

CHEM 121 Biological Chemistry Problem Set 2

1. Draw the structures for the following organic molecules:

- | | | | |
|--------------|--------------|--------------|-------------|
| A. Ethyne | B. Propyne | C. 1-Butyne | D. 2-Butyne |
| E. 1-Pentyne | F. 2-Pentyne | G. 1-Hexyne | H. 2-Hexyne |
| I. 3-Hexyne | J. 2-Heptyne | K. 3-Heptyne | L. 4-Octyne |

2. Write out and complete the following reactions:

- | | |
|---|---|
| A. 1-butene + HCl | B. 1-butene + HF |
| C. 1-butene + H ₂ O + H ⁺ | D. 2-butyne + H ₂ + Ni |
| E. 2-butyne + Na + NH ₃ (aq) | F. 3-hexyne + H ₂ + Ni |
| G. 3-hexyne + Na + NH ₃ (aq) | H. propyne + water + H ₂ SO ₄ + HgSO ₄ |
| I. 1-butyne + H ₂ O + H ₂ SO ₄ + HgSO ₄ | J. 2-butyne + H ₂ O + H ₂ SO ₄ + HgSO ₄ |
| K. isopropyl alcohol + H ₂ SO ₄ + heat | L. 1-propanol + KMnO ₄ |
| M. 2-butanol + CrO ₃ | N. formic acid + methanol + H ⁺ |
| O. toluene + Br ₂ | P. Benzoic acid + trimethylammonium ion |
| Q. glycerine + nitric acid | |
- R. Make any acid chloride, then use your product to make any amide

3. Draw the structures for the following organic molecules:

- | | | | |
|-------------------|------------------|------------------|-------------------|
| A. Hexanal | B. Propanal | C. Ethanal | D. Octanal |
| E. Butanal | F. Ethanoic acid | G. Nonanoic acid | H. Pentanoic acid |
| I. Heptanoic acid | J. Formamide | K. Decanamide | L. Propanamide |