HOMEWORK ASSIGNMENT #4 ORGANIC CHEMISTRY II

**Alkyne reactions and roadmaps:**  (due Wed 22 February)

**Your name :\_\_\_\_\_\_\_\_\_answers\_\_\_\_\_\_\_\_\_\_\_\_\_*\_*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (20 points) total)**

**4.1) Fill-in (8 points/1 point each correct filled-in box )**

O3

Zn/H+



A) CH3COOH + HCOOH



H2SO4/HgSO4

B) 1-BUTYNE

major



Nao/NH3

C) (E)-4-METHYL-2-PENTENE

C3H7Br

NaNH2

D) in NH3(liq) HC≡C-C3H7 + NaBr

HC≡CH (ethyne)



E)





+ 2HBr gem dihalide

**4.2. Alkyne roadmaps (4 pts each/12 pts total)**

**a) Make propanoic acid starting from ethanol and ethyne :**







?

**Propanoic acid**

1. **Make 2-hexanone from 1-butene and ethyne:**





?



**2-hexanone**

**Make E-4-octene from 1-propanol and ethanol :**



**(hint: devise a path from ethanol to ethyne first)**





?

**E-4-octene**

E-only 4-octene

**4.2. alkadiene resonance behaviors**

non-industrial route to ethyne

