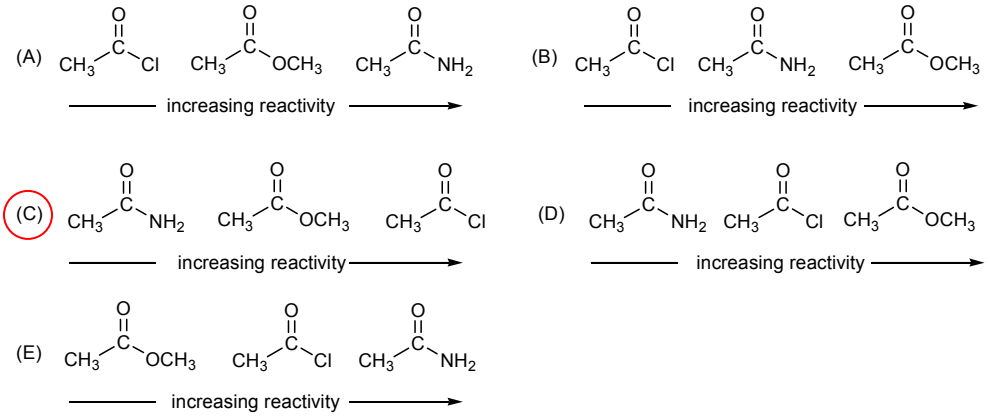
Form 0

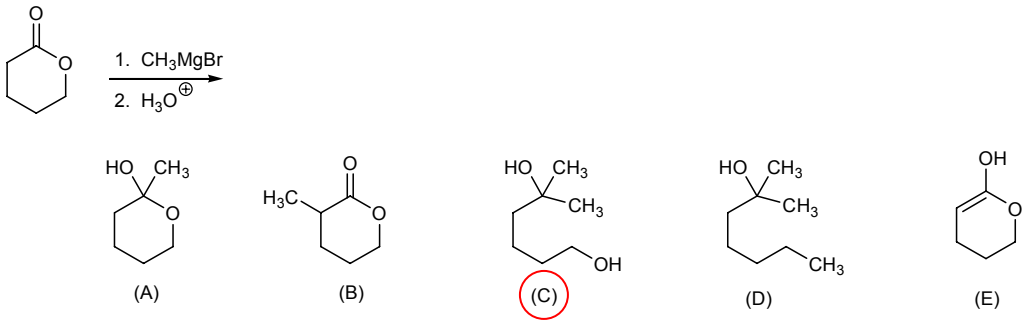
CHE322 **Exam 2** **3/14/2007**

Multiple Choice Questions. 60 points

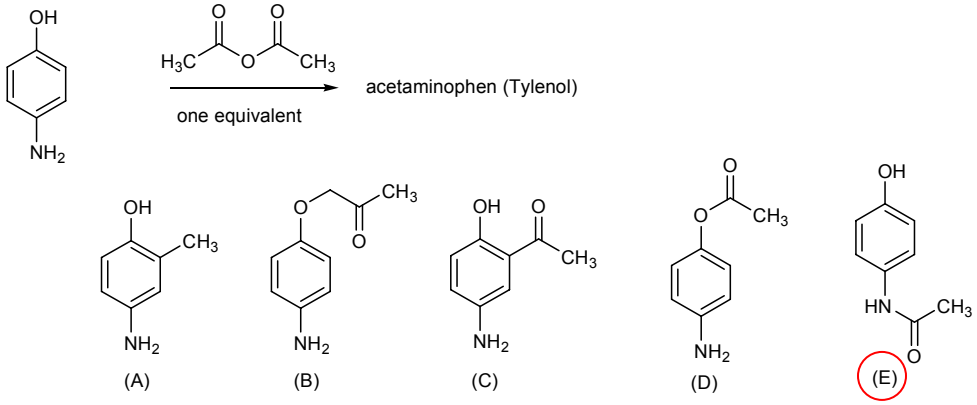
1. Choose the correct order carboxylic acid derivative reactivity with water. (class quiz).



2. Choose the major product of the following reaction (workshop 5).

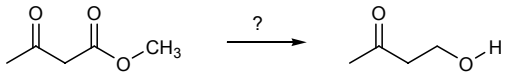


3. Choose the major product of the following reaction (18.28).



Form 0

4. Choose the reaction sequence that could be used to perform the following transformation (class quiz).



(A) $LiAlH_4$ → $NaBH_4$ → $H_3O^{\oplus}$

(B) $LiAlH_4$ → HO OH, $H^{\oplus}$ → $H_3O^{\oplus}$

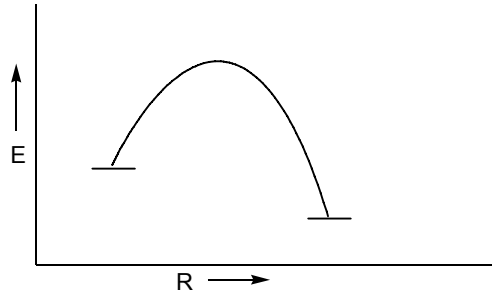
(C) $NaBH_4$ → $LiAlH_4$ → $H_3O^{\oplus}$

(D) HO OH, $H^{\oplus}$ → $LiAlH_4$ → $H_3O^{\oplus}$

(E) $^{\ominus}OH$, H_2O → $LiAlH_4$ → $H_3O^{\oplus}$

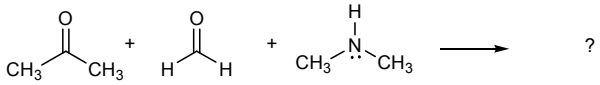
5. Which of the following would cause the rate of a reaction to *increase*. (class quiz)

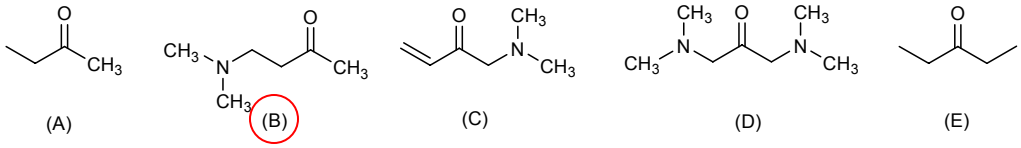
1. The energy of the transition state increases.
2. The energy of the transition state decreases.
3. The energy of the reactants increases.
4. The energy of the reactants decreases.



(A) 1 and 3 (B) 2 and 4 (C) 1 and 4 (D) 2 and 3 (E) 1 and 2

6. Predict the major product of the following reaction. (workshop 6)

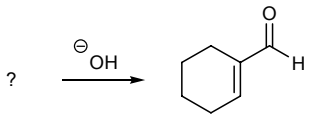


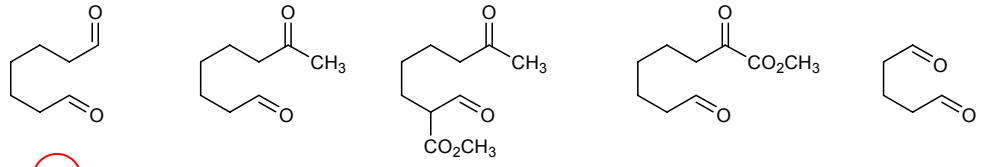


(A) (B) (C) (D) (E)

Form 0

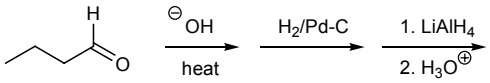
7. Choose the reactant that would give the product shown. (class quiz)

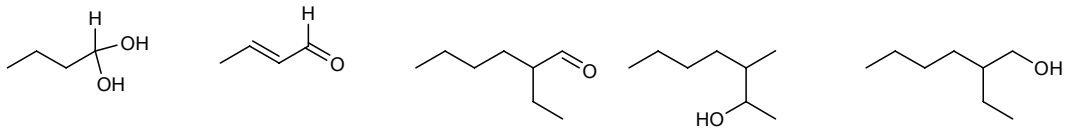




(A) (B) (C) (D) (E)

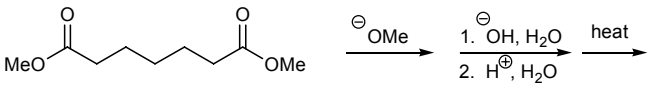
8. Choose the product of the following reaction sequence, a product that is used in the preparation of sunscreens. (19.58)

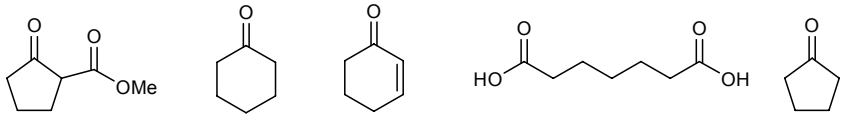




(A) (B) (C) (D) (E)

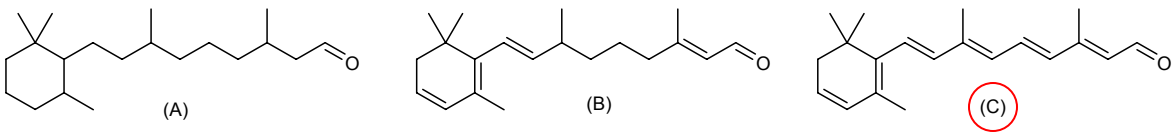
9. Choose the major product of the following reaction sequence. (workshop 6)



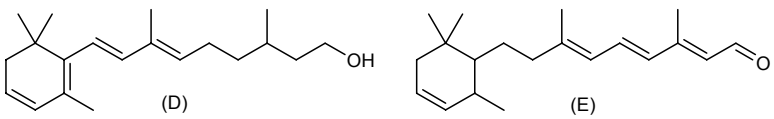


(A) (B) (C) (D) (E)

10. Choose the compound with the lowest energy π→π* absorption in the UV-visible spectrum. (class quiz)



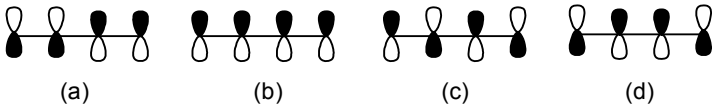
(A) (B) (C)



(D) (E)

Form 0

11. Choose the correct statement about the butadiene π-molecular orbitals shown below. (class quiz)



(A) Molecular orbital (b) is the HOMO of butadiene.

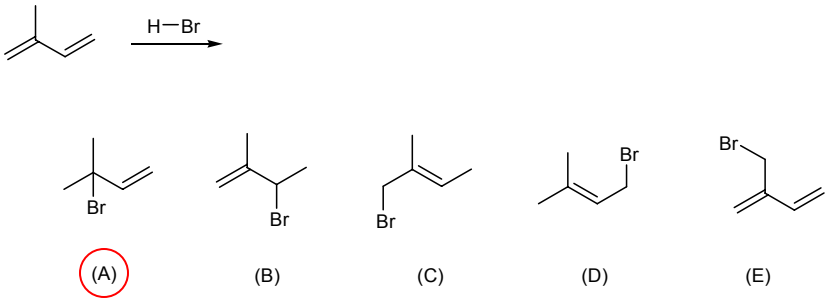
(B) Molecular orbital (d) is the LUMO of butadiene.

(C) Molecular orbital (a) is the least stable.

(D) Molecular orbital (c) is the most stable.

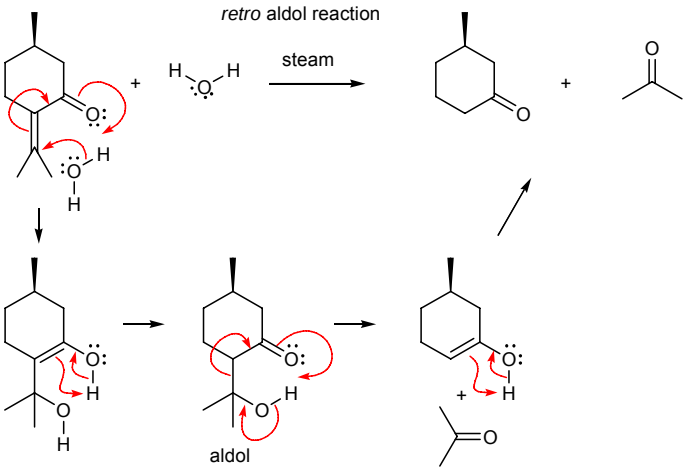
(E) Molecular orbital (c) has 0 nodes.

12. Predict the major product of the addition of HBr to isoprene under kinetic reaction conditions. (class quiz)



Short Answer Questions. 40 points.

13. The treatment of pulegone with steam produces 3-methylcyclohexanone and acetone. Using the curved arrow formalism show the bond breaking and bond making that occurs in this transformation. (19.26)



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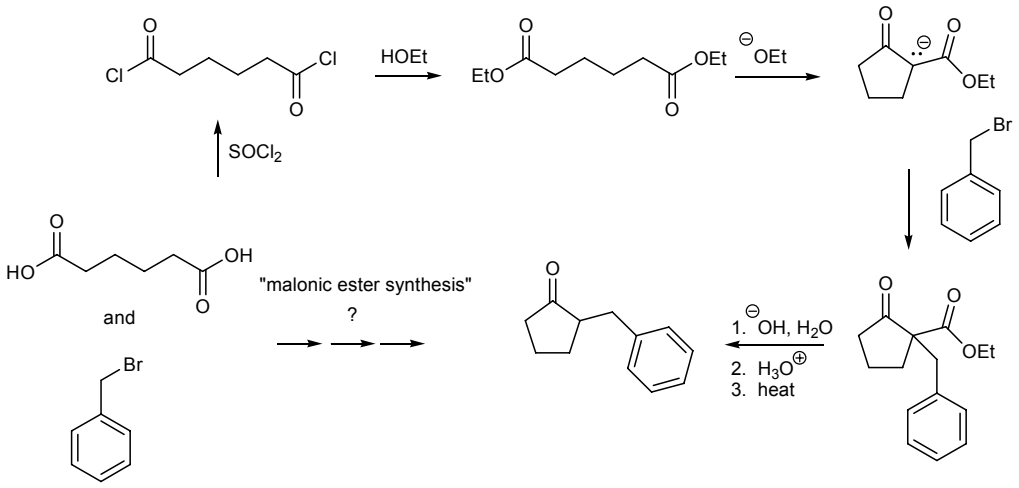
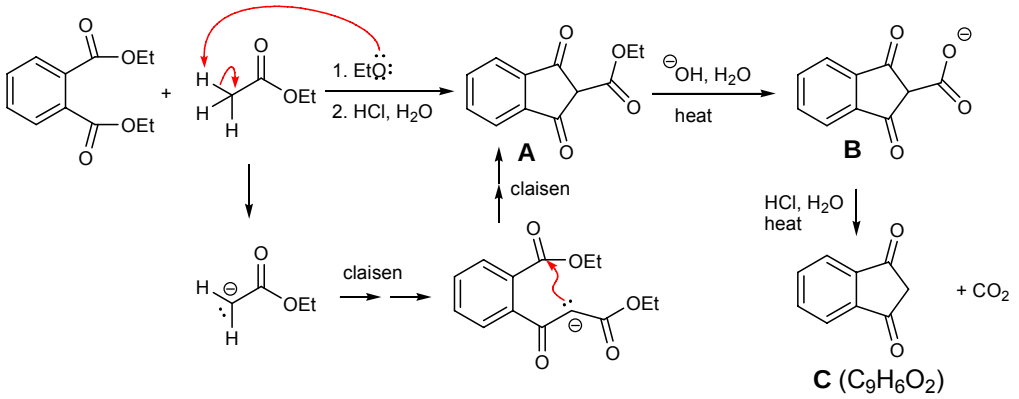
14. Show how you could perform the following transformation (workshop 6).



15. Give structures for compounds **A**, **B** and **C**. (19.35)



16. Give the reactant(s) that would result in the following product. (workshop 8)