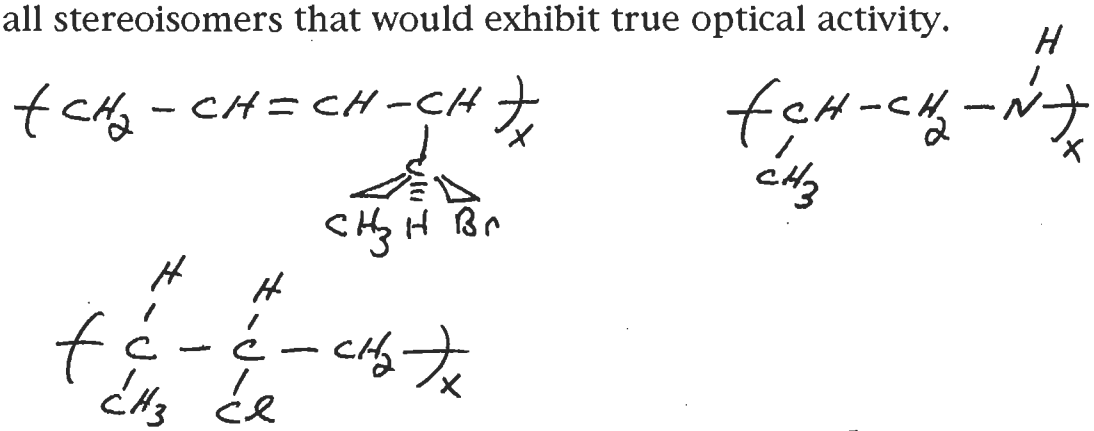
3.034- quiz #1 closed book and notes

1 For each of the following polymers, draw the 3-D structure of all stereoisomers that would exhibit true optical activity.



2 Calculate the number average molecular weight ($\overline{M}_n$), weight average molecular weight ($\overline{M}_w$) and polydispersity index (PDI) of a polymer sample created by mixing 1 mole of a 50,000 g/mole polymer chain with 1 mole of a 150,000 g/mole polymer chain. Assume both polymers to be monodisperse.

3. Show the structure of a tripeptide that would....

   a. adsorb onto a positively charged surface at pH > 10 and adsorb onto a negatively charged surface over the pH range of 2.0-6.0.

   b. form inter-molecular covalent crosslinks

   c. be a building block of a α-helix

4. An analysis of a meteor that impacted the earth reveals the presence of both D and L amino acid optical isomers. Speculate as to whether or not this meteor came from a planet that supported life and explain the basis for your speculation.