THE UNIVERSITY OF TOLEDO 1872

Mid-Term Exam 1

Time: 10:00 am – 11:00 am
Date: February 16, 2017
Room: BO 2059

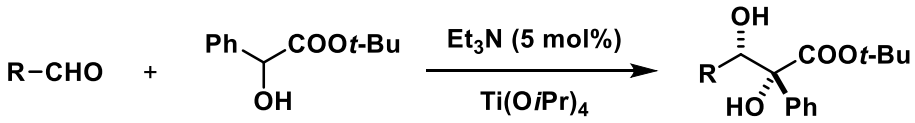
100 Points - Total

1. **Problem:** Please provide mechanisms for 5 of the following 10 named reactions: (**25 PTS**)

    1. Baeyer-Villiger Reaction
    2. Bishler-Napieralski Reaction
    3. Barton-McCombie Reaction
    4. Benzoin Condensation
    5. Bergman Reaction
    6. Birch Reduction
    7. Biginelli Reaction
    8. Beckmann Rearrangement
    9. Aldol Condensation
    10. Baylis-Hillman Reaction

Answers:

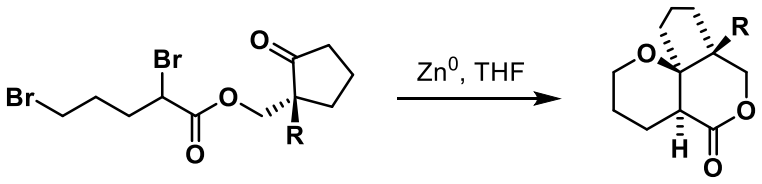
2. **Problem:** Rationalize the *syn*-selectivity of the following reaction with a clear 3-D representation of the Zimmerman-Traxler transition state. (**25 PTS**)



R	yield (%)	ratio (*syn*/*anti*)
Me	70	55:45
Et	75	79:21
i-Pr	78	94:06

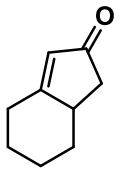
Answer:

3. **Problem:** Provide a mechanism that accounts for observed stereochemistry of the illustrated transformation. (**25 PTS**)



Answer:

4. **Problem:** Show how you would synthesize the following molecule. Use retro-synthetic analysis to break the pertinent bonds. Provide mechanisms for every step you use. As a hint, start with cyclohexanone and some other compound of your choice (From Quiz #2). (**25 PTS**)



Answer: