Problem 1: Propose a mechanism for the following transformation

1) Cl$_2$C=CH$_2$
t-BuOK, THF

2) Silica Gel
Purification
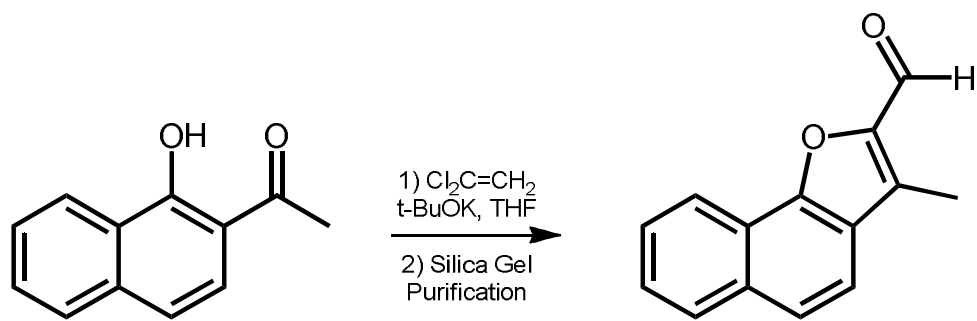
Problem 2: Propose a mechanism for the following transformation

Pd(OAc)$_2$, AgOAc
O$_2$ Balloon

Xylene 130°C, 24 h

COOEt