1. (6 pts) Draw the following

p-bromobenzaldehyde  (2R,3R)-2,3-epoxypentane  benzophenone

2. (18 points) Mechanism  Provide lone pairs and electron pushing arrows to complete the following mechanism. Then answer the questions.

a. The official name for the organic product is formaldehyde ____________

b. Is the formaldehyde oxidized or reduced in this reaction?

  an  to  another

  hydrocarbons  to  0

(c. How many moles of water are consumed in this reaction?________

(d. What is the role of H⁺? ______

(e. Why is H⁺ necessary? ______

(f. This reaction’s equilibrium lies far to the right (0.1% formaldehyde), while the same reaction with acetone lies far to the left (99.9% acetone). Why?

  (g. If the reaction is performed in strong acid, pH < 1, then no reaction occurs. Why? ______

3. (6 points) Which epoxide would fit the following reaction conditions?

1. (CH₃)₂CHMgBr

2. Acid Workup

HCl

enantiomer