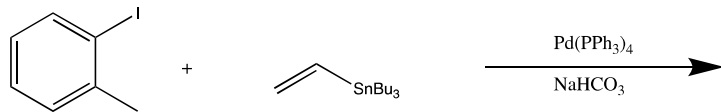
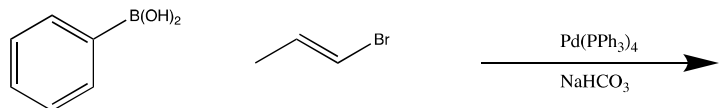


1. Provide the product for the following palladium catalyzed coupling reactions. Then circle the correct name of these particular cross coupling reactions (4 points; 2 point):

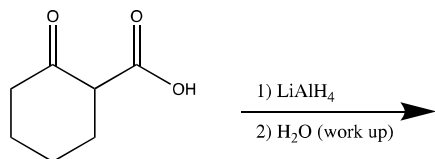
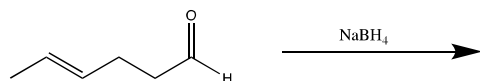
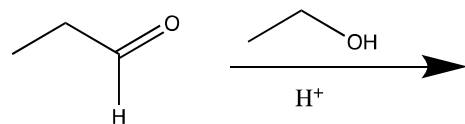
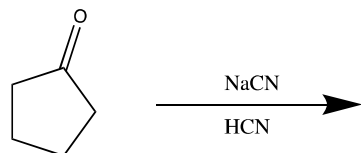


Stille Coupling Negishi Coupling
Suzuki Coupling



Stille Coupling Negishi Coupling
Suzuki Coupling

2) Provide the products to the following carbonyl based reactions (8 points):



3) Provide the arrow pushing mechanism for the following acid catalyzed reaction and provide the expected gem diol product (6 points):

