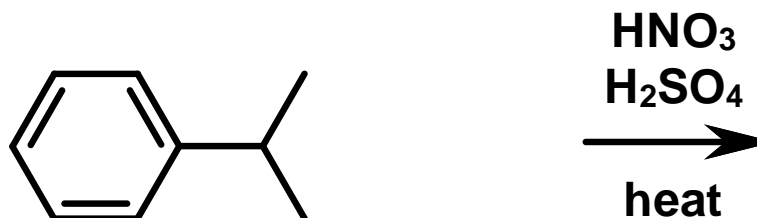
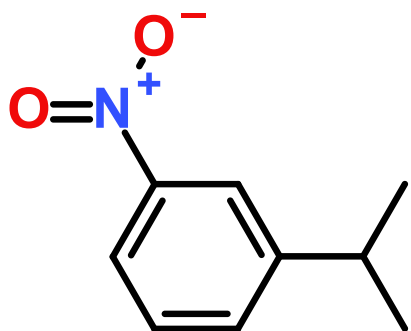


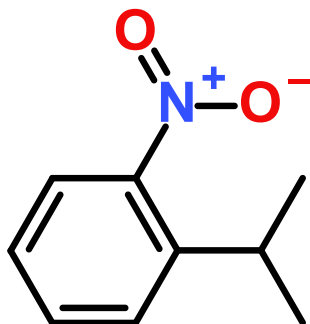
Give the major product(s) of the following reaction.



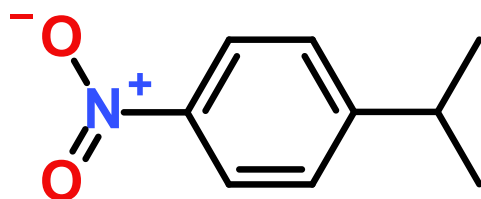
2016-09-12 Q1



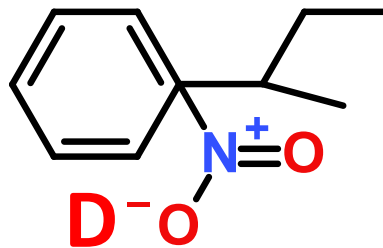
A



B



C



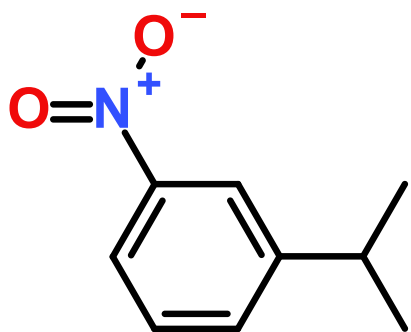
D

E. There is no reaction or the correct product is not listed here.

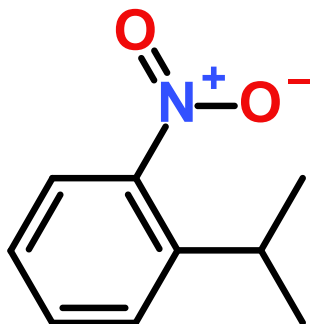
Give the major product(s) of the following reaction.



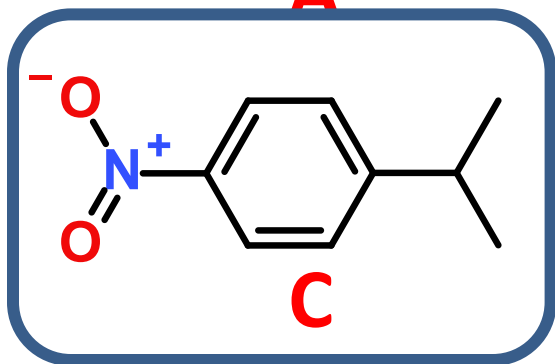
2016-09-12 Q1



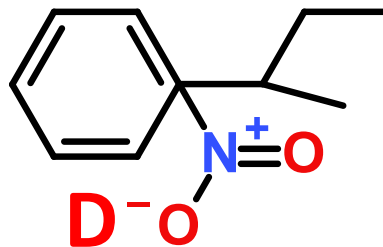
A



B



C



D

E. There is no reaction or the correct product is not listed here.

Exam 1

- **Time:**
 - Tuesday, September 20: 7:00 – 9:00PM OR
 - Wednesday, September 21: 7:00 – 9:00PM OR
 - Thursday, September 22: 7:00 – 10:00PM
- **Location – Soc/Anthro Testing Center**
 - Chapters will be covered in this order: Chapter 11, 14, 15, 19, 13
- **Practice Exams are Posted**
 - B7-19-98A Practice Exam 1A
 - B7-19-98B Practice Exam 1B
- **Deadline for alternate arrangements is Monday, 9/19/2016 at 4:30 PM (i.e., close of business)**
 - An oral make-up exam will be required for making up the exam for all students not taking the exam on the above dates or having already made prior arrangements

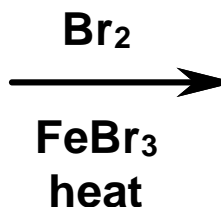
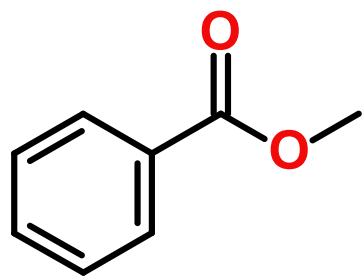
Order of Coverage (Exam 1)

	Homework Assignment	Due Date
1	B4-11-01 IR Functional Groups (wDeadline)	Tuesday, August 23
2	B7-14-02 Mass Spec - Molecular Ion (wDeadline)	Wednesday, August 24
3	B7-14-03 Mass Spec - Isotope Effects (wDeadline)	Thursday, August 25
4	B7-15-01 Number of Peaks ¹ H NMR Spectra (wDeadline)	Friday, August 26
5	B7-15-06 Number of Peaks ¹³ C NMR (wDeadline)	Saturday, August 27
6	B7-15-02 Theoretical NMR Chemical Shift (wDeadline)	Sunday, August 28
7	B7-15-03 Theoretical NMR Integration (wDeadline)	Monday, August 29
8	B7-15-04 Theor. NMR Spin-Spin Splitting (wDeadline)	Tuesday, August 30
9	B7-15-05 NMR Spectroscopy Problems (wDeadline)	Wednesday, August 31
10	B7-15-07 ¹³ C NMR Structure ID (wDeadline)	Thursday, September 1
11	B7-13-01A Nomenclature Alkyl Halides (wDeadline)	Friday, September 2
12	B7-13-01B Alkyl Halide Nomenclature (wDeadline)	Saturday, September 3
13	B7-13-02A Halogenation of Alkanes (wDeadline)	Sunday, September 4
14	B7-13-02B Halogenation of Alkanes (wDeadline)	Monday, September 5

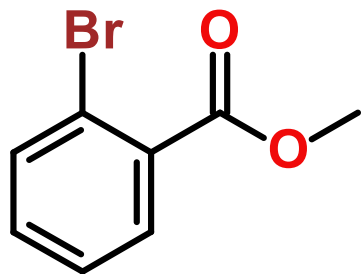
Order of Coverage (Exam 1)

	Homework Assignment	Due Date
15	B7-13-03A Oxidation and Anti-oxidants (wDeadline)	Tuesday, September 6
16	B7-19-01 Aromaticity (wDeadline)	Wednesday, September 7
17	B7-19-02B Arene Nomenclature (wDeadline)	Thursday, September 8
18	B7-19-03A Halogenation of Arenes (wDeadline)	Friday, September 9
19	B7-19-03B Halogenation of Arenes (wDeadline)	Friday, September 9
20	B7-19-04A Arene Rxns Inorganic Acids (wDeadline)	Saturday, September 10
21	B7-19-04B Arene Rxns Inorganic Acids (wDeadline)	Saturday, September 10
22	B7-19-05A Friedel-Crafts (wDeadline)	Sunday, September 11
23	B7-19-05B Friedel-Crafts (wDeadline)	Sunday, September 11
24	B7-19-06 Arene Mechanistic Issues (wDeadline)	Wednesday, September 12
25	B7-19-06B Arene Mechanisms (wDeadline)	Wednesday, September 12
26	B7-19-07A Nucleophilic Aromatic Subs (wDeadline)	Thursday, September 13
27	B7-19-07B Nucleophilic Aromatic Subs (wDeadline)	Friday, September 14
	Exam 1	September 20, 21, 22

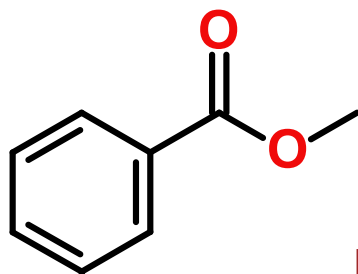
Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order.



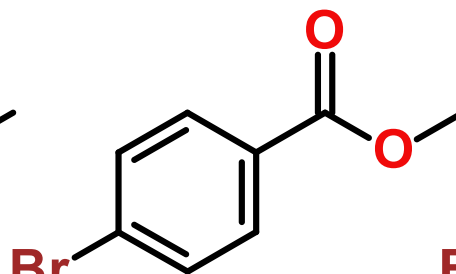
2016-09-12 Q2



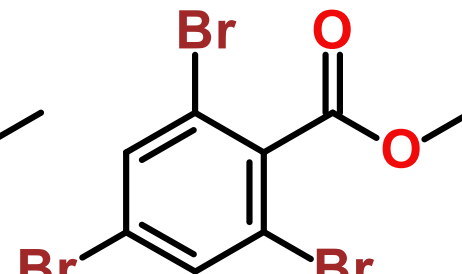
A



B



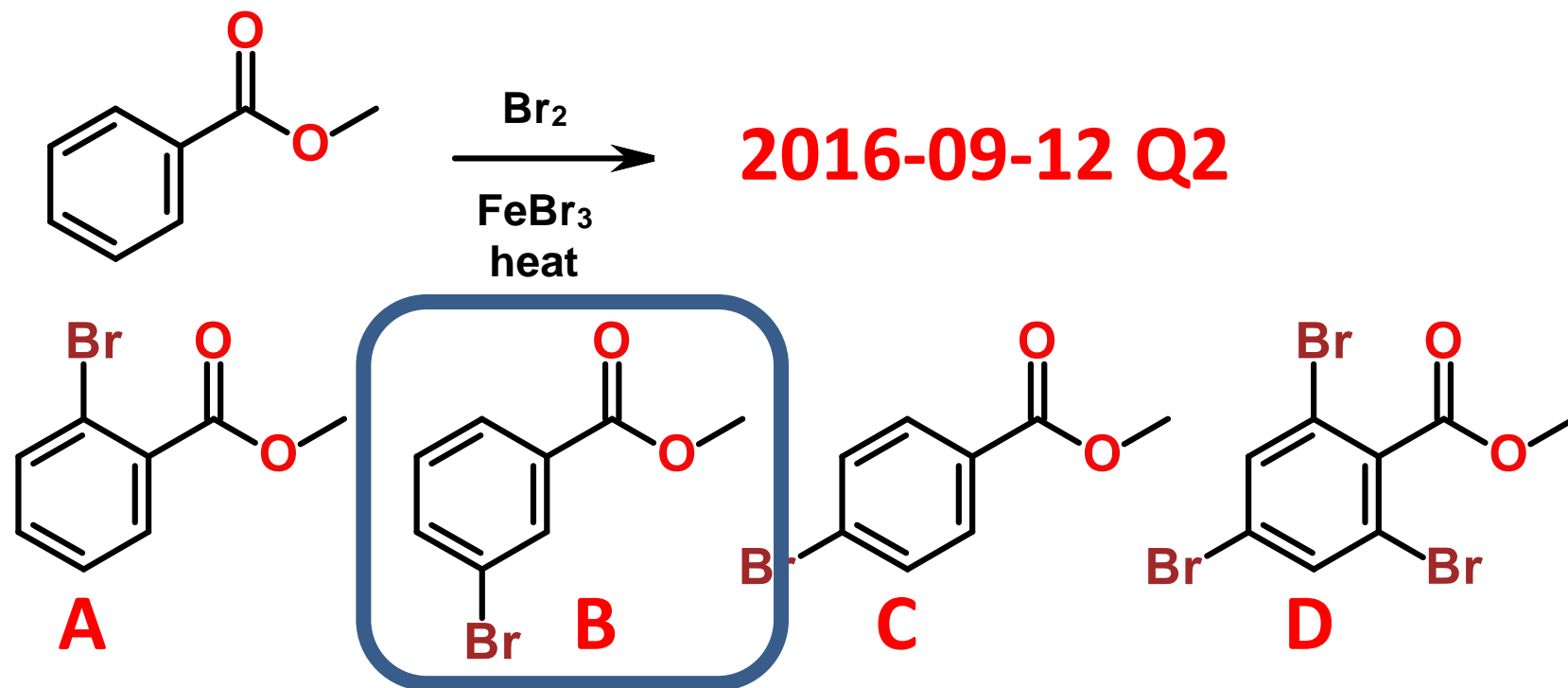
C



D

E. None of the above.

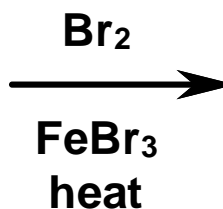
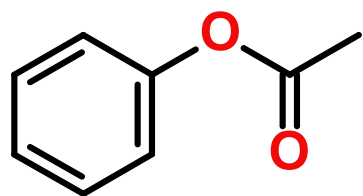
Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order.



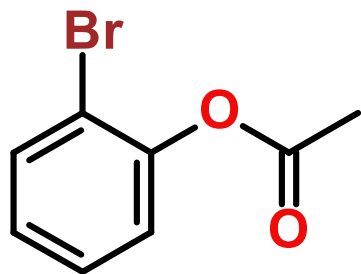
2016-09-12 Q2

E. None of the above.

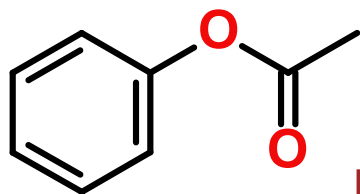
Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order.



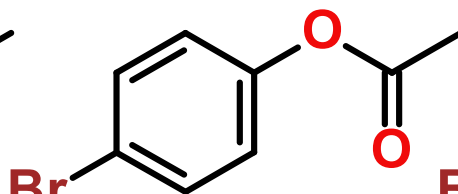
2016-09-12 Q3



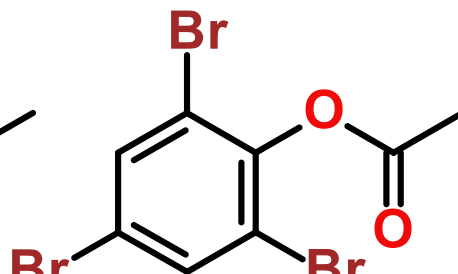
A



B



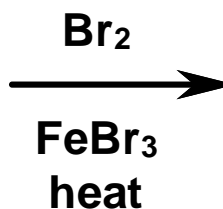
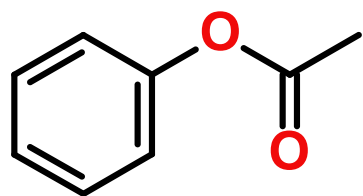
C



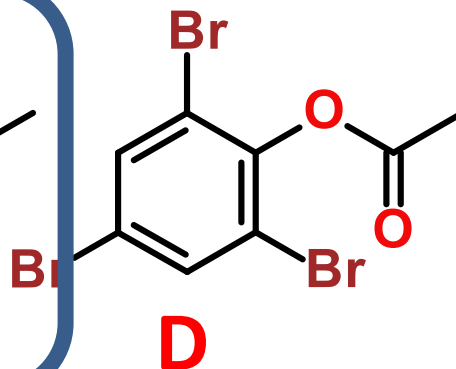
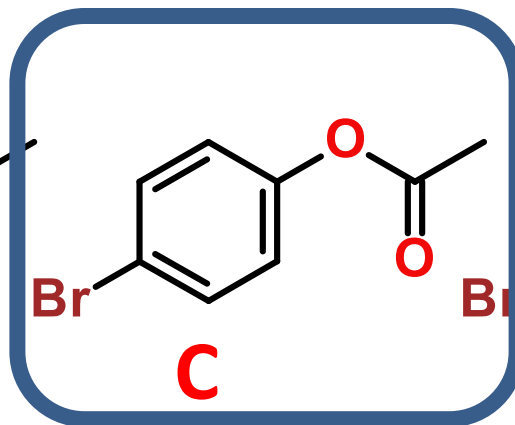
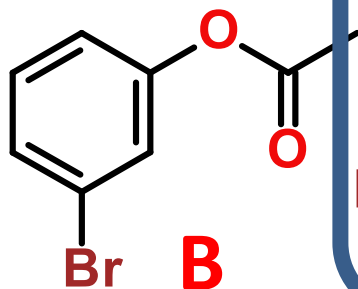
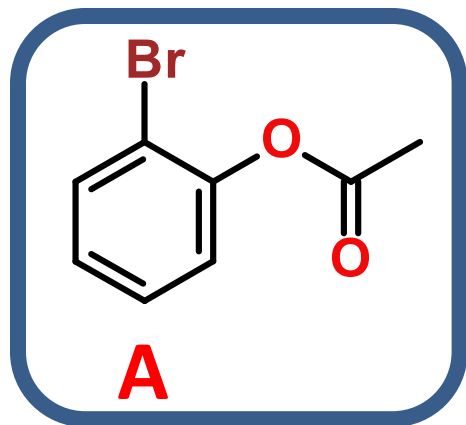
D

E. None of the above.

Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order.

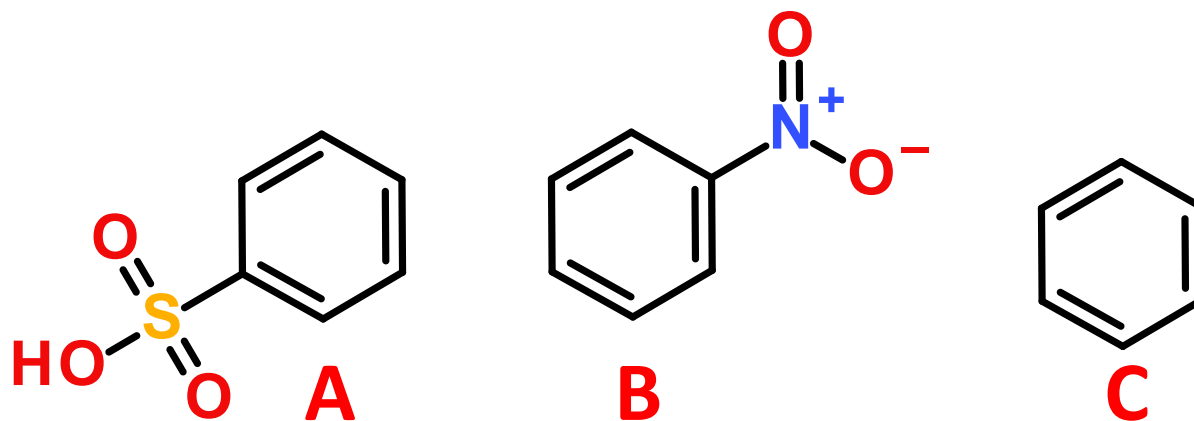
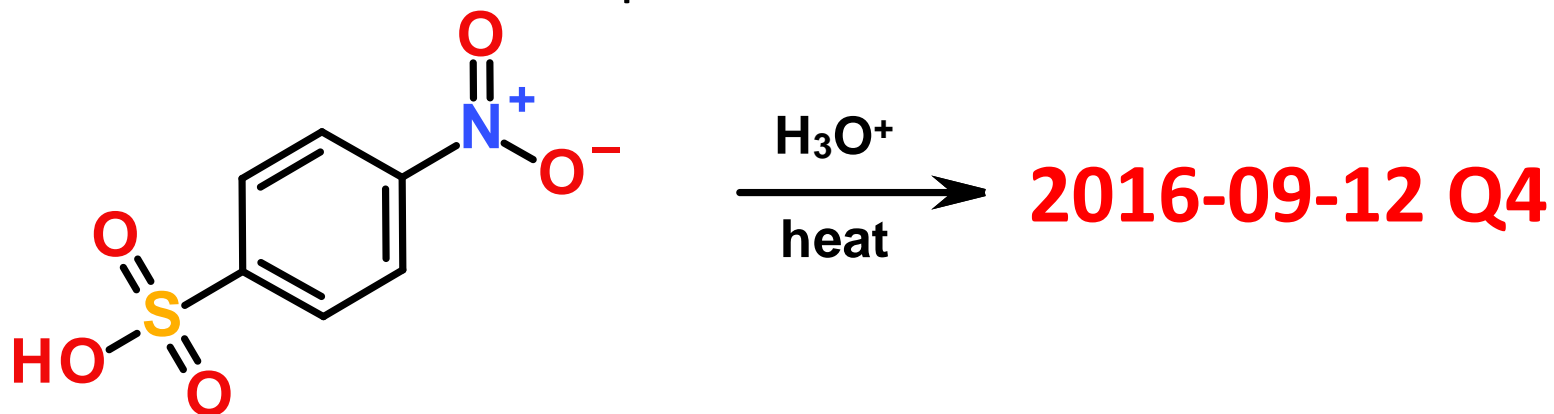


2016-09-12 Q3



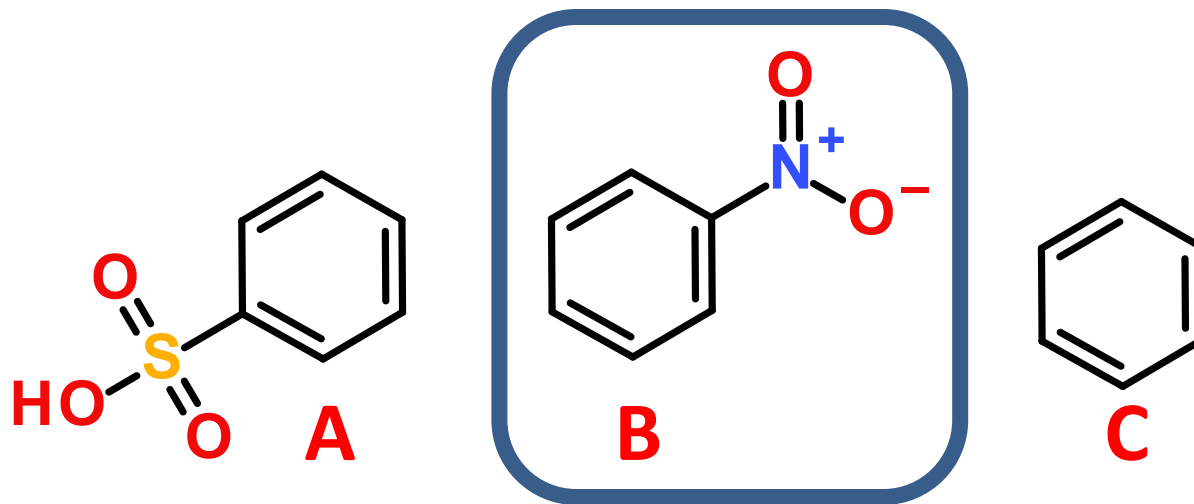
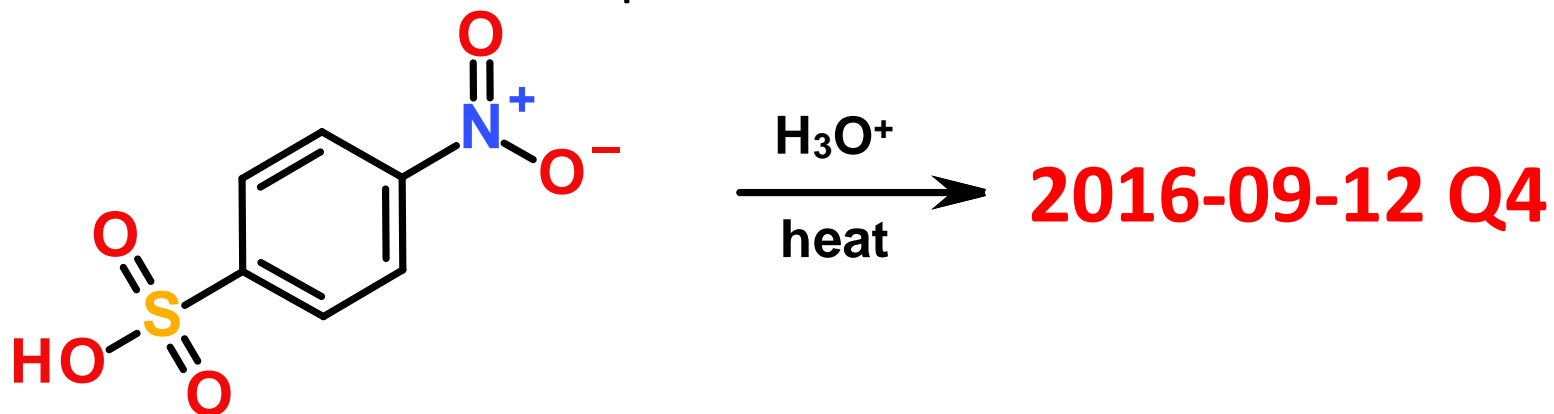
E. None of the above.

Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order.



D. None of the above.

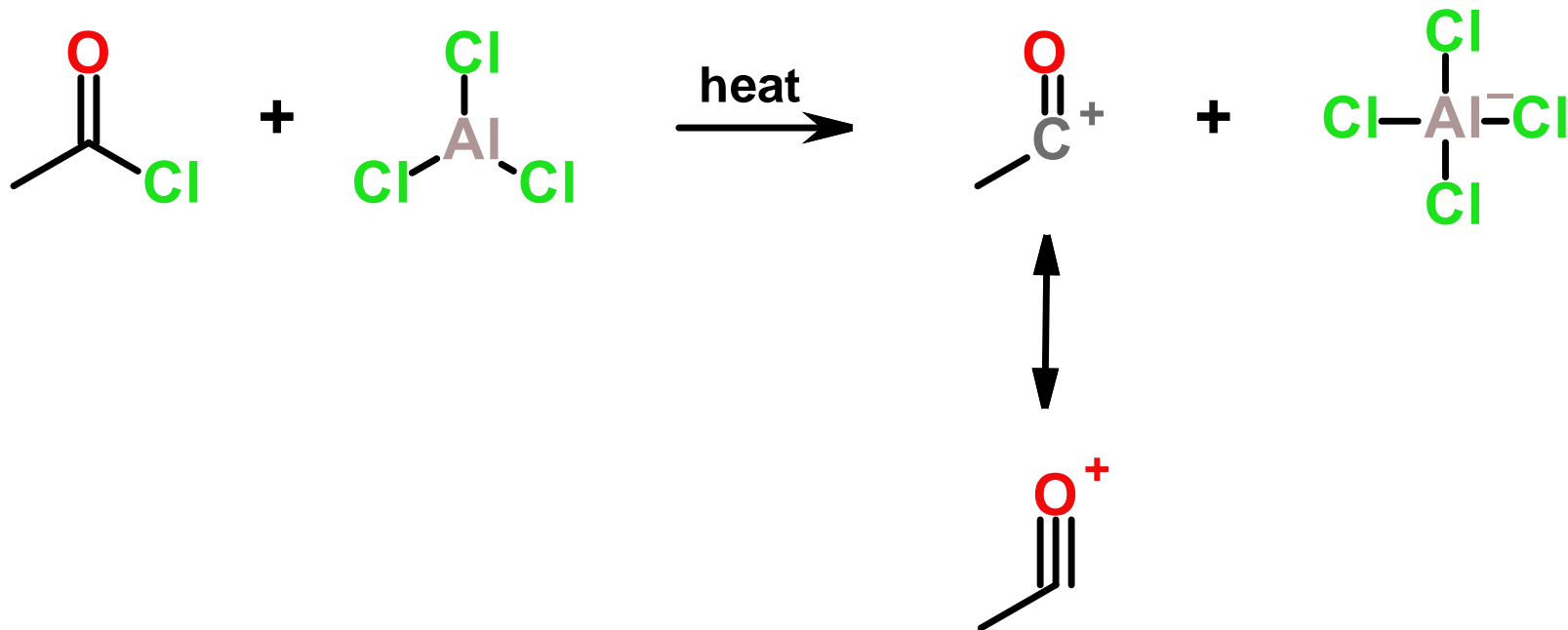
Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order.



D. None of the above.

Friedel-Crafts Reactions

- Reactions of Arenes with Carbocations
 - Several ways of generating C⁺
- **Friedel-Crafts only react with benzene or activated arenes**

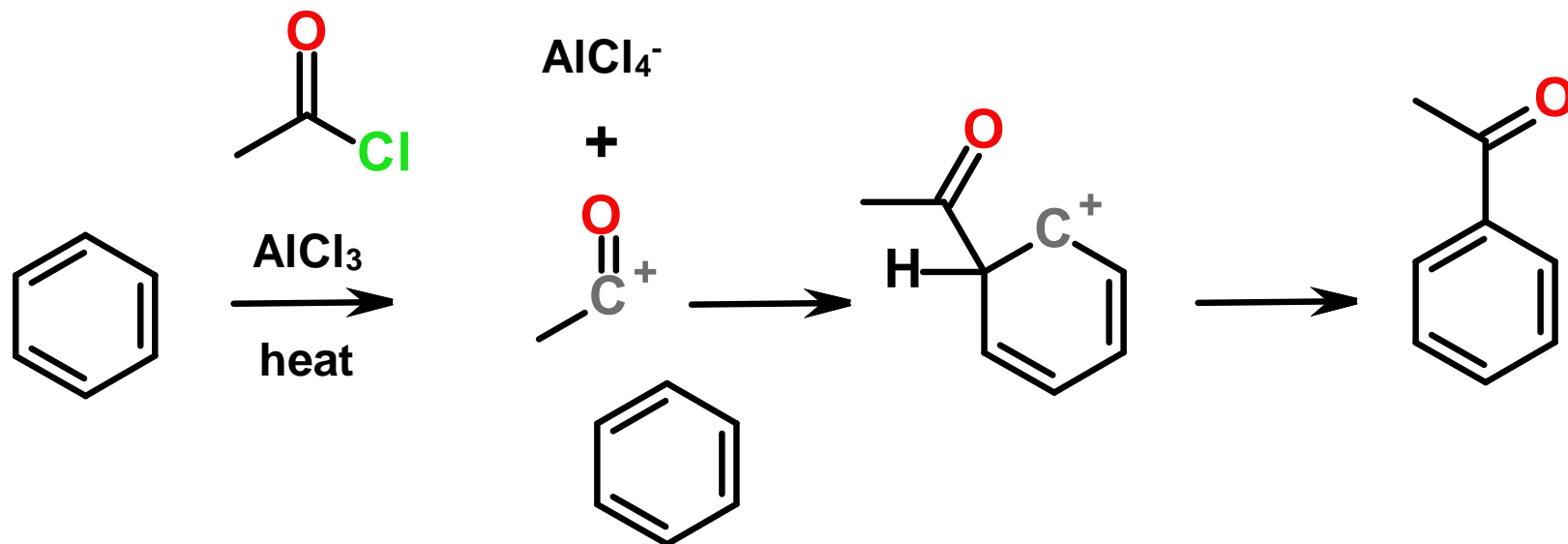


Method 1 – Acyl Carbocations

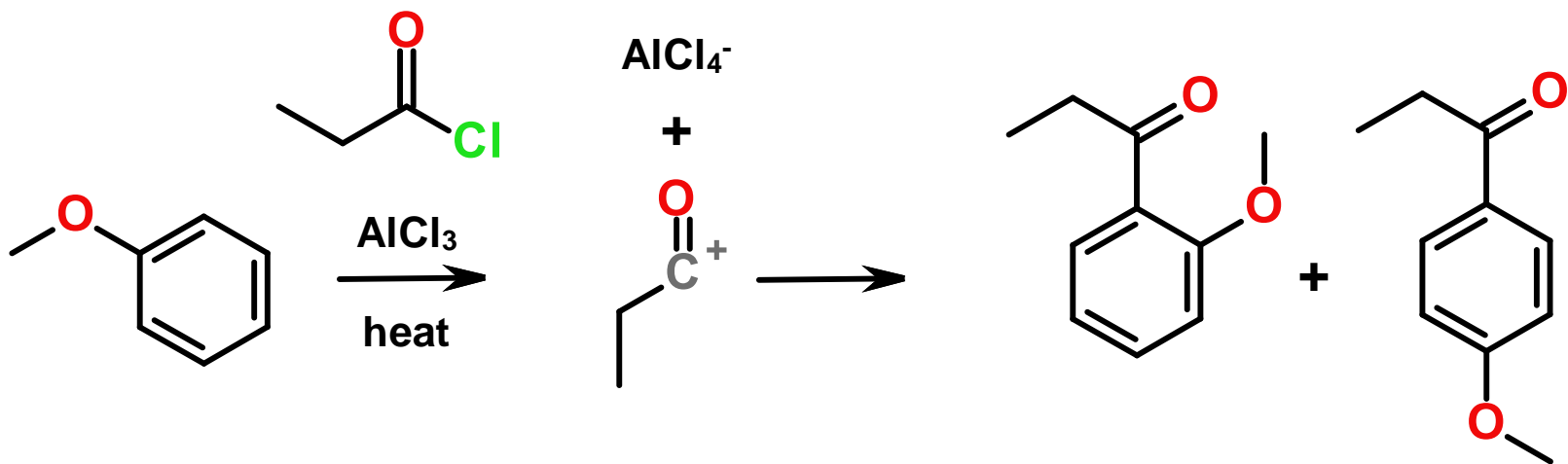
GENERATING CARBOCATIONS

Most commonly used Friedel-Crafts Reaction

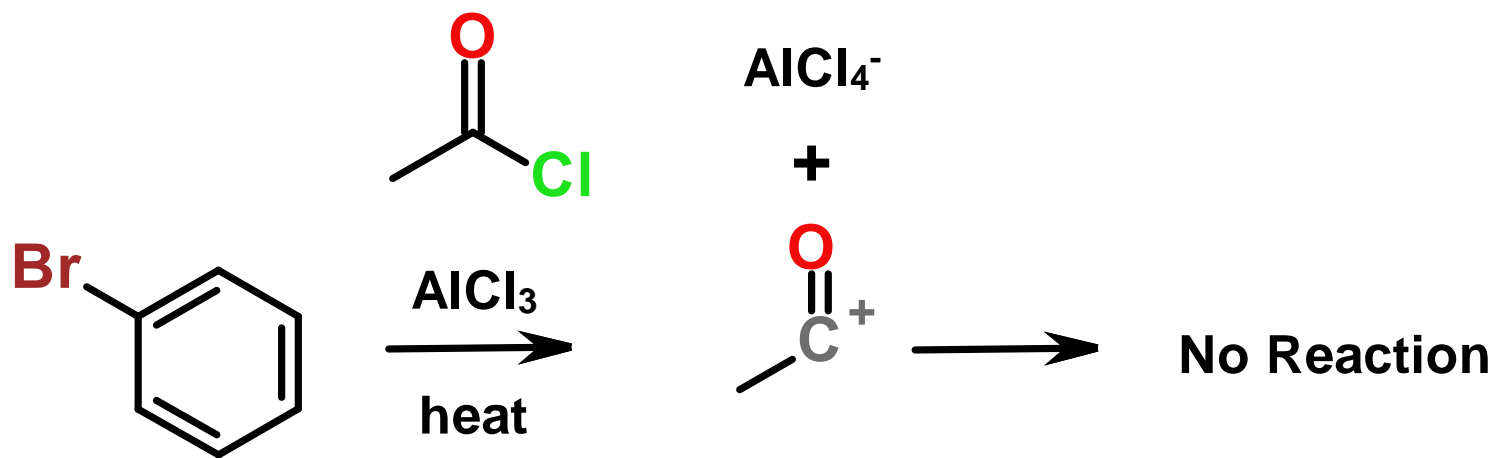
Acyl Carbocation Examples



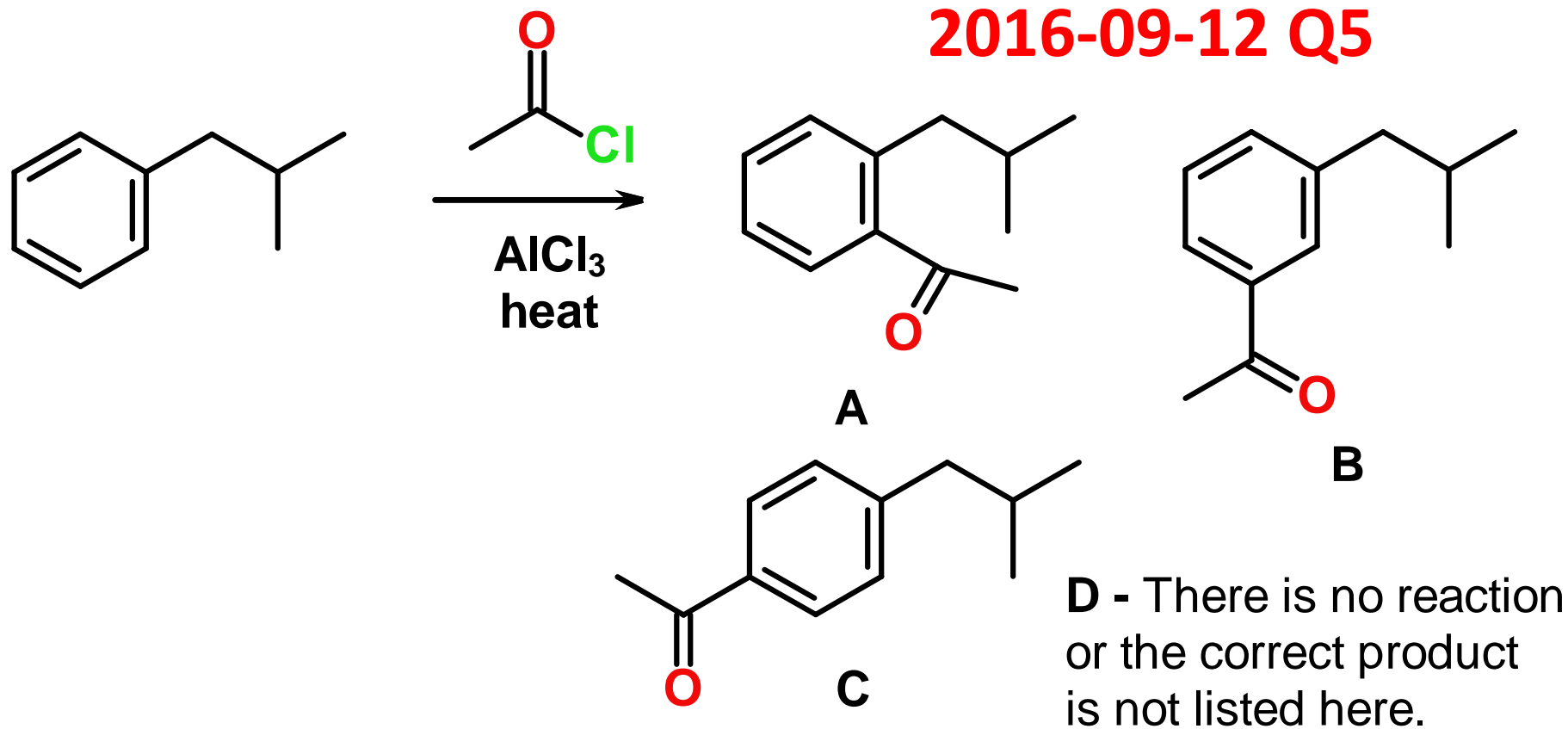
Acyl Carbocation Examples



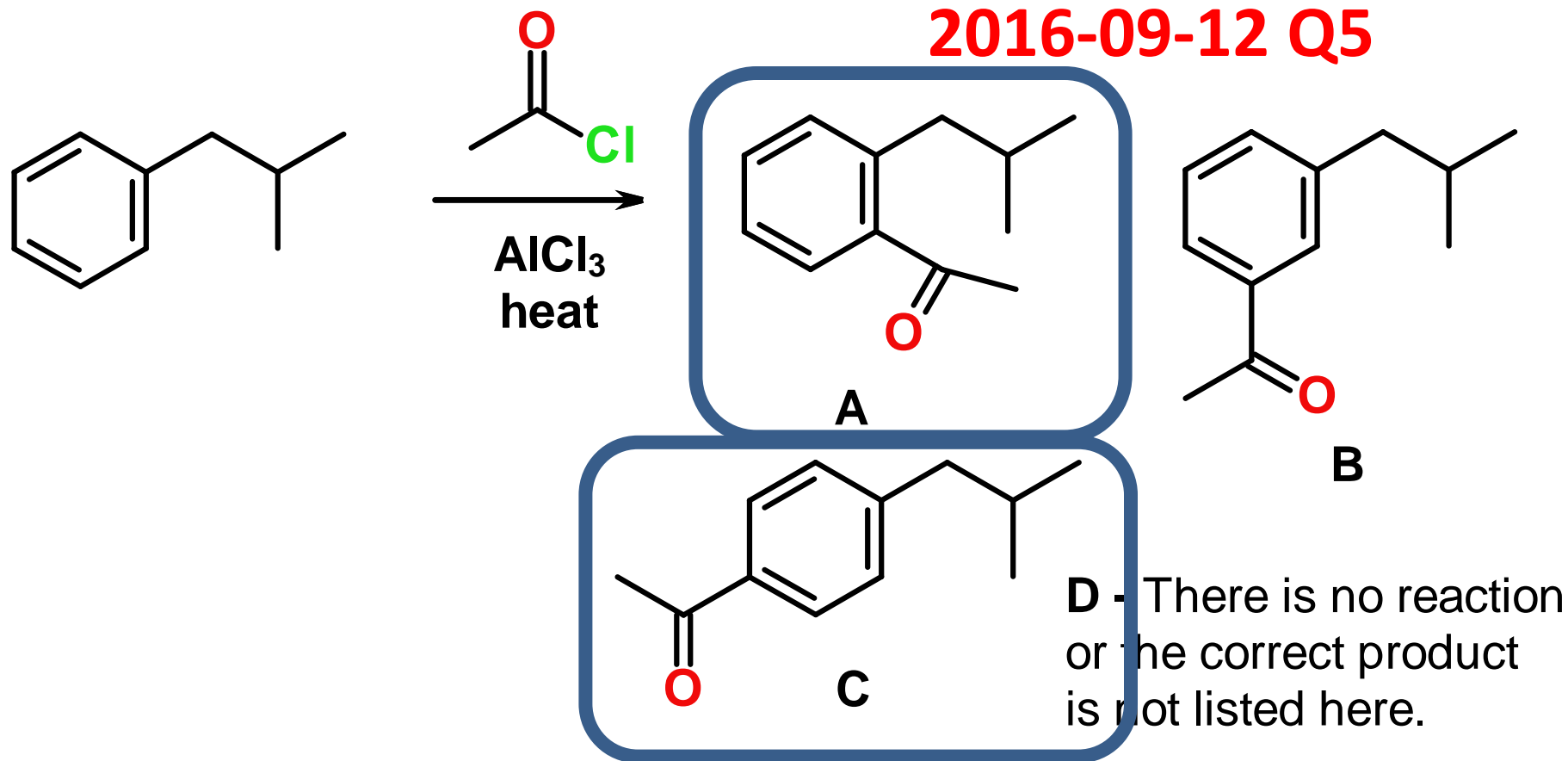
Acyl Carbocation Examples



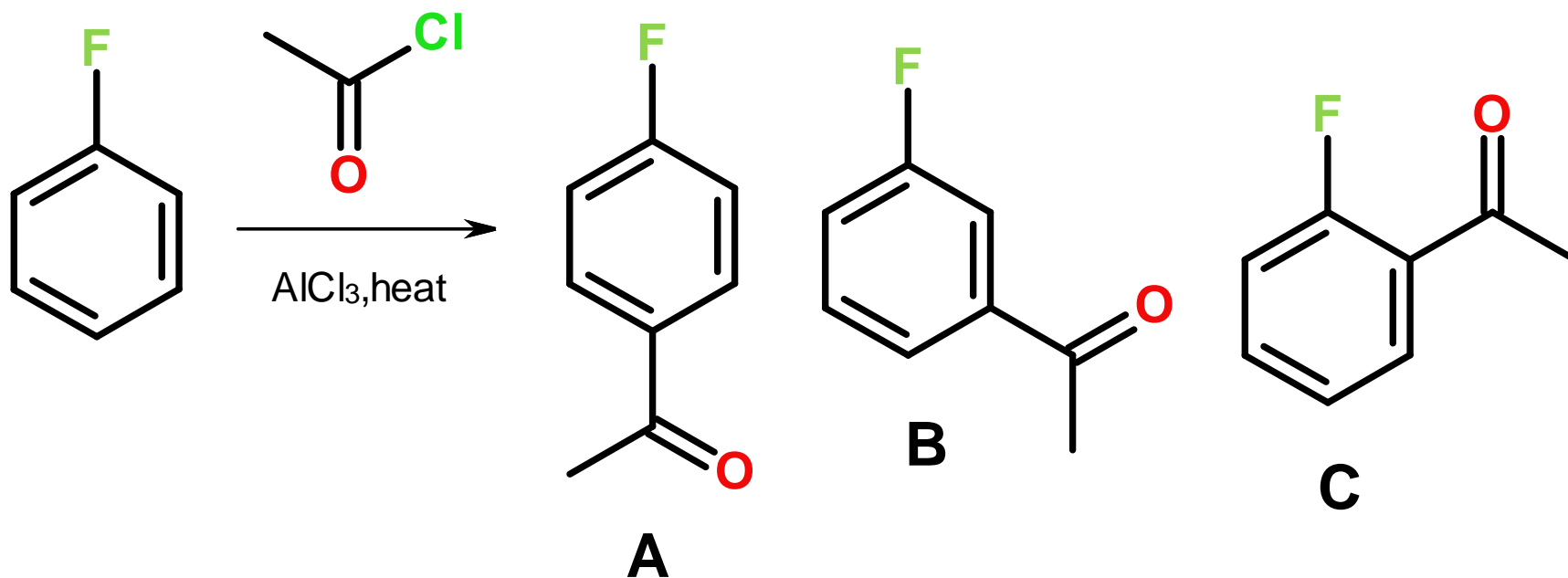
Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order.



Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order.



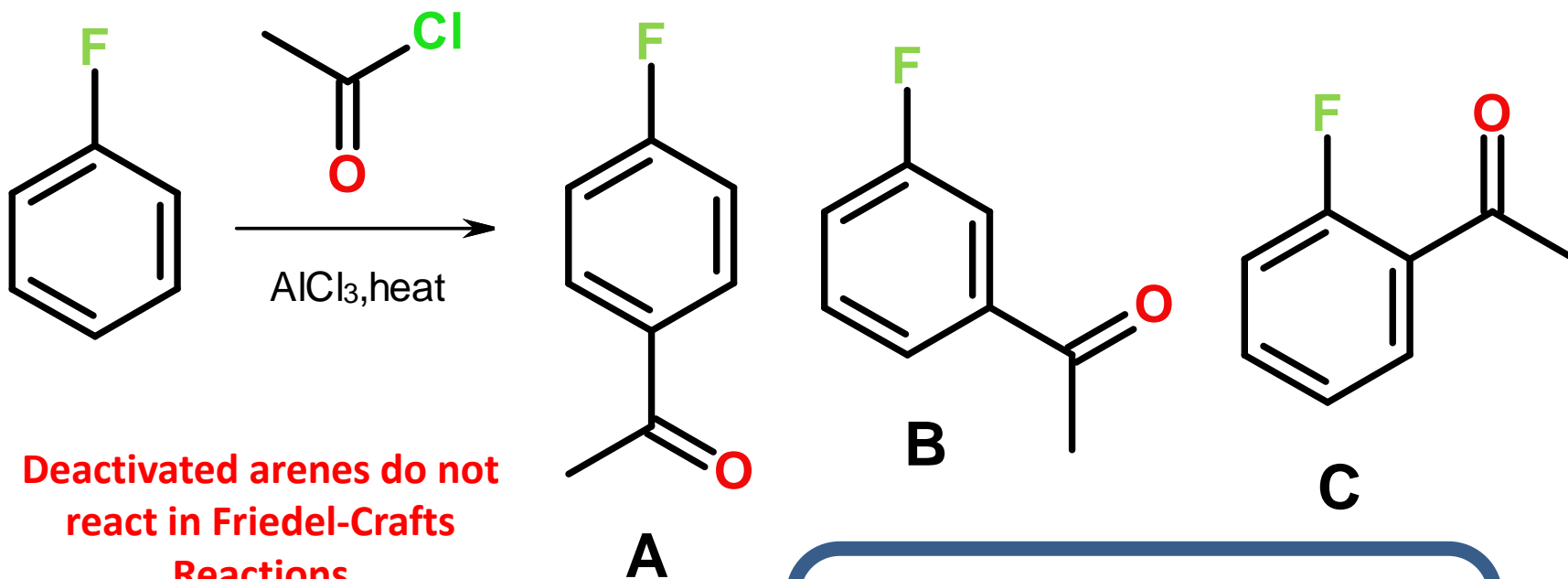
Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order.



2016-09-12 Q6

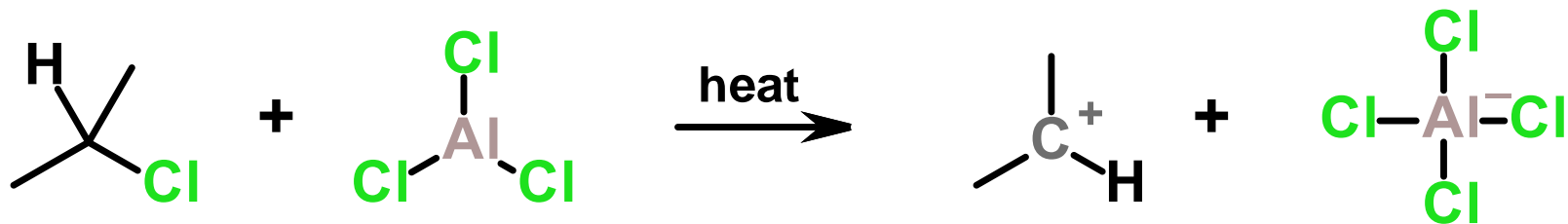
D - There is no reaction or the correct product is not listed here.

Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order.



2016-09-12 Q6

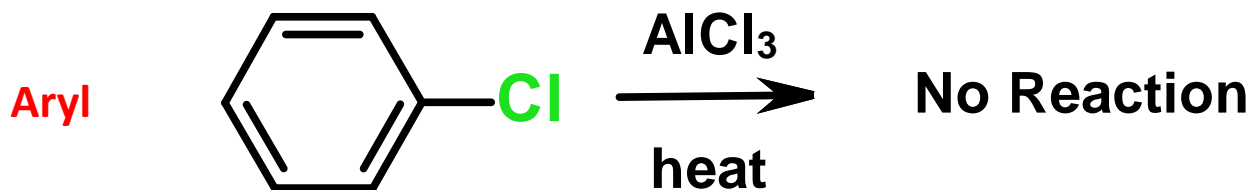
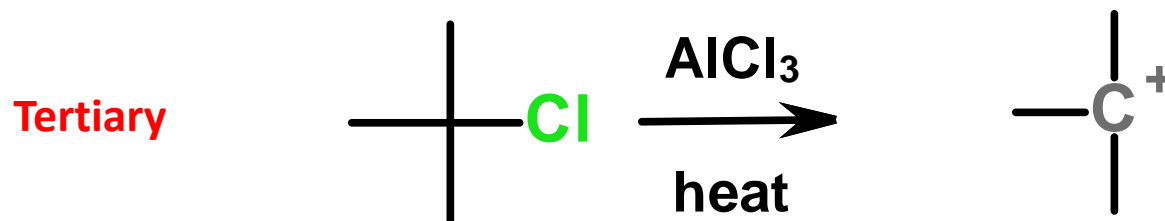
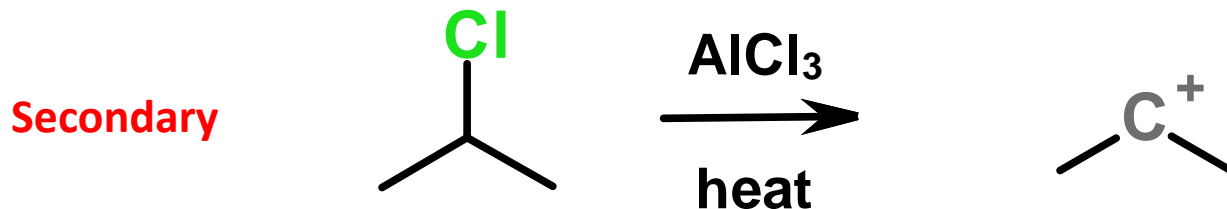
D - There is no reaction or the correct product is not listed here.

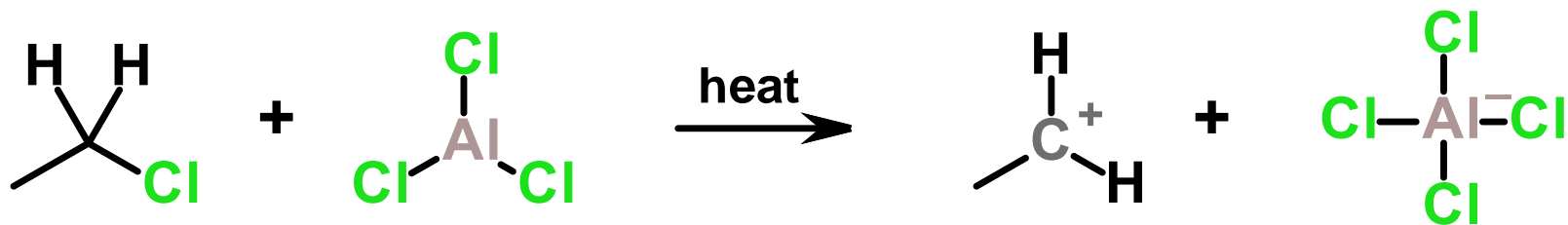


Method 2 – Alkyl Carbocations

GENERATING CARBOCATIONS

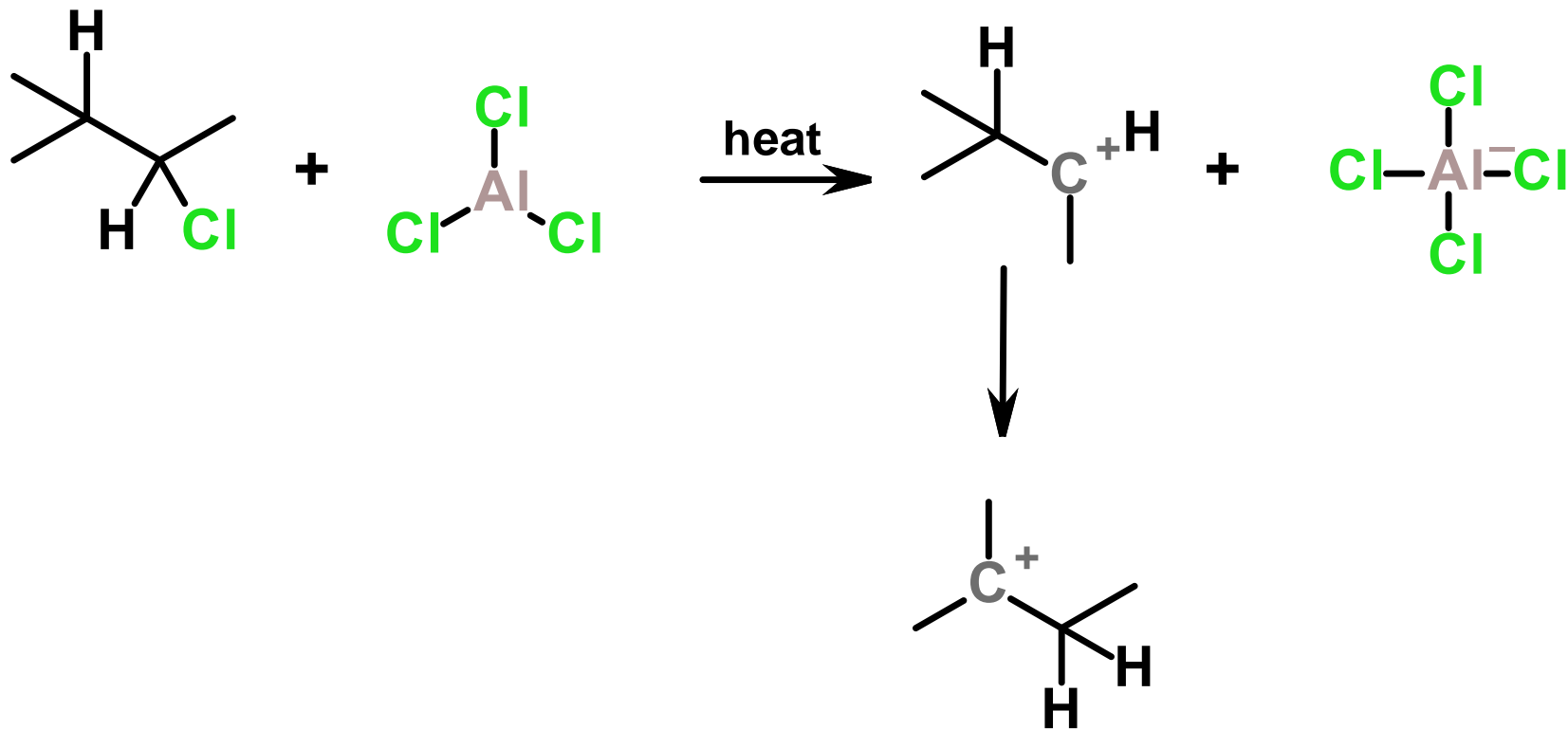
Alkyl Carbocations Behave Like Alkyl Carbocations





Notable Things About Alkyl Carbocations - 1

PRIMARY CARBOCATIONS CAN BE FORMED

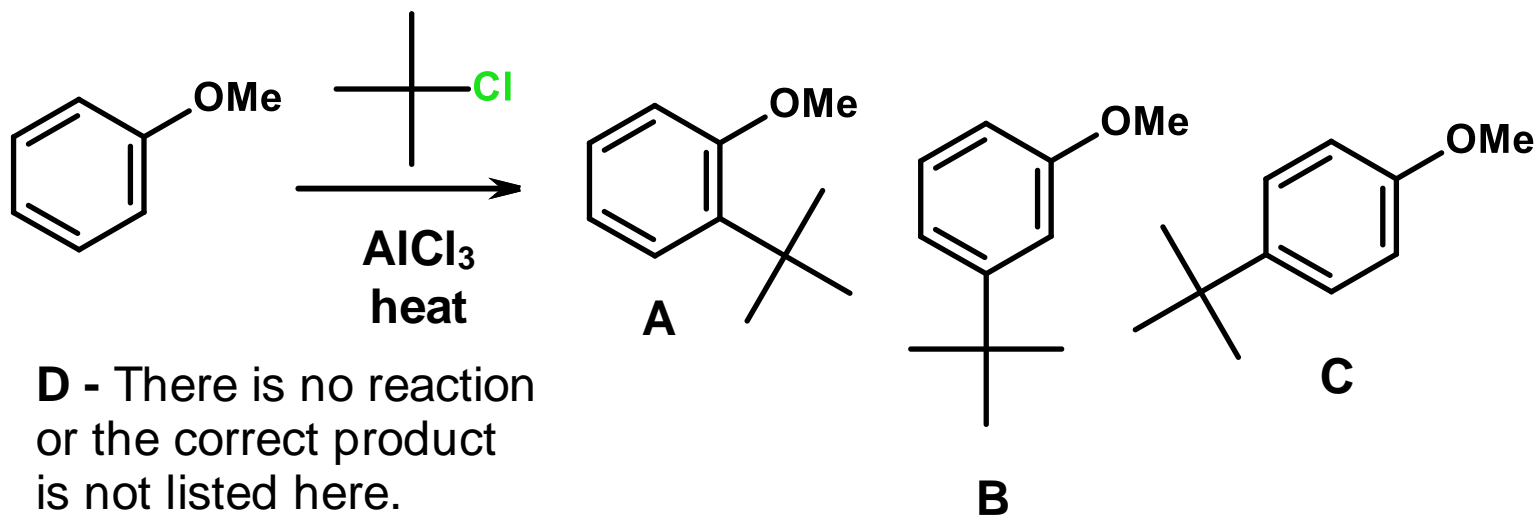


Notable Things About Alkyl Carbocations - 2

CARBOCATIONS CAN REARRANGE

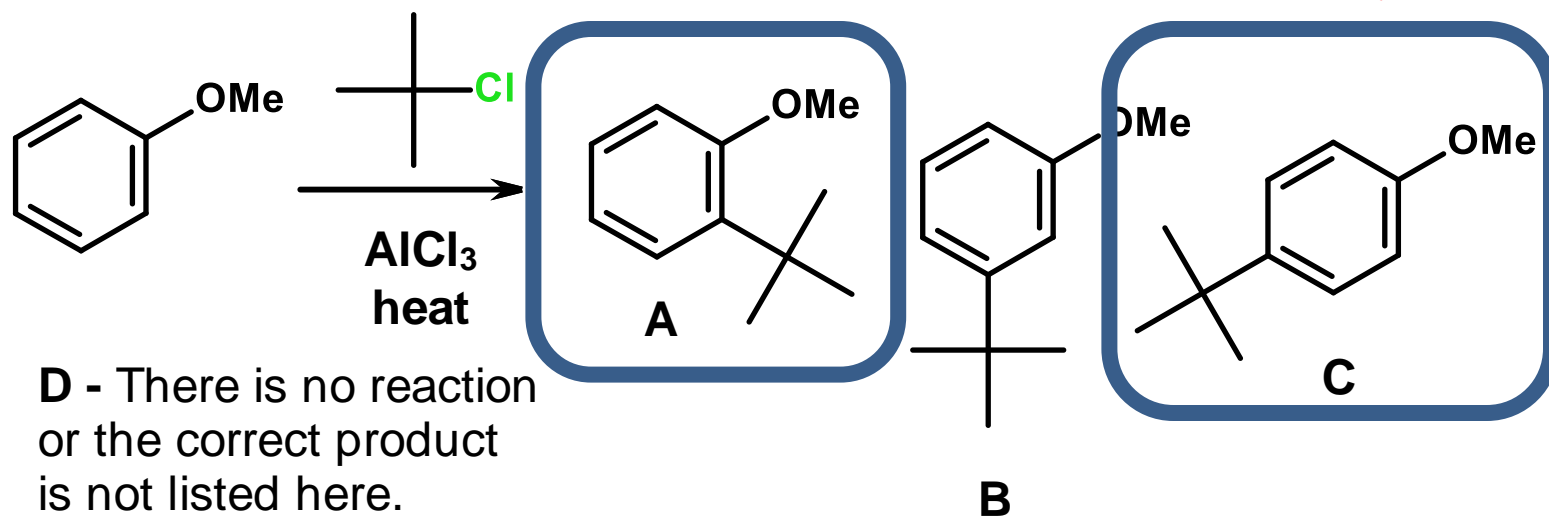
Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order. (Example: xxxx a b)

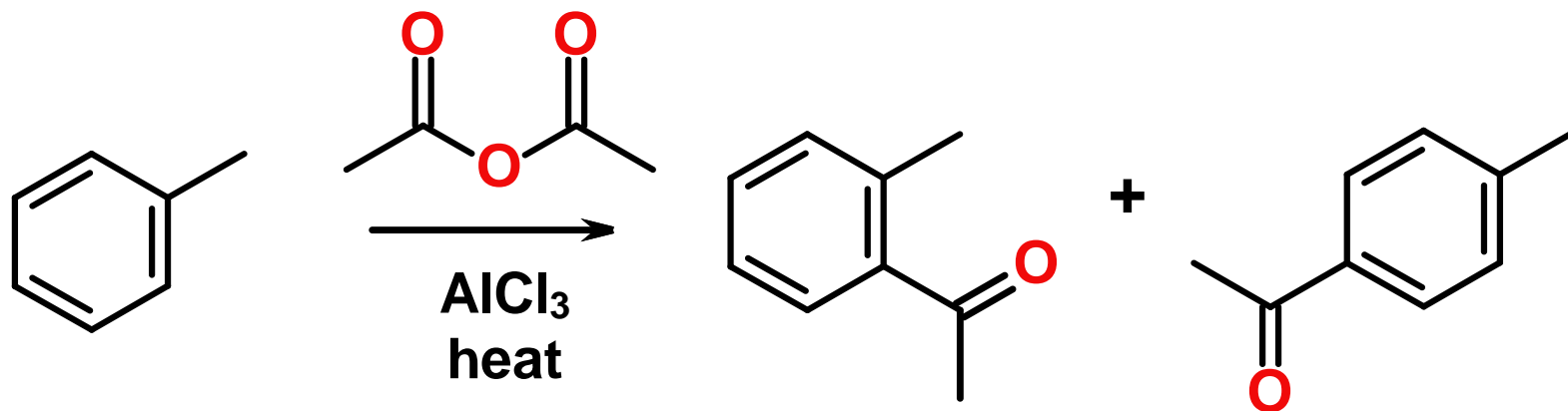
2016-09-12 Q7



Give the major organic product(s) of the following reaction. Give your answer as a text answer, with the correct answers being listed in alphabetical order. (Example: xxxx a b)

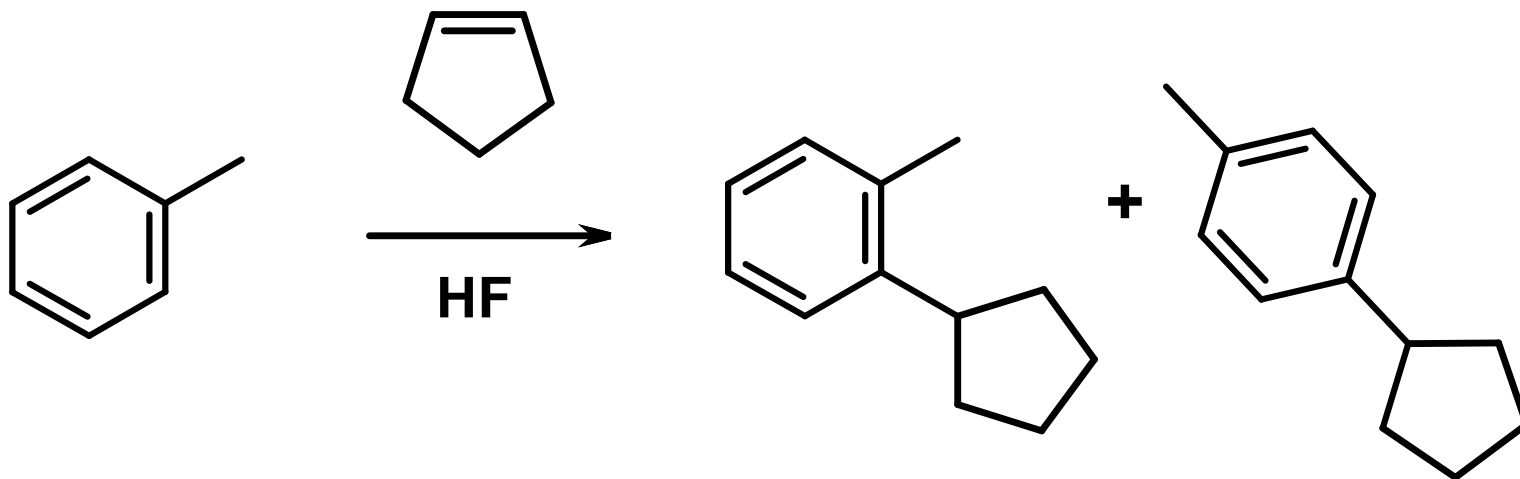
2016-09-12 Q7





Method 3 – Carbocations from Anhydrides

GENERATING CARBOCATIONS



Method 4 – Carbocations from Alkenes

GENERATING CARBOCATIONS

No heat needed!