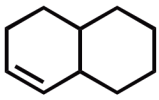
Alkene Exam Preparation Pack

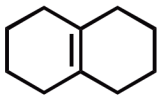
20 Essential Alkene Practice Exam Problems

Problem 1: Alkene Stability

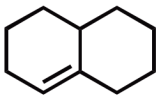
Link to answer
http://bit.ly/Alkenes-MOC-1a



A



B



C

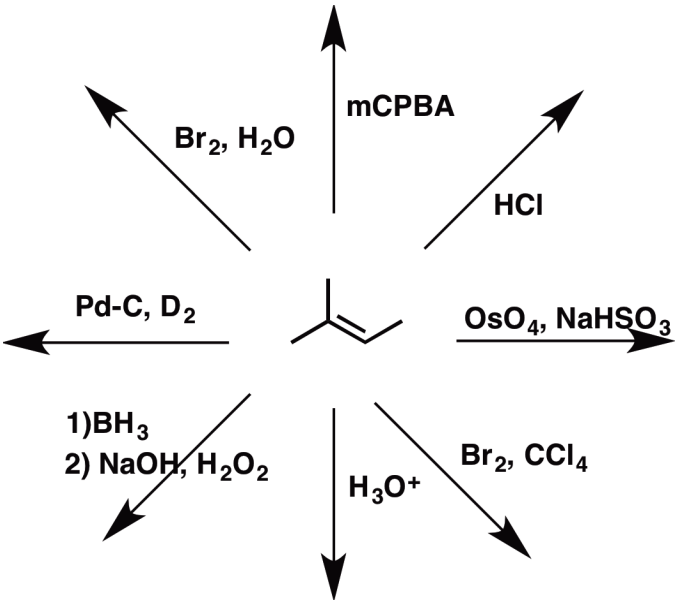
a) Arrange these alkenes **A, B** and **C** from most stable to least stable

b) Hydrogenation of *which alkene* would be the most exothermic?

c) Given these three energies for ΔH° of hydrogenation (in kcal/mol):
–30.2, –28.4, –26.8
which one would be matched with –28.4 kcal/mol?

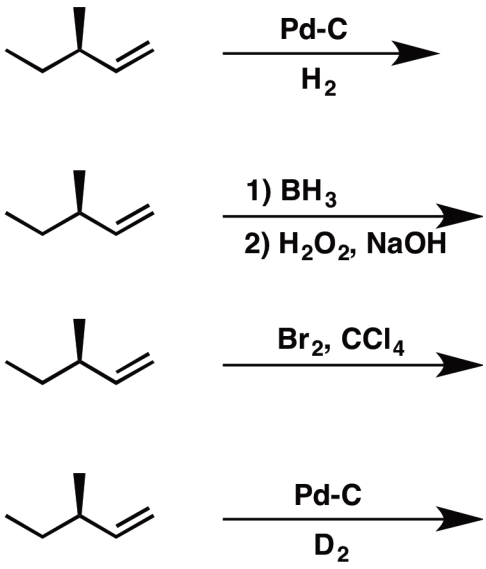
Problem 2: Draw One Product Of Each Reaction

http://bit.ly/Alkenes-MOC-2



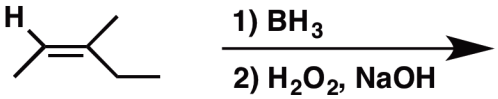
Problem 3: Provide all the products of these reactions. If there is more than one, state the relationship between the products (e.g. enantiomers, diastereomers, or constitutional isomers)

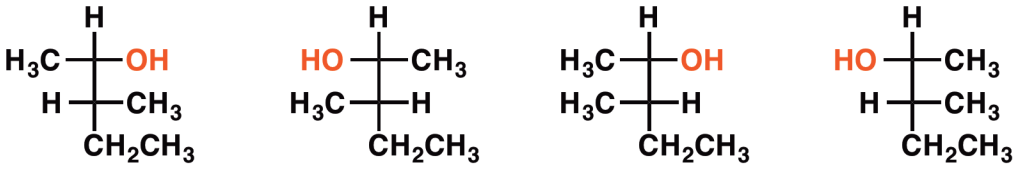
http://bit.ly/Alkenes-MOC-3



Problem 4: Pick the structure(s) which correspond to the products of the reaction below

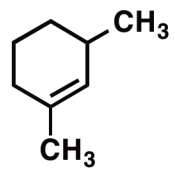
http://bit.ly/Alkenes-MOC-4



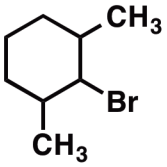


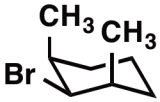
1 2 3 4

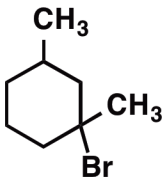
Problem 5: Circle the correct product of this reaction http://bit.ly/Alkenes-MOC-5

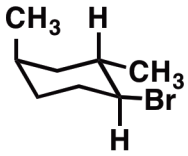


?



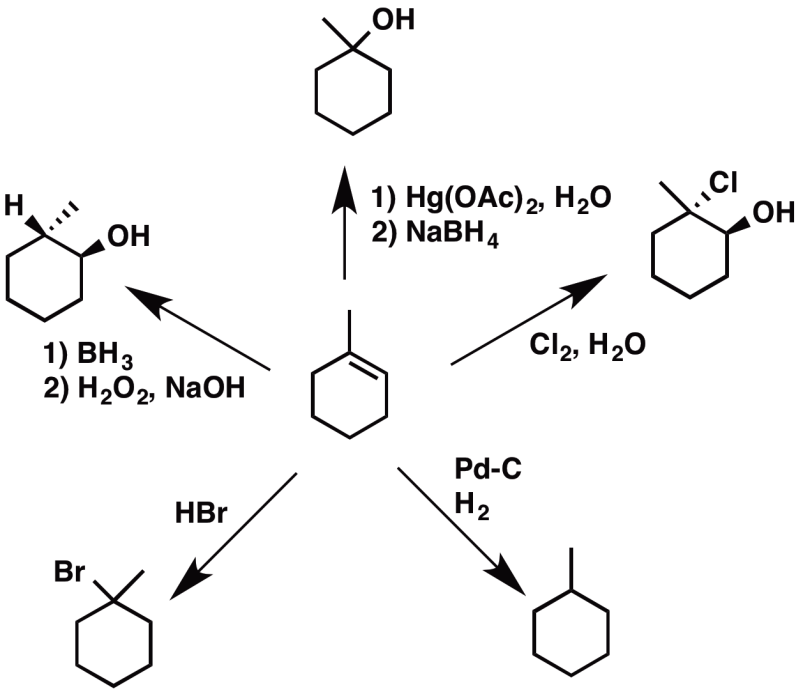






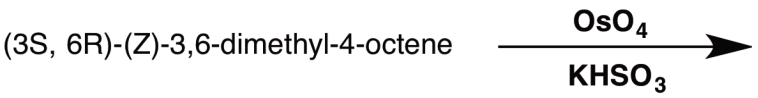
Problem 6: Which product is incorrect?

http://bit.ly/Alkenes-MOC-6



Problem 7: Draw the product(s) of the following reaction

http://bit.ly/Alkenes-MOC-7

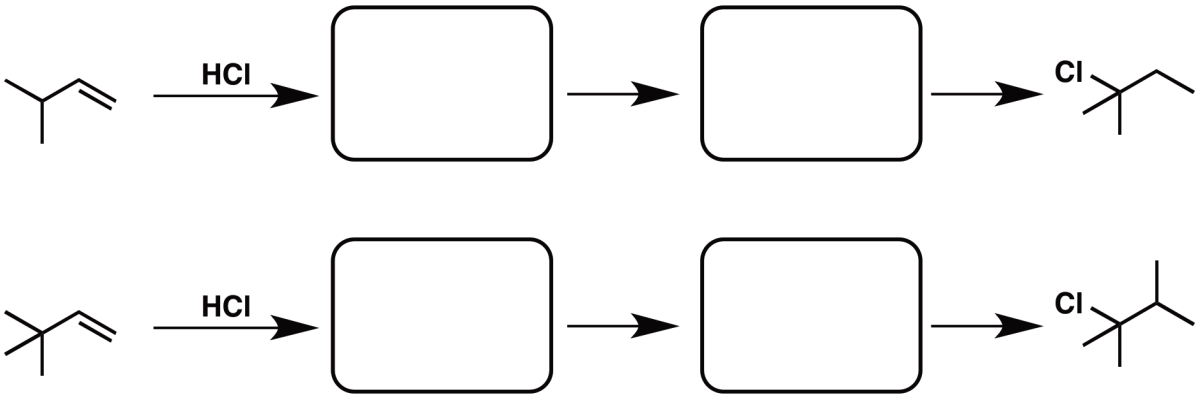


Problem 8: Draw the product of the following intramolecular reaction, and a mechanism for its formation.

http://bit.ly/Alkenes-MOC-8

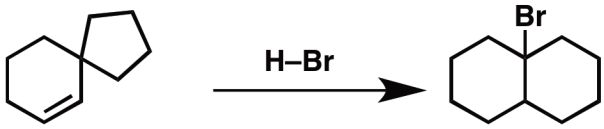
Problem 9: Draw the mechanisms for these two rearrangement reactions

http://bit.ly/Alkenes-MOC-9



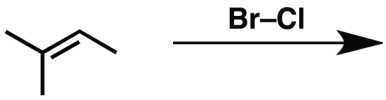
Problem 10: Draw a mechanism for this reaction

http://bit.ly/Alkenes-MOC-10



Problem 11: What would be the product(s) of the following reaction?

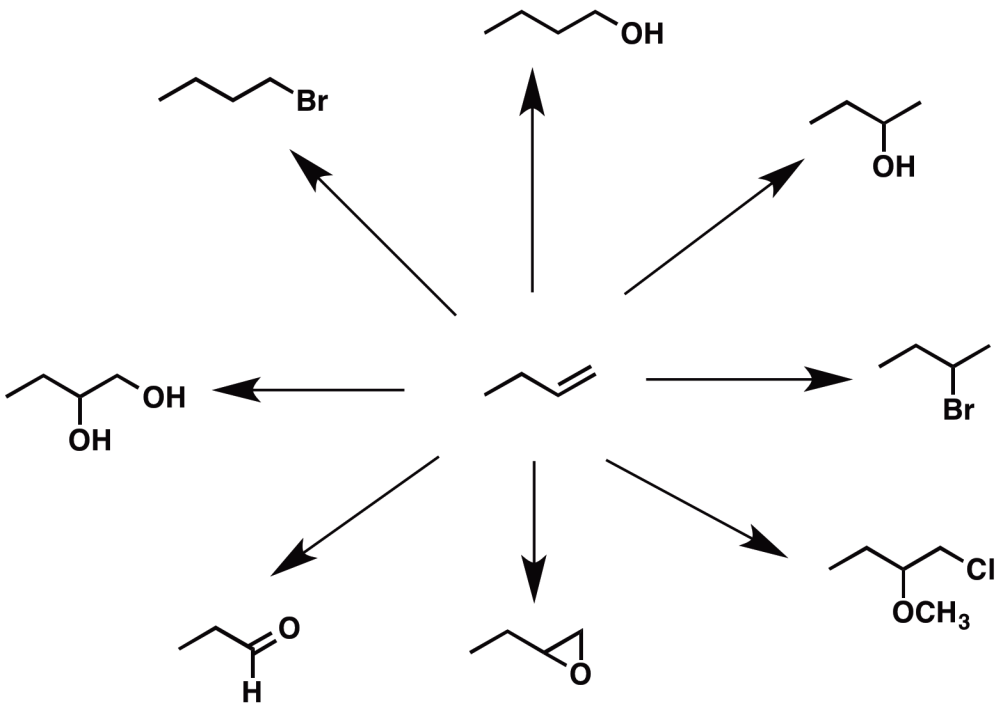
http://bit.ly/Alkenes-MOC-11



(Hint: you may not have seen this reagent before. Use electronegativity differences to figure out which atom is more electrophilic)

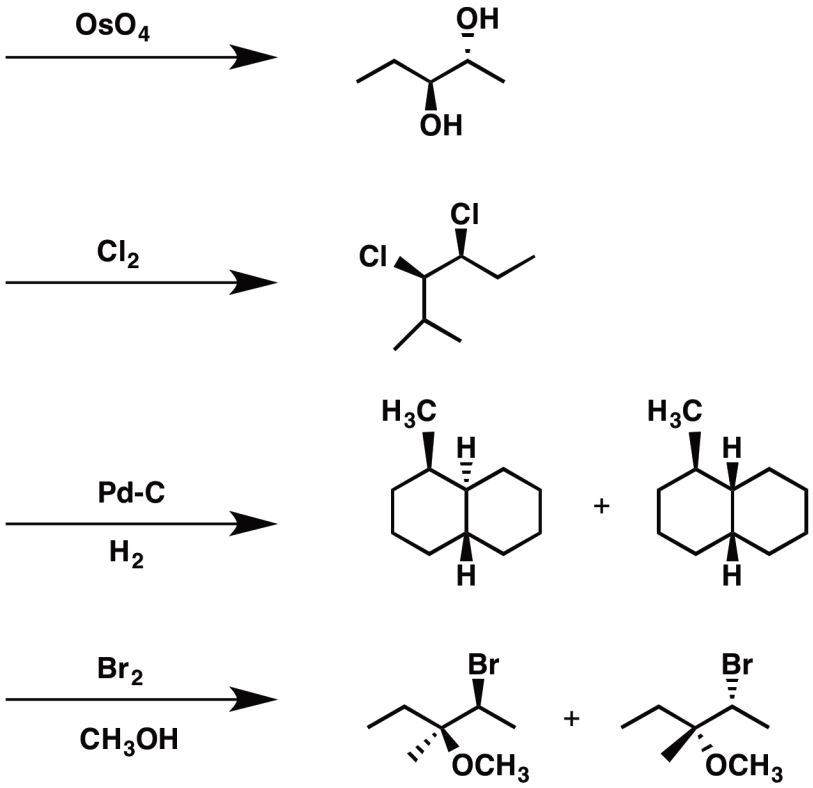
Problem 12: Give the reagents for each of the following transformations

http://bit.ly/Alkenes-MOC-12



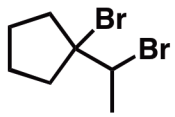
Problem 13: Draw a suitable alkene for each of the following reactions

http://bit.ly/Alkenes-MOC-13



Problem 14: Which alkene (A, B, C or D) would give this dibromide product upon treatment with Br_2 and CCl_4 ?

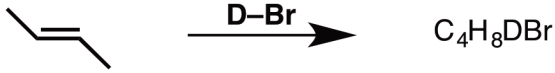
http://bit.ly/Alkenes-MOC-14



A **B** **C** **D**

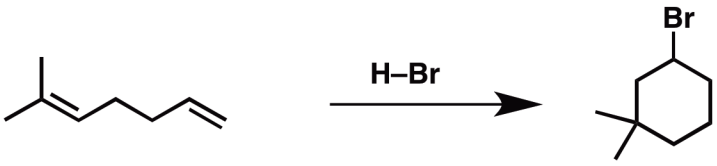
Problem 15: Draw all products resulting from this reaction and indicate how they are related to each other.

http://bit.ly/Alkenes-MOC-15



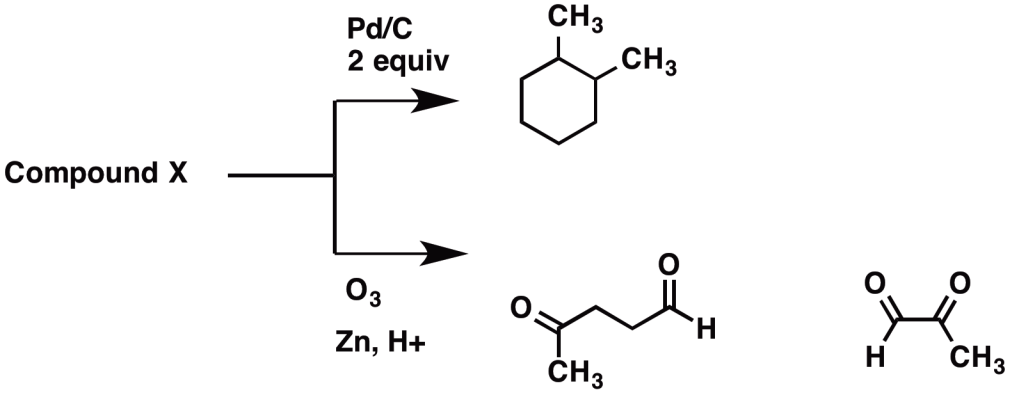
Problem 16: Draw a mechanism for this reaction:

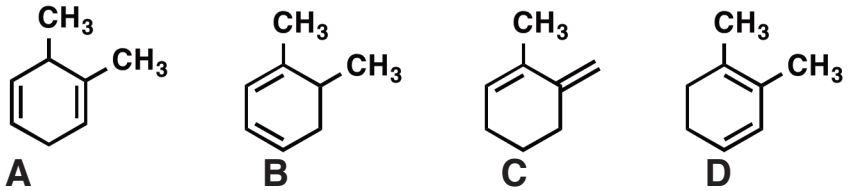
http://bit.ly/Alkenes-MOC-16



Problem 17: Compound X absorbs 2 equivalents of hydrogen gas during hydrogenation with Pd-C/H_2 . When treated with O_3 (and reductive workup) it gives the two products shown. What is compound X?

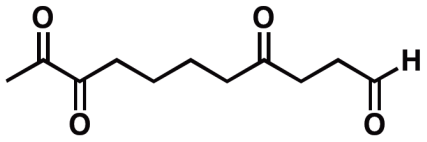
http://bit.ly/Alkenes-MOC-17





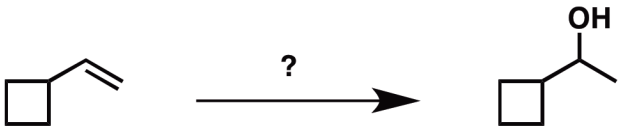
Problem 18: MYSTERY COMPOUND X was found to absorb 2 equivalents of H_2 gas under catalytic hydrogenation conditions. Ozonolysis of X gave the molecule shown. Draw the structure of the mystery compound

http://bit.ly/Alkenes-MOC-18



Problem 19: What reagent(s) would you use for the following transformation?

http://bit.ly/Alkenes-MOC-19



Problem 20: Draw a mechanism for the following reaction

http://bit.ly/Alkenes-MOC-20