

February 3, 2005

**Cumulative Examination
Organic Chemistry**

By : Professor A. K. Ghosh

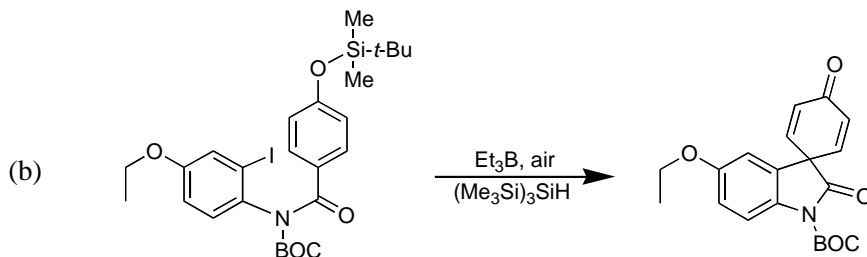
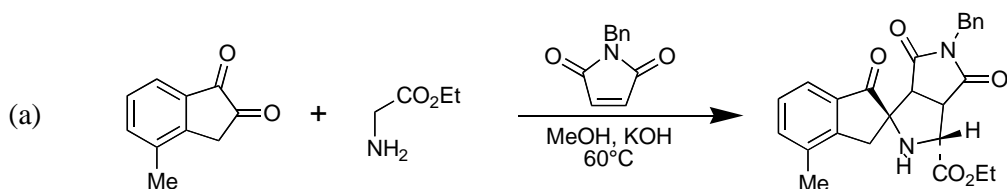
1. (a) In our departmental seminar, on January 27, 2005, Dr. Annaliese Franz from Harvard University described synthetic methodology and chemical biology of organic molecules. Briefly describe the topics of the seminar. . (10 pts)

(b) On January 24, 2005, Dr. Roman Manetsch from Scripps Research Institute described biocatalysis to target guided assembly of potent inhibitors. Briefly describe the topics of the seminar. (10 pts)

2. Draw a structural formula for Cys-Arg-Met-Asn. Write this peptide in one-letter symbol form. Label the N-terminal amino acid and the C-terminal amino acid. What is the net charge on this tetrapeptide at pH 6 ? (20 pts)

3. What are carbohydrates ? How did these compounds get their name ? Define disaccharide, oligosaccharide and polysaccharide. (20 pts)

4. Propose the mechanism of the following reactions: (20 pts)



5. Define with examples: (a) Vilsmeier Formylation (b) Fries Rearrangement (3) Sharpless Asymmetric epoxidation and (4) Corey-Winter olefination.

(20 pts)