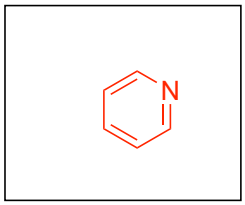
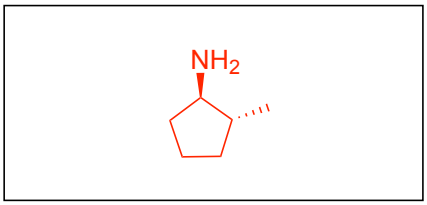
CHEM 2521/2621 Exam 3 April 15, 2026 Name Key

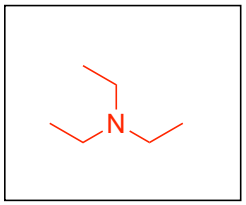
1. (12 pts) Provide the structures of the following compounds



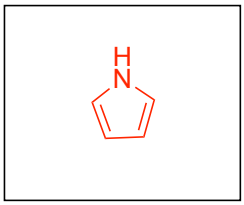
pyridine



(1*R*,2*R*)-2-methylcyclopentamine

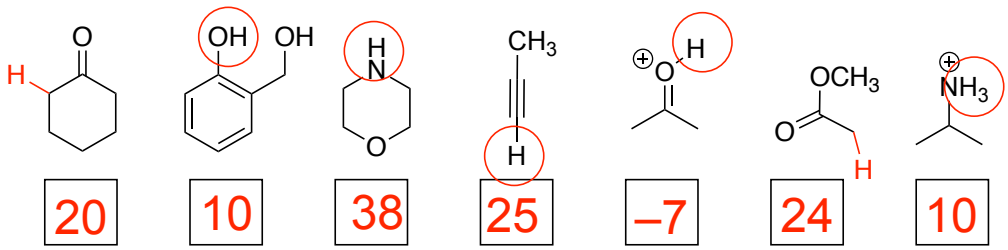


triethylamine



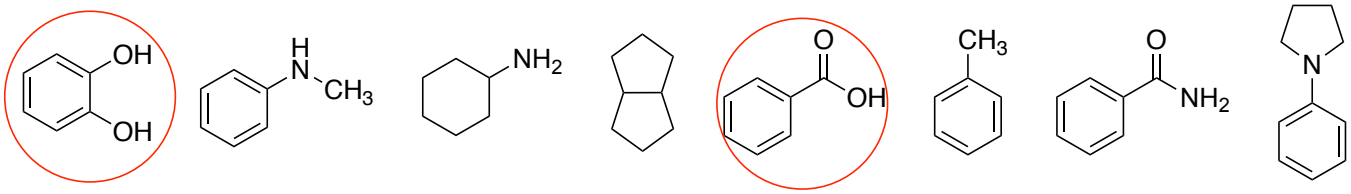
pyrrole

2. (7 pts) Circle or draw in the most acidic proton in each of the following molecules and give the pKa value.

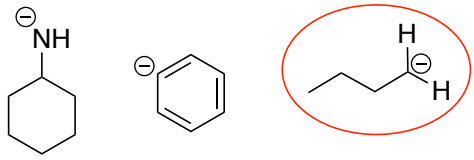
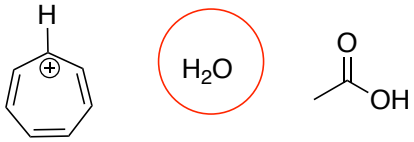


20 10 38 25 –7 24 10

3. (8 pts) Circle the compounds below that should be more soluble in aqueous NaOH vs Et_2O in a separatory funnel.



4. (12 pts) Circle the compound in each box that is the strongest base.

iPr_2NLi LiOH LiCl	
$EtNH_2$ Et_2NH Et_3N	KOH MeMgBr NaCl
LDA DBU DCM	

LDA = $[(CH_3)_2CH]_2NLi$
DBU = 1,8-Diazabicyclo[5.4.0]undec-7-ene
DCM = dichloromethane

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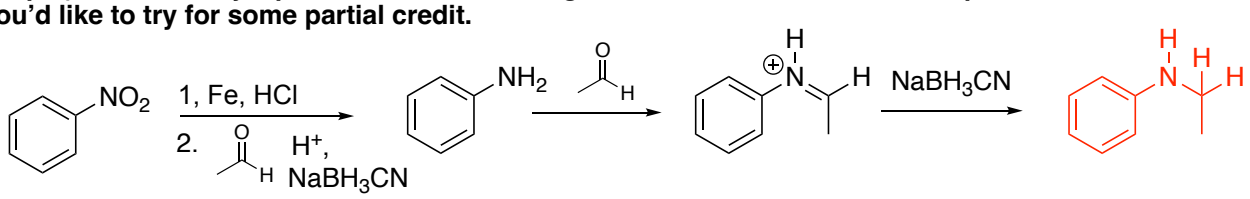
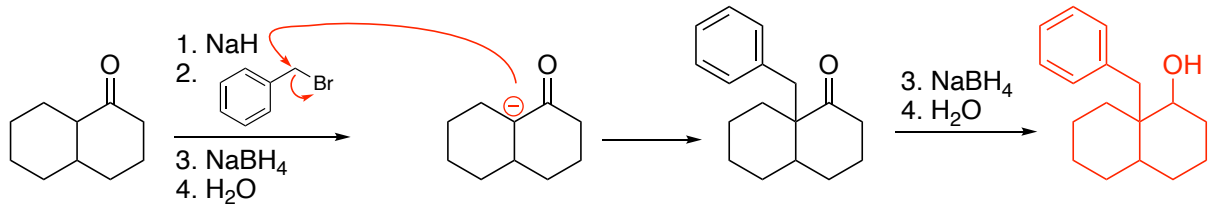
5. (42 pts) Give the major product of the following reactions. Show intermediate products if you'd like to try for some partial credit.

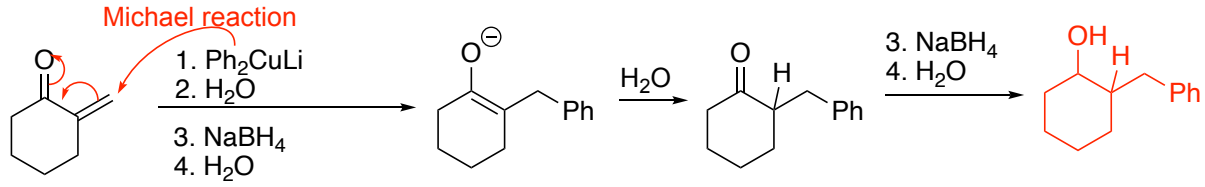
A.



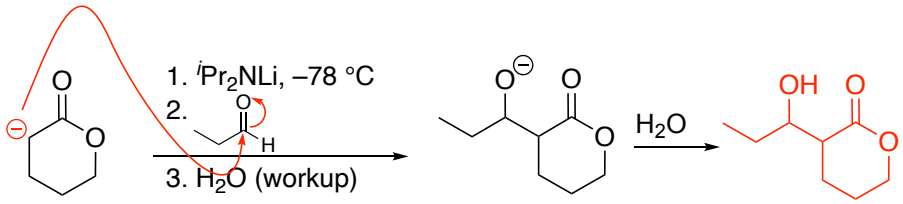
B.



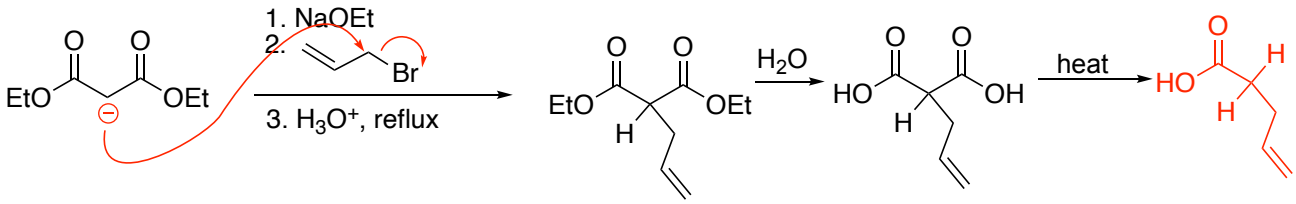
C.



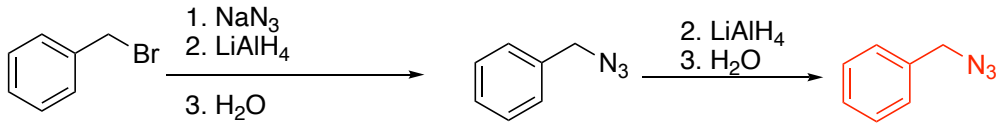
D.



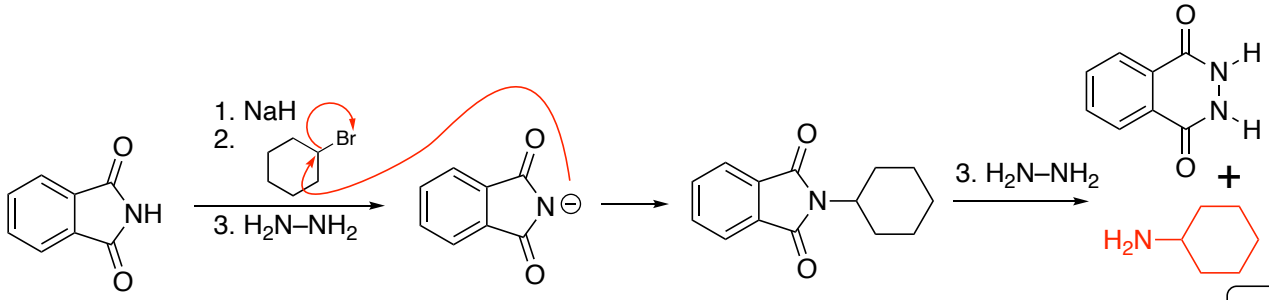
E.



F.



G.



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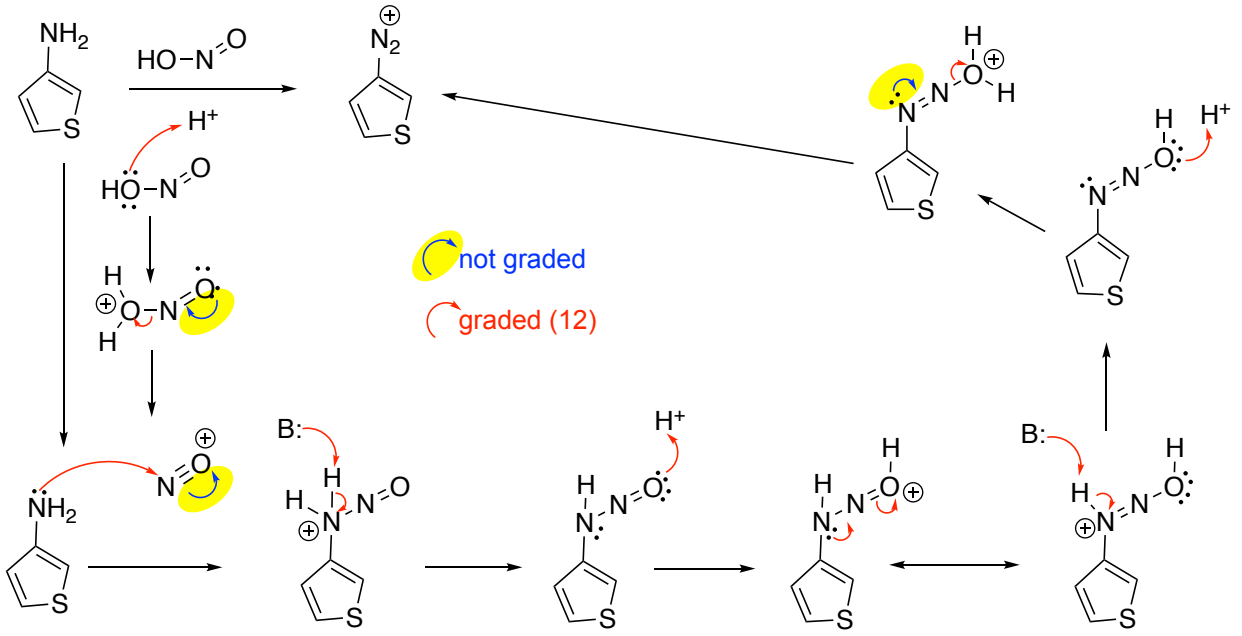
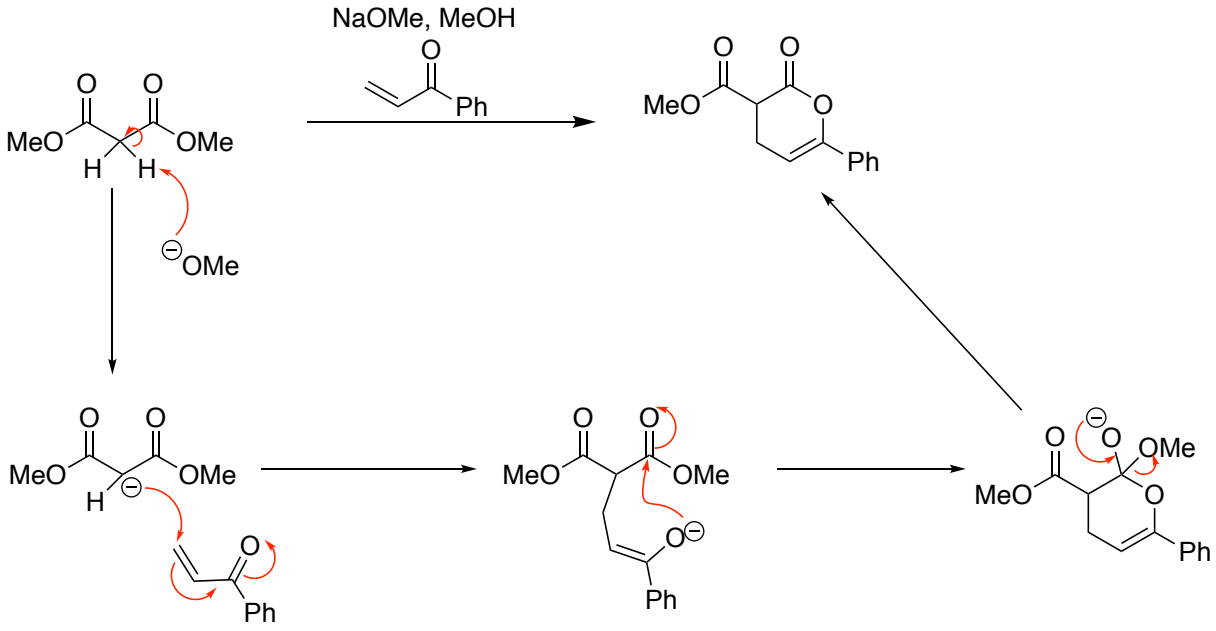
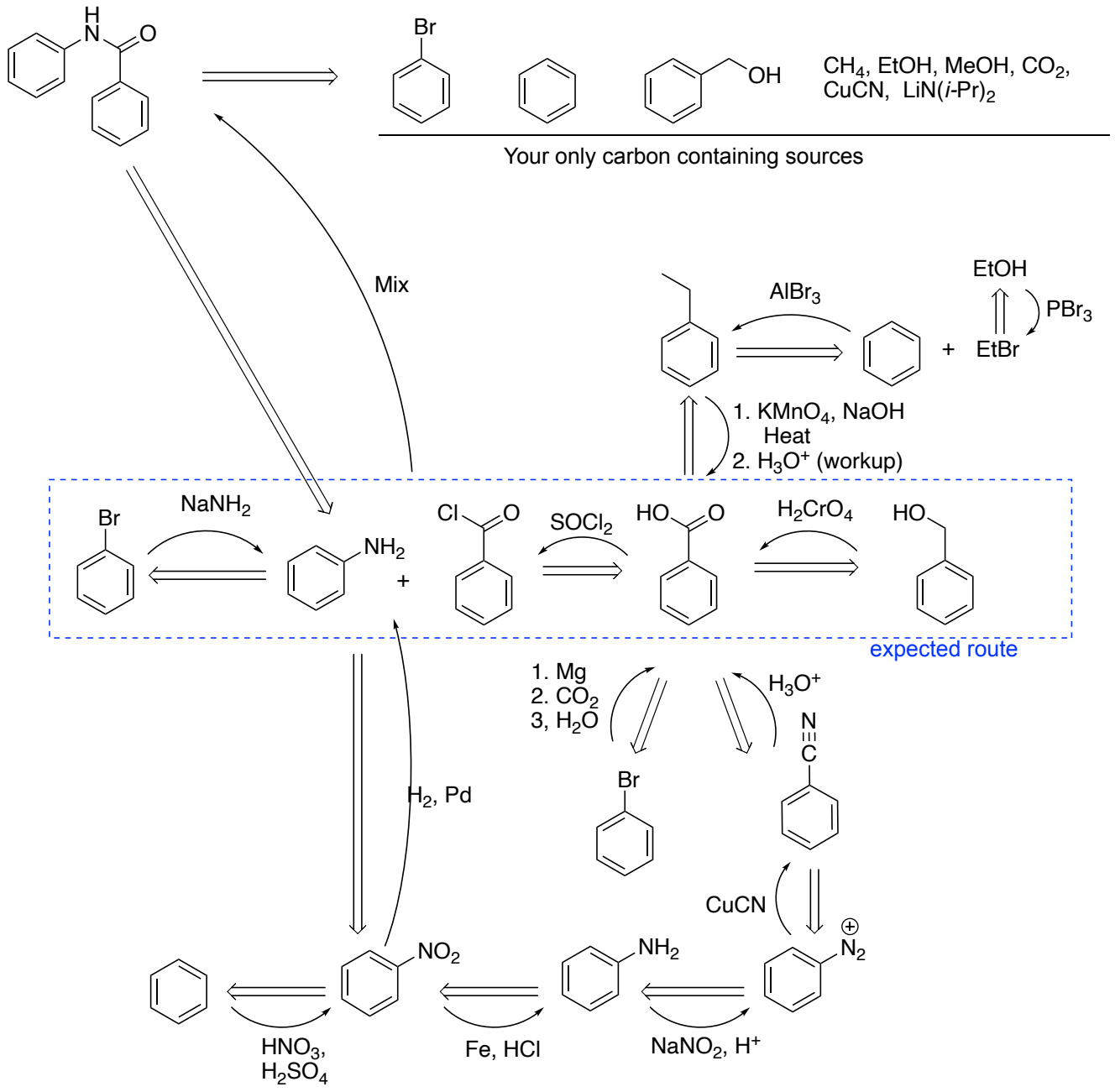
6. (24 pts) Provide a detailed arrow pushing mechanism to account for the following transformation. Resonance structures maybe helpful but they are not necessary.



7. (18 pts) Provide a detailed arrow-pushing mechanism to account for the following transformation.



8. (12 points) Provide a retrosynthetic analysis for the following molecule. To receive full credit, you must work backwards and you must include reagents. The only available carbon-containing starting materials and/or reagents are given below.



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