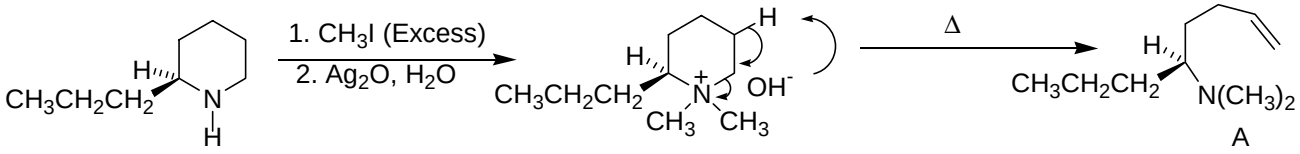
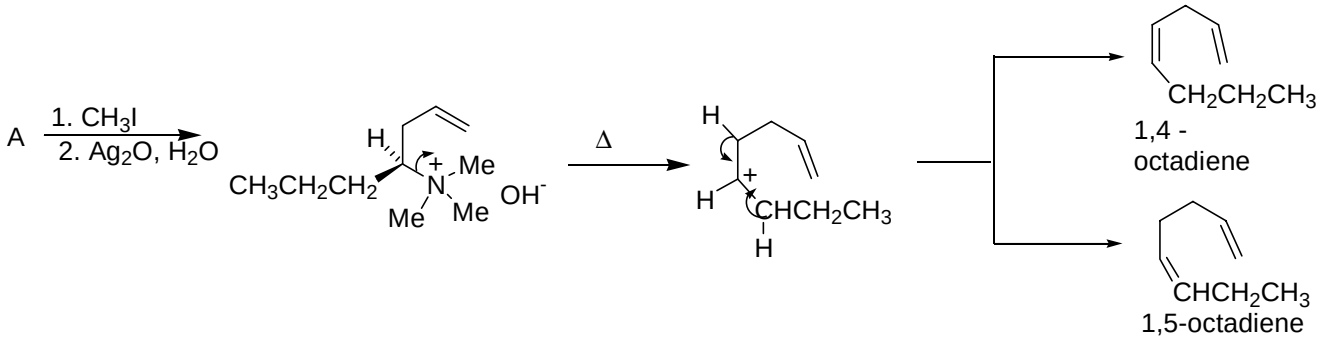
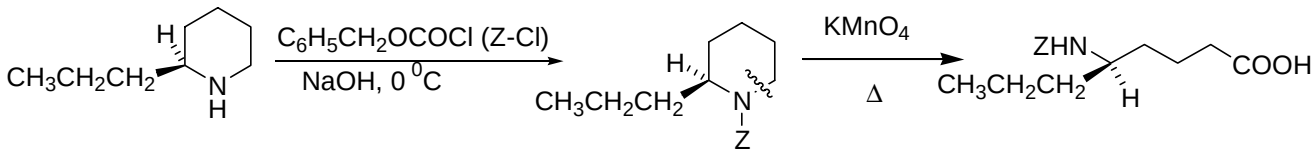
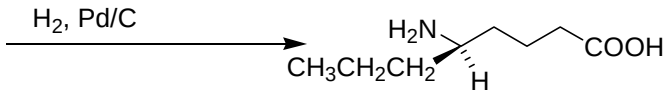
Problem 26 Chemical Structure and Absolute Stereochemistry of Coniine







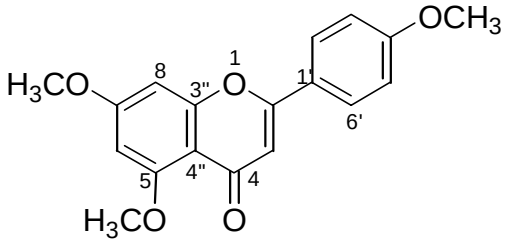


(S)- 5-aminooctanoic acid

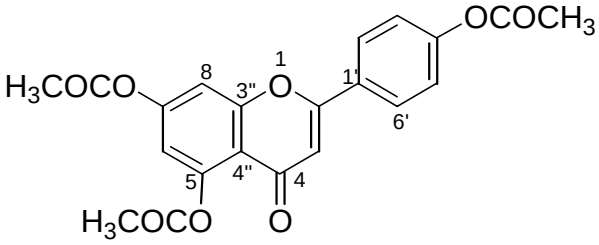
The $KMnO_4$ oxidation reaction step is based on A. M. Castano, J.M. Cuerva, A. M. Echavarren, *Tetrahedron Letters*, 35, 7435-7438 (1994)

Problem 27: The chemistry and identification of flavonoids

1.



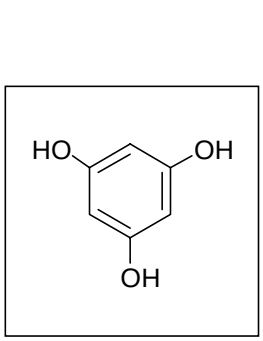
B



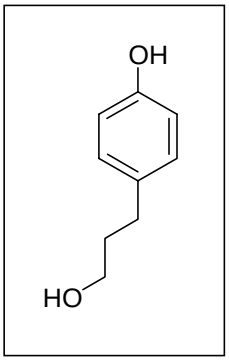
C

2. a) down field. The ^{1}H-NMR resonance of phenolic proton involvement in hydrogen bonding will be observed at very low magnetic field (~ 12ppm).

3.

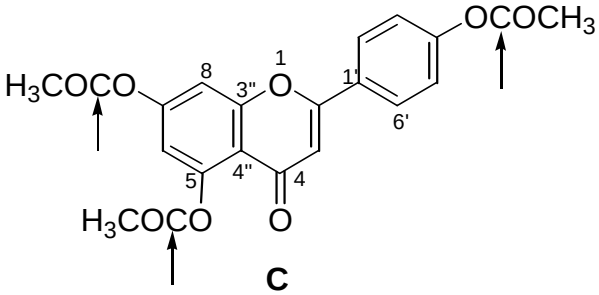


D



E

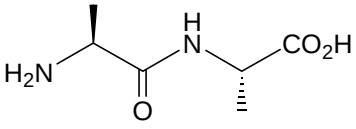
4. ^{13}C-NMR would be expected to show three characteristic peaks of the three different carbonyl groups.



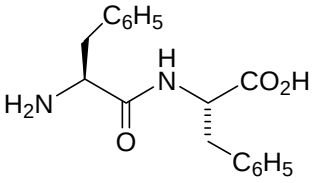
C

Problem 28: Synthesis of peptides

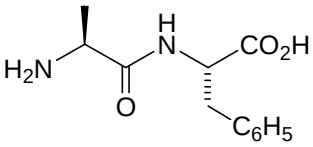
1



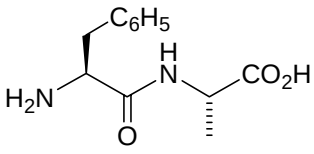
Dipeptide I



Dipeptide II

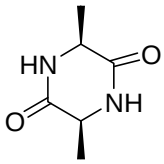


Dipeptide III

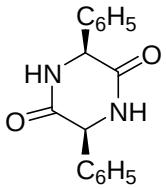


Dipeptide IV

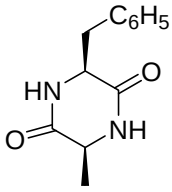
The cyclic dipeptides (diketo piperazines) must also be considered:



DP-I



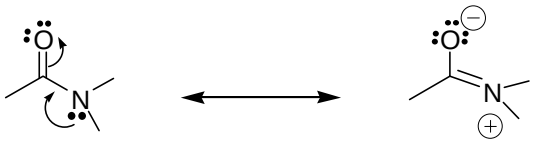
DP-II



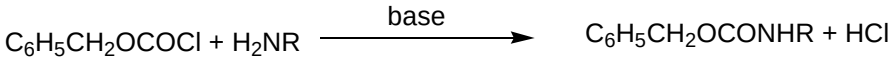
DP-III

2. Best answers are 5 and 2.

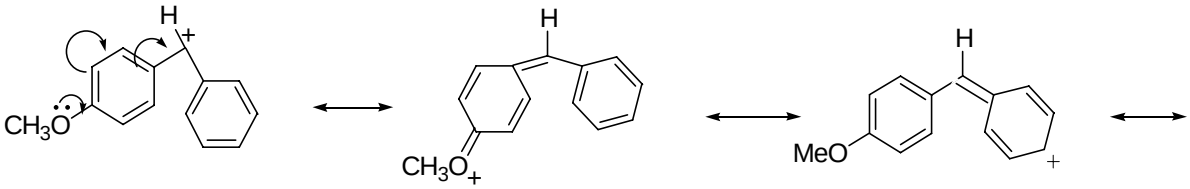
3.



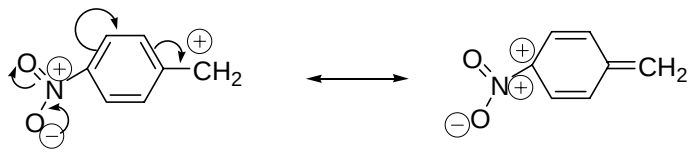
4. Benzyl chloroformate, reagent N^{o} 4, would react easily with an amine in the following way:



5. If we assume the intermediate formation of a carbonium ion, the ease of formation of such ion would parallel its stability. Electron delocalization is most extensive in case D:



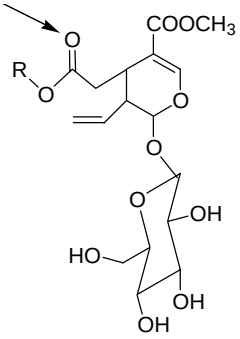
And least effective in case A:



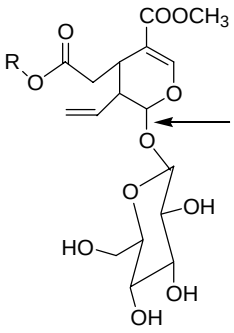
In the same way the cation from B is better stabilized than the cation from C. Therefore, the order of increasing lability is: A<C<B<D.

Problem 29: Oleuropein hydrolysis

1.

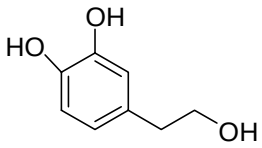


(a)



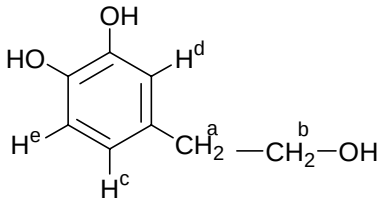
(b)

2.



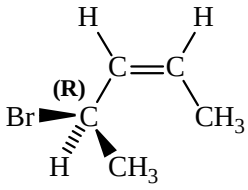
The correct structure is C

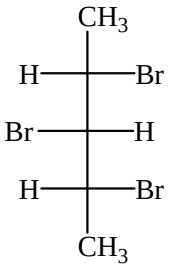
3.



Problem 30: Stereochemistry of the Addition Reactions to Alkenes

a)





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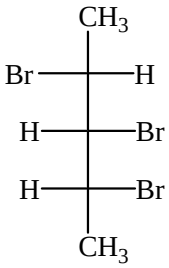
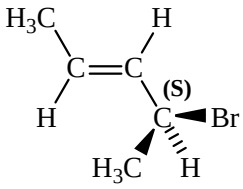
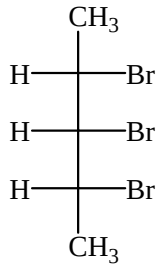


Yes

b)





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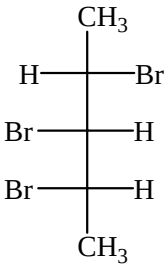
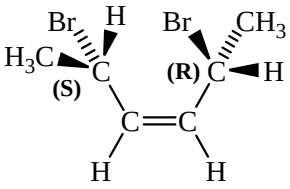
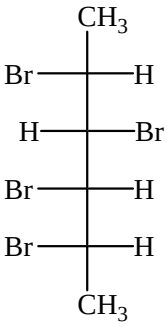


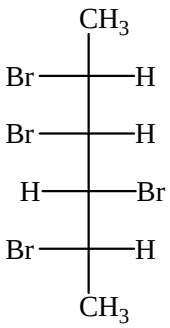
Yes

c)



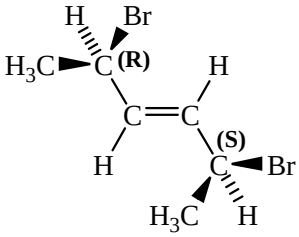


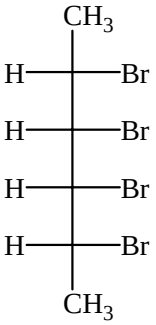
Yes



Yes

d)





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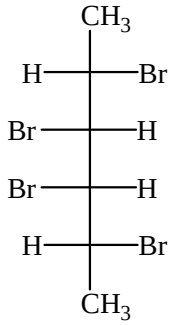
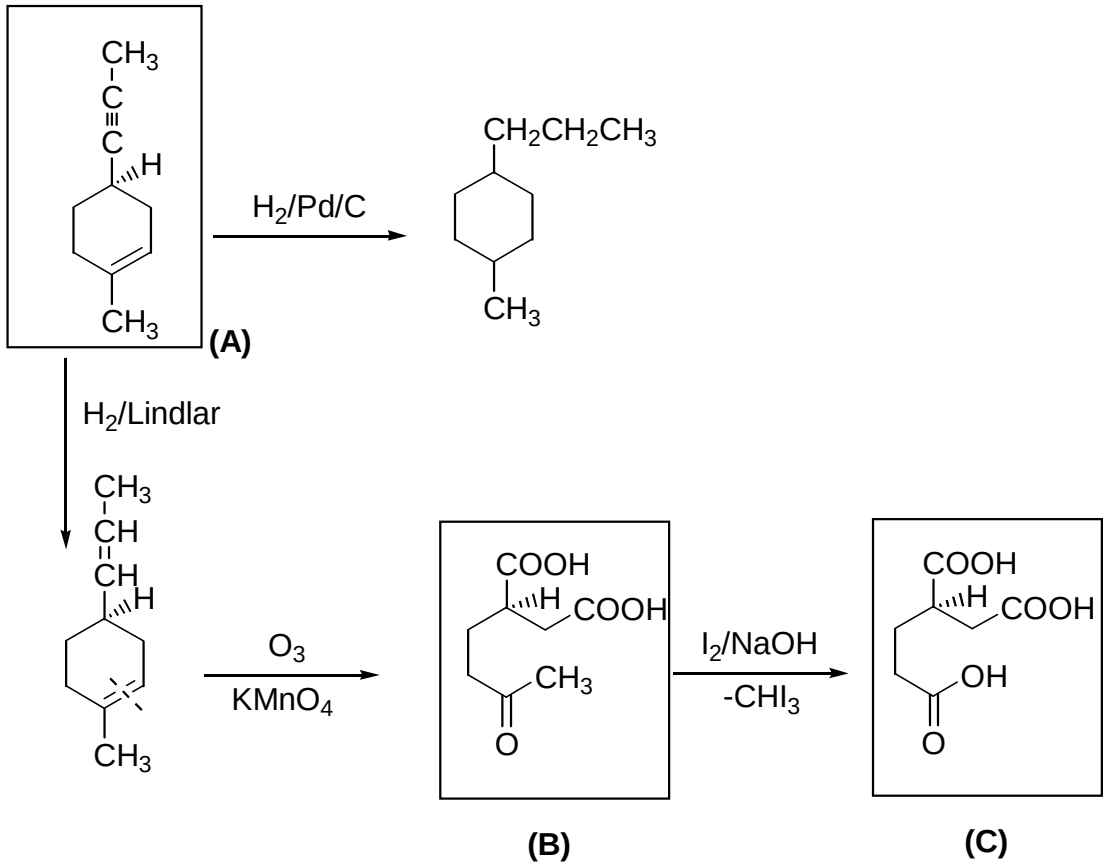


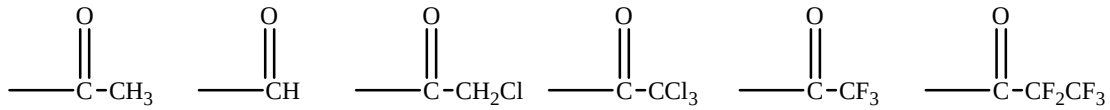
No

Problem 31: Identification of Organic Compounds

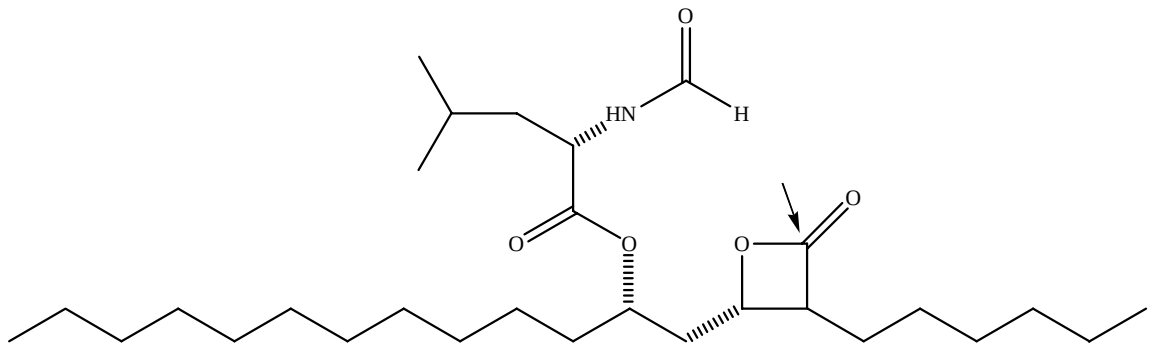


Problem 32: Lipases

a)



b)



c)