HOMEWORK ASSIGNMENT #4 ORGANIC CHEMISTRY II

**Alkyne-based roadmaps:**  (due Wed 22 February)

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

4 points per correct (plausible) synthesis

**Alkyne roadmaps (4 pts each)**

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

**1) make ethyl chloride**

**3) ozonolysis**







**2) make 3-hexyne**



?



**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)**





1*200 C/no O2*

*(industrial route*

**E-4-octene**

?



1) non-industrial route to ethyne



2) conversion of ethanol to ethyl chloride

3) synthesis of 3-hexyne



4) E-only alkene formation



**d) Make butanal from ethanol :**







**Butanal**

from non-industrial route using ethanol in problem 4d





**e) Make 2,2-dichlorobutane from ethanol**







**2,2-dichlorobutane**

from 4d

