Organic Cumulative November 7, 1998 9:00 AM to Noon 1251 Chemistry Conference Room Synthetic Organic Chemistry

- 1.(24 pts.) Provide the name and structure for the following eight common organic abbreviations:
 - AIBN Py DMAP
 - NMO TFAA DEAD
 - PTSA Tr

AIBN	DMAP	NMO	Ру
DEAD	PTSA	Tr	TFAA

Consider the following total synthesis of (-)-Ovatolide: Delgado, A.; Clardy, J. J. Org. Chem. **1993**, 58, 2862. (-)-Ovatolide **11** is isolated from the leaves of *Bridelia siamensis* Craib and is used in folk medicine as a laxative and astrignet. Specific questions are asked on the next pages, please answer the questions completely and carefully. Neatness is always helpful.



1.(6 pts) In the name (-)-Ovatolide what does the (-) mean? and does this tell us anything about the absolute stereochemistry of the Ovatolide?

2.(5 pts) What reagents are neccessary for step A and are there any other possible regioisomers formed in this reaction ?

3.(10 pts) Rationalize the regioselectivity of the mono-debenzylation reaction carried out in step B and provide the reagents for step C in the conversion of compound **2** to compound **3**.

4.(10 pts) The conversion of compound **3** to compound **4** is a modification of the Henry Aldol reaction. Using the reagents given in steps D and E suggest a structure for compound **4** and provide a mechanism for the formation of **4**. Do not forget to look ahead to help you out.

5.(10 pts) Suggest a reasonable structure for compound **6** and provide a mechanism for the formation of compound **7**.

6.(10 pts) Suggest a mechanism for the transformation of compound 7 to compound 8

7.(10 pts) The transformation from **9** to **10** is macrolactonization using dipyridyl disulfide (Corey-Niccolaou reagent). Provide a structure for compound **10** and discuss some of the potential problems associated macrolactonization reactions in general.

8.(15 pts) Suggest a reasonable mechanism for the macrolactonization of **9** to **10** and comment on why you think dipyridyl disulfide is a useful reagent for this macrolactonization.