Chemistry 3371, Quiz 5

Name ____________________________ Recitation Day ________ March 4, 2005

1) (5 points) Show with a diagram the relative energies and electron population of the \( \pi \) molecular orbitals in the ground state. Only the relative orbital energies are required.

![Diagram of \( \pi \) molecular orbitals in a molecule.]

2) (6 points) Draw the \( \pi \)-molecular orbitals of the pentadienyl cation as linear combinations of p-type atomic orbitals on each carbon in order of increasing energy vertically and show the electron population of the orbitals.

![Diagram of pentadienyl cation with \( \pi \) molecular orbitals.]

3) (9 points) Give products with stereochemistry for the following electrocyclic reactions. Indicate for each if the transition state is Hückel or Möbius.

a) \( \text{[Diagram of molecule with arrow labeled } h\text{v}] \)

b) \( \text{[Diagram of molecule with arrow labeled } \text{heat}] \)

c) \( \text{[Diagram of molecule with arrow labeled } \text{heat}] \)