Learning Objectives
Chapter 15 – Aldehydes and Ketones

- What are the functional groups in aldehydes and ketones? You should be able to look at a structure and determine if the structure corresponds to an aldehyde or a ketone.
- You should be able to name aldehydes and ketones. You should also be able to convert the name of an aldehyde or ketone to a structure.
- You should know the basic physical properties of aldehydes and ketones.
- Why do aldehydes and ketones have boiling points between those of alkanes and those of alcohols?
- Why are low molecular weight aldehydes and ketones soluble in water? Why aren’t high molecular weight aldehydes and ketones soluble in water?
- You should be able to look at structures and determine which has the higher boiling point or which is more soluble based on the types of compounds involved (see slides 13 and 14).
- What is the product of the oxidation of a primary alcohol? A secondary alcohol?
- You should be able to predict the product of oxidizing a particular alcohol.
- What is the product of reducing an aldehyde? A ketone?
- You should be able to predict the product of reducing an aldehyde or ketone.
- What does Tollens’ reagent test for? What is the sign of a positive Tollens’ test?
- What does Benedict’s reagent test for? What is the sign of a positive Benedict’s test?
- You should be able to look at an aldehyde or ketone structure and determine if it will give a positive Tollens’ test or a positive Benedict’s test. You should also be able to predict the oxidized product when an aldehyde or ketone is mixed with Tollens’ reagent (see slide 20).
- What is an addition reaction? What adds to the carbonyl carbon? To the carbonyl oxygen? You should be able to predict the products of an addition reaction (addition to a carbonyl in an aldehyde or a ketone).
- What is an acetal? How is it formed? You should be able to predict the product of a reaction between an aldehyde (or ketone) and alcohol molecules. You should also be able to determine which alcohol was used in acetal formation if I give you the structure of the aldehyde/ketone and that of the acetal.
- What are the products of the hydrolysis of acetals? (What is hydrolysis, anyway?)
- What is a hemiacetal? How is it formed? How is it different from an acetal? What are its properties?
- You should be able to recognize a structure as corresponding to an acetal or a hemiacetal.