Homework 7 Questions

Use MSWord and ChemOffice to enter answers. Answers not submitted on this form will not be graded. STAPLE PAGES TOGETHER.

You may collaborate to develop strategies to answer these questions but ALL WORK USING CHEMDRAW, CHEM3D AND MSWORD SHOULD BE COMPLETED INDEPENDENTLY OF OTHERS. YOU MUST NOT EXCHANGE FILES WITH OTHER STUDENTS OR CUT-AND-PASTE FROM OTHER STUDENTS.

Links to “Instructions for ChemDraw” and “Instructions for Chem3D” are provided on the homework Webpage.

Nomenclature (1 pt)
1. Potassium (2E,4E)-2,4-hexadienoate is added as a preservative to certain foods to prevent bacteria and mold from causing food spoilage. Draw a structural formula of potassium (2E,4E)-2,4-hexadienoate.

Acidities (1 pt)
2. In each of the following pairs below, which compound would have the higher pKa?

![Structures of A and B](image)

Synthesis (4 pts)
3. Predict the products of the following reactions:

![Reactions A and B](image)

D. ![Reactions C and D](image)
Reactions of Acid Derivatives (3 pts)
4. Predict the products of the following reactions.

A. [Chemical structure of A]
B. [Chemical structure of B]
C. [Chemical structure of C]

Mechanisms (2 pts)
5. A urethane is a molecule where the carbonyl is part of an ester and an amide. Propose a mechanism for the formation of the following urethane.

\[ \text{NH} \quad \text{O} \quad \text{NH} \quad \text{O} \]

Synthesis (6 pts)
6. Synthesize the following compounds using only benzene, carbon dioxide, 1-propanol as sources of carbon.

A. [Chemical structure of A]
B. [Chemical structure of B]

Applications (3 pts)
7. Diphenhydramine was one of the first known antihistimines. It is marketed under the brand name Benadryl. Propose a synthesis starting from benzene, benzoic acid, and 2-(N,N-dimethylamino)ethanol.

[Image of Benadryl box]