Name: _____ SID: _____

Signature: _____ 3BL GSI Name: _____

PRINT YOUR NAME CLEARLY!!

Lecture Only: _____

Completing an I Grade: _____

Chem 3B Su07 **Midterm 2** **06AUG07**
Neil O.L. Viernes

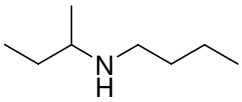
This exam has 12 pages; **make sure you have them all.** The last page is blank. Use as scratch paper, anything written on it will NOT be graded.

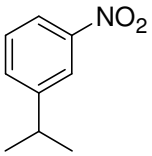
Please place answers in designated spaces. **Please write clearly.** Messy or ambiguous answers will not be graded.

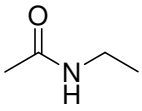
This exam runs 115 minutes. No clarifying questions will be answered by the GSI's after the exam begins.

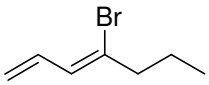
Do not write in this box	
1) _____	**(16)**
2) _____	**(10)**
3) _____	**(11)**
4) _____	**(12)**
5) _____	**(16)**
6) _____	**(30)**
7) _____	**(15)**
8) _____	**(16)**
9) _____	**(24)**
10) _____	**(10)**
Total _____	**(160)**

1) (16 pts)
Provide nomenclature or structures for the following:







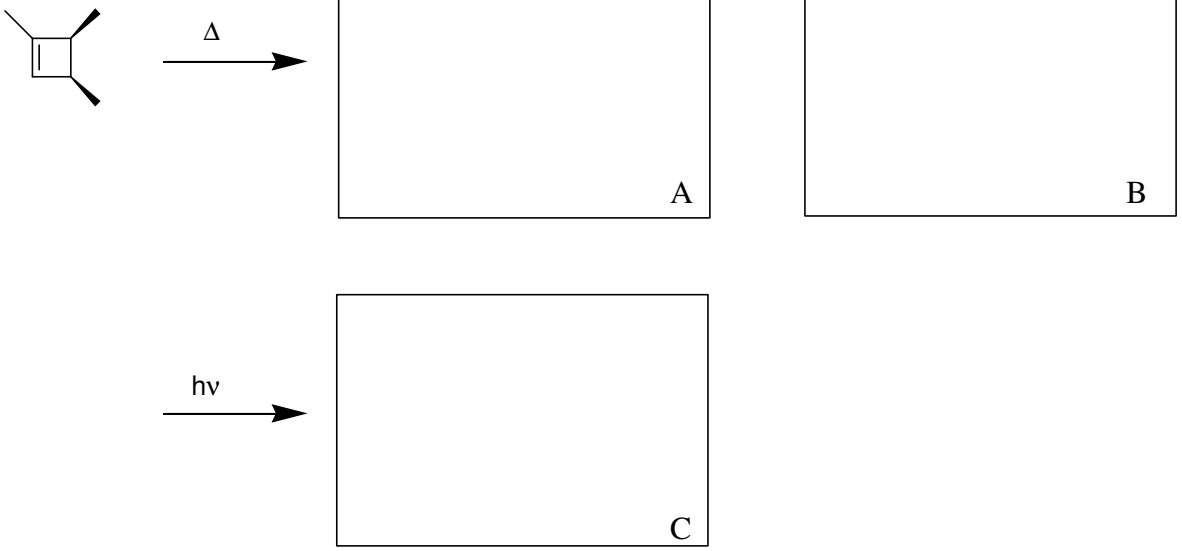


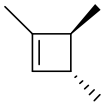
2,4,6-Trinitrotoluene
(TNT)

Styrene

2) **(10 pts)**

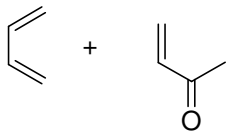
Predict the products for the following electrocyclic ring opening reactions.



How would you prepare the molecules A, B and C from 

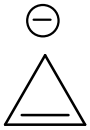
3) (11 pts)

Draw the HOMO (Diene) – LUMO (Dienophile) molecular orbital interaction for the Diels-Alder reaction of



Identify the σ-bonds being formed and the secondary p-orbital interaction from the endo addition.

Determine if the following molecules are anti-aromatic or aromatic.



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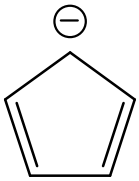

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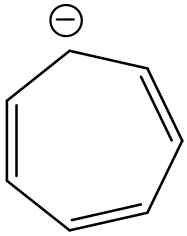

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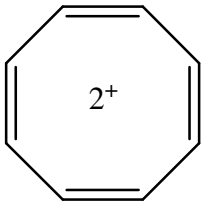

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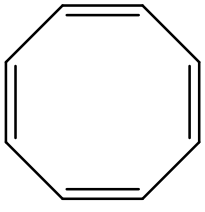

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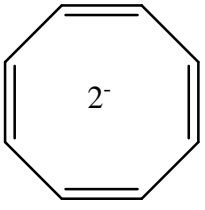

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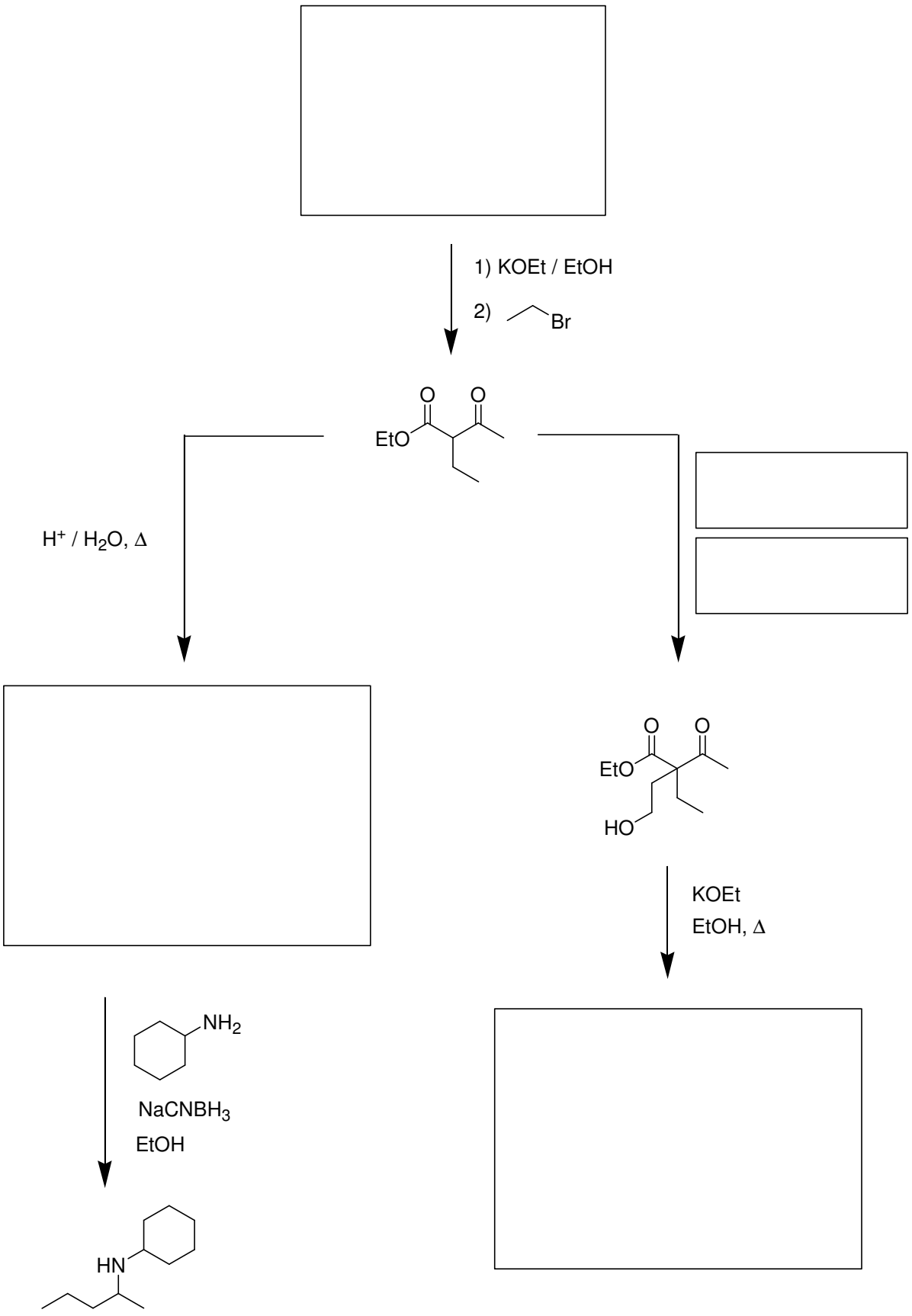
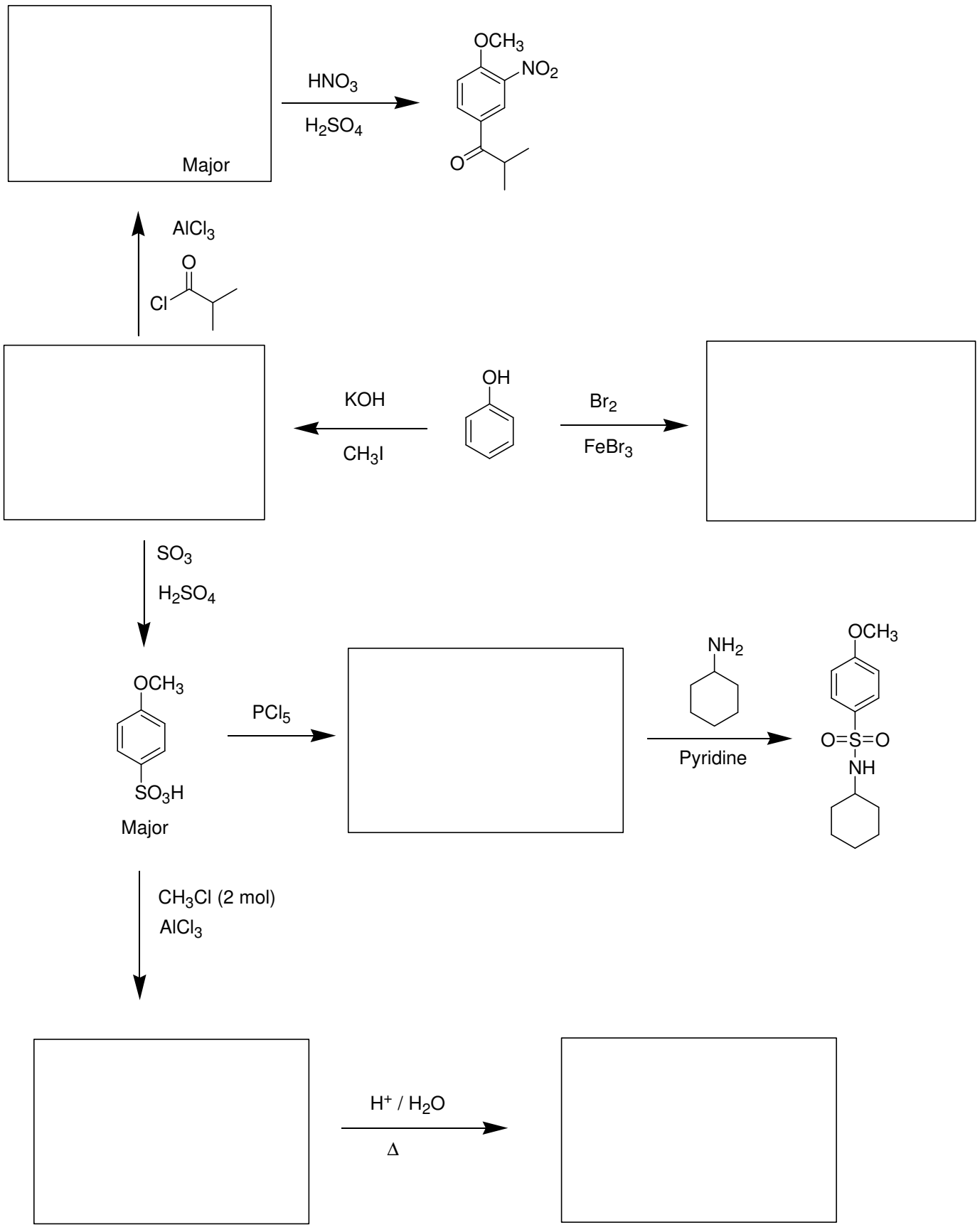
4) **(12 pts)**
Complete the synthetic roadmap.

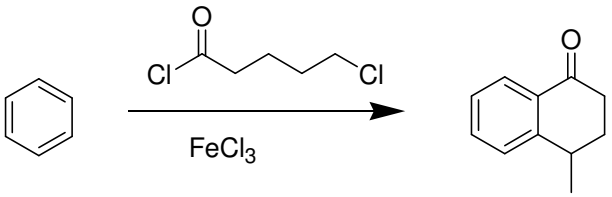


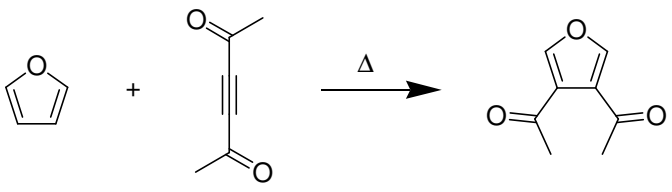
5) (16 pts)
Complete the synthetic roadmap.



6) (30 pts)

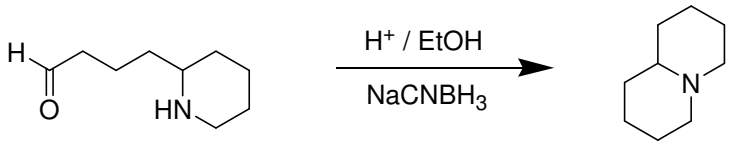
Provide a mechanism for the following transformations.



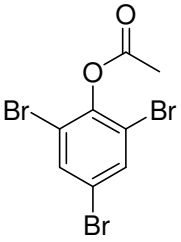


7) (15 pts)

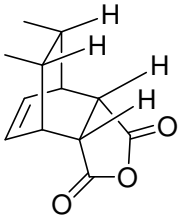
Provide a mechanism for the following transformation.



8) **(16 pts)**
Propose a synthetic route to the following molecules.

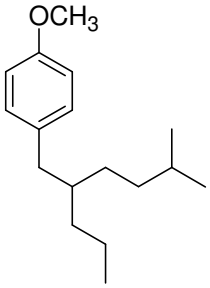


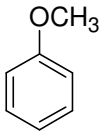
From a mono-substituted benzene, no more than 6 carbons



Light must be used in one of the synthetic steps

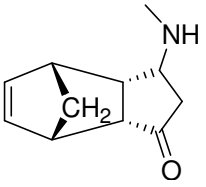
9) **(24 pts)**
Propose a synthetic route to the following molecule.



From 

and a dicarbonyl 7 carbons or less

10) (10 pts)
Propose a synthetic route to the following molecule



Largest cyclic starting material is 5 carbons