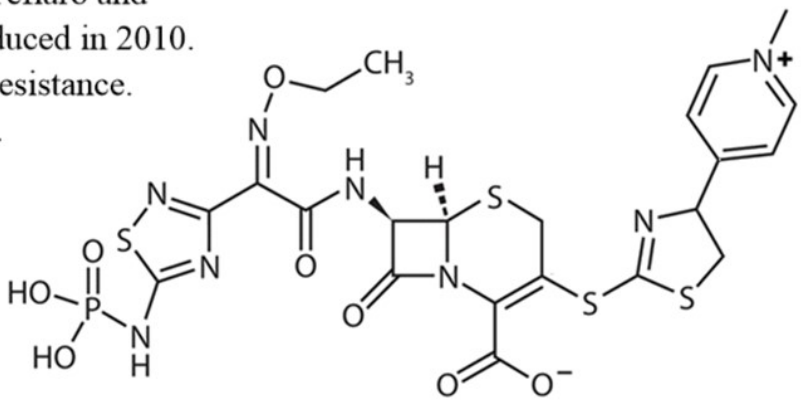
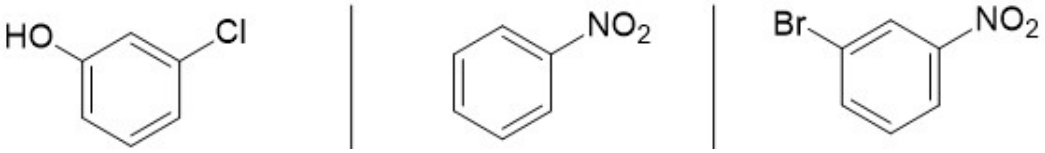
1 Shown below is ceftaroline (trade names Teflaro and Zinforo), an antibiotic drug that was introduced in 2010. By 2014, MRSA had mutated to develop resistance. Identify the aromatic ring(s) in ceftaroline.



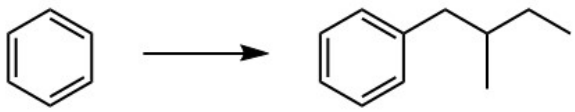
A) 1
B) 2
C) 3
D) 4
E) 5

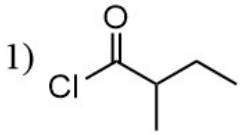
2 Determine whether each compound will readily undergo a ***Nucleophilic* Aromatic Substitution** (S_NAr) and/or readily reacts (*i.e.*, is "activated") under ***Electrophilic* Aromatic Substitution** (EAS) conditions.



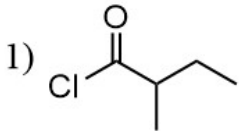
3 Categorize each of the following groups as an **ortho/para director** or a **meta director.**

4 Provide the reagents necessary to transform the given starting material into the desired product.



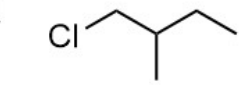
I 

2) Zn(Hg), HCl

II 

2) NH_2NH_2, TsOH

3) KOH, H_2O, heat

III 

A) I only

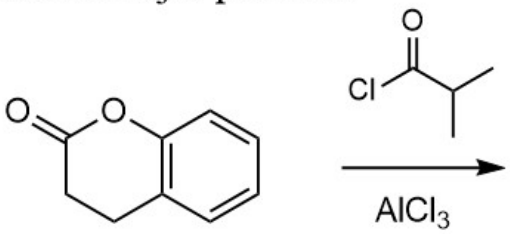
B) II only

C) III only

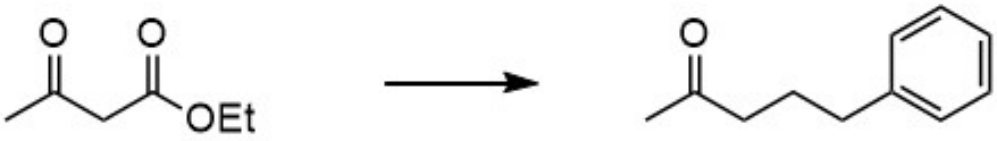
D) I and II only

E) I, II and III

5 Predict the major product.

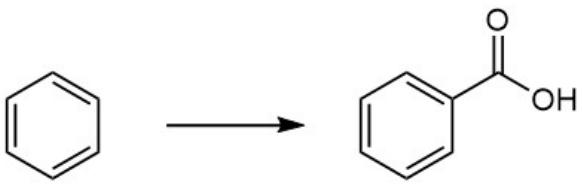


6 Provide the reagents necessary to transform the given starting material into the desired product.

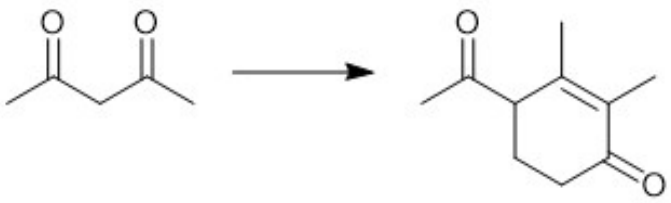


7 Provide THREE possible synthetic routes:

Possible retrosyntheses: Grignard, oxidation, hydrolysis



8 Provide the necessary reagents.



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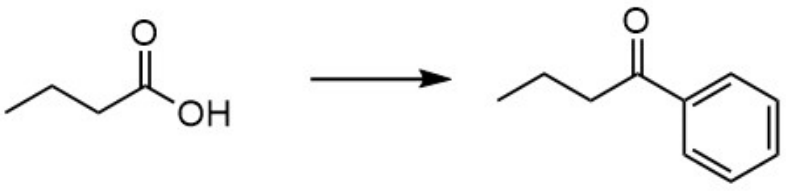
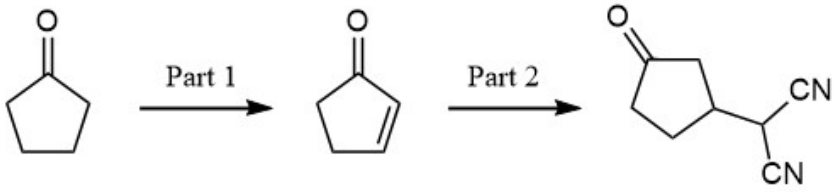
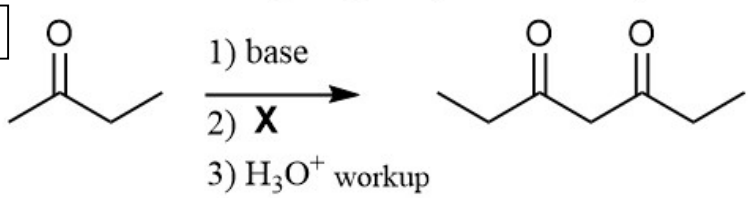


10 Provide the necessary reagents.



Provide the necessary reagents (base and compound **X**).

11



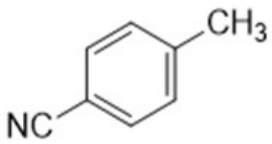
Identify suitable reaction conditions for the "base" above.

A) LDA, –78°C B) NaOH, –78°C C) NaH, 25°C D) NaOH, 25°C

A) Base should be added slowly to a solution of the ketone.
B) Ketone should be added slowly to a solution of the base.
C) The order of addition does not mattre (both A and B give the same results)

12–13 Prepare each of the following target molecules from **toluene**.

12



13 *meta*-nitrobenzoic acid