

Chemistry 334

First Hour Examination

September 29, 1997

Professor Charonnat

Name: \_\_\_\_\_

Be certain that your examination has five (5) pages including this one.

Put your name on **each** page of this examination booklet.

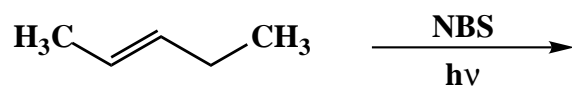
By putting your name on this examination booklet you agree to abide by California State University, Northridge policies of academic honesty and integrity.

Name: \_\_\_\_\_

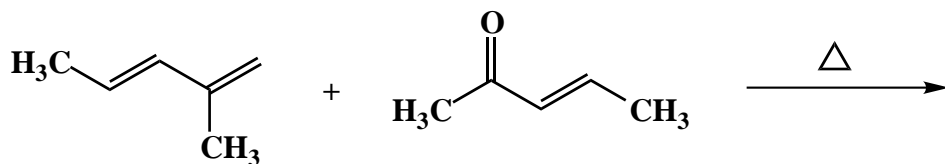
1. (25 points)

For each of the following five (5) questions draw the structure of the expected major organic product. If relevant, explicitly specify absolute and/or relative stereochemistry.

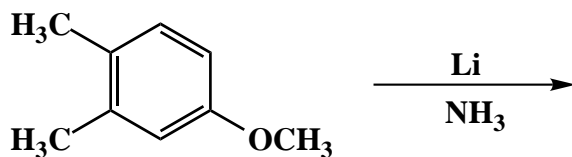
A.



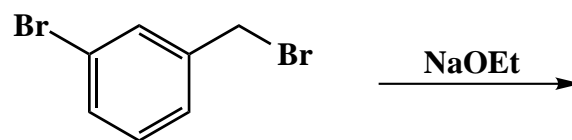
B.



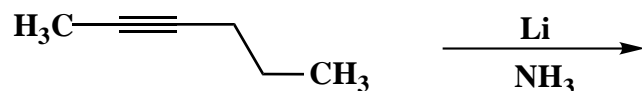
C.



D.



E.



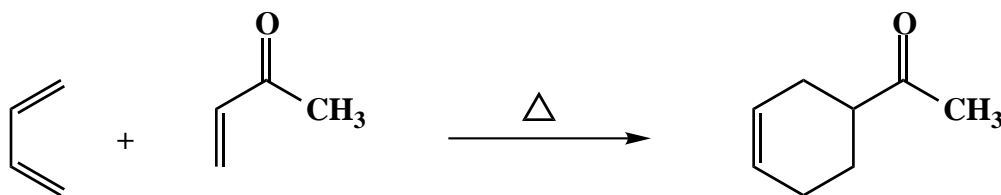
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2. (25 points)

Answer the following three (3) questions precisely, succinctly and with correct grammar.

A. The Beer-Lambert law for ultraviolet/visible spectroscopy states that absorbance,  $A$ , equals the molar absorption coefficient,  $\epsilon$ , times the concentration,  $c$ , times the path length,  $l$ . Why is absorbance directly proportional to concentration?

B. Why does the following Diels-Alder reaction afford a racemic mixture?

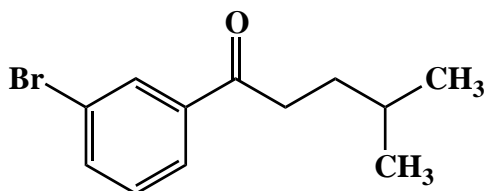


C. Why is it generally true that a convergent synthesis is more efficient than a linear synthesis?

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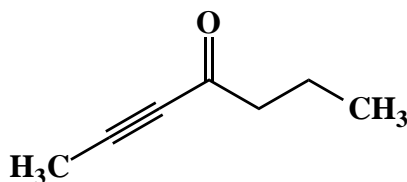
3. (25 points)

A. Design a synthesis of the ketone 1 from benzene. Use any inorganic and organic reagents that are necessary. Show all reagents and stable synthetic intermediate compounds. (**N.B.** Do not draw mechanisms for each synthetic transformation!)



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B. Design a synthesis of the ketone 2 from acetylene. Use any inorganic and organic reagents that are necessary. Show all reagents and stable synthetic intermediate compounds. (**N.B.** As above, do not draw mechanisms for each synthetic transformation!)

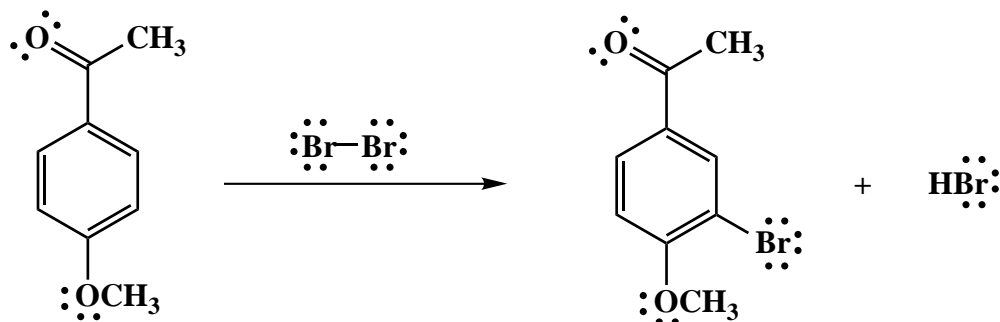


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4. (25 points)

Draw the mechanism of the following reaction, using the curved-arrow notation to indicate the reorganization of electron density. Show **all** intermediates and denote **all** lone pair electrons, formal charges, countercharges and resonance structures where appropriate.



**Congratulations!**

1	/25
2	/25
3	/25
4	/25
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Total:	/100