ORGANIC CHEMISTRY CH 351-02 (McNulty/Wilson)
Exam #4
December 2, 2004

Problem 1 _______ (25)
Problem 2 _______ (26)
Problem 3 _______ (15)
Problem 4 _______ (28)
Problem 5 _______ (6)
E. C. _______ (4)

TOTAL _________ (100)

TRUE! by Daryl Cagle

Actual questions from the 1,619 average daily calls to the Butterball Turkey Hot Line.

Bob Parr (aka Mr. Incredible): It's not a graduation. He's moving from the 4th grade to the 5th grade.
Helen Parr (aka Elastagirl): It's a ceremony.
Bob Parr: It's psychotic! They keep creating new ways to celebrate mediocrity.

- The Incredibles
1. Choose five of the next six reactions and give the possible product(s) for the ones you have chosen. INDICATE WHICH YOU WANT GRADED! Be aware of details like stereochemistry, regiochemistry, and rearrangements. (5 pts each)

a. 

b. 

c. 

d. 

e. 

f. 

KEY
(26) 2. Given the following reactions, give detailed arrow pushing mechanisms for two of the three. You need only show the products drawn even though there may be more products formed. If enantiomers can be formed, you only need to show the formation of one of the enantiomers. (13 pts each)

a. \[ \text{HgOAc}_2, \text{H}_2\text{O} \]

b. \[ \text{H}_2\text{SO}_4, \text{EtOH} \]

c. \[ \text{CH}_3\text{O}^-, \text{OCH}_3 \]

A. 

B.
(15) 3. Given the following roadmap, supply answers for A and B for each. The molecular formulas have been triple checked! Partial credit may be awarded for incorrect answers which are self-consistent. (5 pts each)

a.

$A =$

$B =$

$C =$
(28) 4. Starting with alcohols of 5 carbons or less, HCCH, any inorganic reagent you need, any appropriate solvent, any base (for deprotonation only!), synthesize **two** of the following **three** molecules. Use good reactions which will give you the major product you desire. (14 pts each)

![Molecular structures]

Reasonable syntheses accepted. Good synthetic steps, $S_N2$ reactions with good substrates, good leaving groups, starting with the correct starting materials, etc. Let me know if you have questions. All of the syntheses could have used ring opening of an epoxide as the key step, try it. Maybe something like this will be on the final…

(6) 5. Polymers are often made as co-polymers where multiple monomers are incorporated into a polymer to give it unique properties. Given this, the following polymer contains two different monomer pieces which have been incorporated in a random pattern. Given that the polymer shown has eight units of monomer, give me the structures of the two unique monomers which would give this polymer.

![Polymer structure]

(4 pts) **Extra Credit.** Answer either a) or b) (designate which one you are answering): a) Who lives in a pineapple under the sea? b) Where does SpongeBob SquarePants live?

Who has a three-year-old…