

Chemistry 334

Hour Examination #1

March 8, 1999

Professor Charonnat

Name: _____

Be certain that your examination has six (6) pages including this one.

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

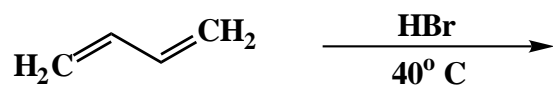
By putting your name on this examination booklet you agree to abide by California State University, Northridge policies of academic honesty and integrity.

Name: _____

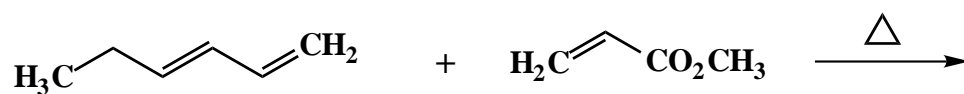
1. (25 points)

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.

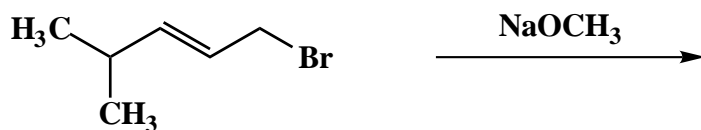
A.



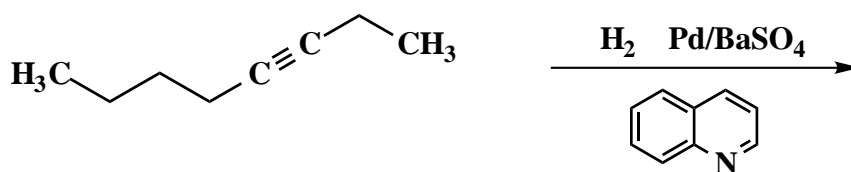
B.



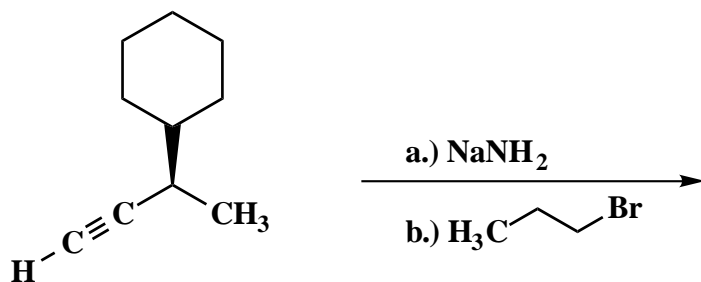
C.



D.



E.



Name: _____

2. (20 points)

For each of the following five (5) questions, circle the number that corresponds to the correct answer.

A. The Diels-Alder reaction affords:

1. cyclopentene products
2. cyclohexene products
3. cycloheptene products

B. Aromatic compounds contain:

1. $4n$ π conjugated electrons in a cyclic array
2. $4n+2$ π conjugated electrons in an acyclic array
3. $4n+2$ π conjugated electrons in a cyclic array

C. Ultraviolet/visible spectroscopy gives discernible information about:

1. valence shell electronic transitions
2. vibrational transitions
3. rotational transitions

D. A nitro group is a meta-directing substituent due to:

1. sterics
2. induction
3. resonance

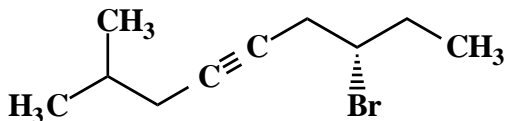
E. A nitro group is a deactivating substituent due to:

1. sterics
2. induction
3. resonance

Name: _____

3. (10 points)

Use IUPAC nomenclature to write the systematic name of the following internal alkyne.



4. (10 points)

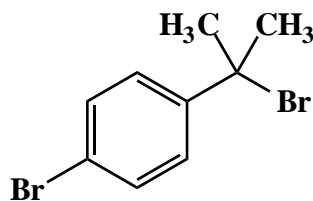
Answer the following question precisely, succinctly and with correct grammar.

What experimental evidence suggests that the Diels-Alder reaction does not proceed through radical intermediates? Explain how the data supports this assertion.

Name: _____

5. (15 points)

Design a synthesis of the dibromo compound **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!)

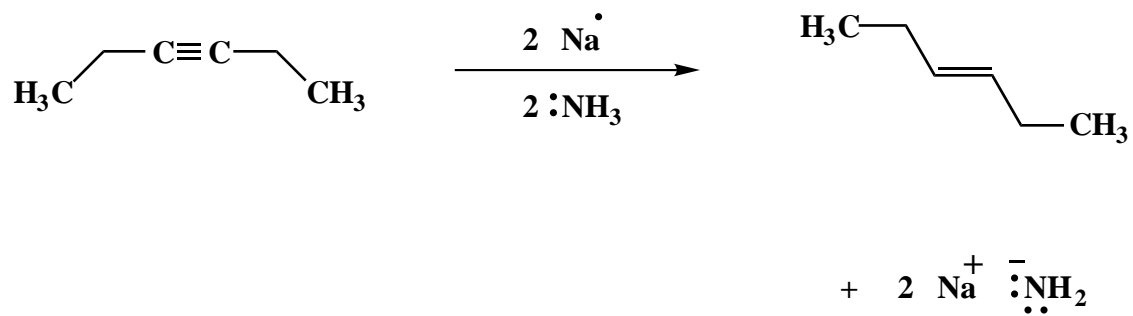


1

Name: _____

6. (20 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** unpaired electrons, lone pair electrons, formal charges and countercharges where appropriate.



Congratulations!

1	/25
2	/20
3	/10
4	/10
5	/15
6	/20
<hr/> Total:	<hr/> /100