

Biochem 330  
Assignment 3  
Due 9/22/08

1. The octapeptide AVGWRVKS was digested with the enzyme trypsin. Would ion exchange or size exclusion be most appropriate for separating the products? Explain.

What if the peptide is digested with chymotrypsin? Which method would be more useful?

2. The relative electrophoretic mobilities of a 30-kd protein and a 92-kd protein on a SDS polyacrylamide gel are 0.80 and 0.41 respectively. What is the apparent mass of a protein having a mobility of 0.62 on this gel?

3. The following are reagents that are often used in protein chemistry:

CNBr	6M HCl
$\beta$ Mercaptoethanol	Ninhydrin
Trypsin	Phenylisothiocyanate.
Performic Acid	Sanger reagent (Fluorodinitrobenzene)
Dabsyl Chloride	Chymotrypsin
DCC	

Which one (s) is (are) necessary for the following tasks.

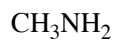
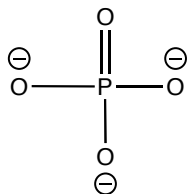
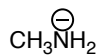
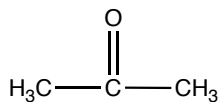
- A) Hydrolysis of peptide bonds.
- B) Reduction of disulfide bonds.
- C) Oxidation of disulfide bonds.
- D) Detection of amino end of peptide
- E) Detection of the amino end of a peptide (only small amount of protein—pg-ng amounts)
- F) Used in peptide synthesis to make a good leaving group.
- G) Cuts peptides on the carboxy side of positively charged residues
- H) Cuts peptides on the carboxy side of aromatic residues.
- I) Breaks peptides on carboxy side of methionine residues, forms homoserine lactone.
- J) Used to do Edman degradation for peptide sequencing.
- K) Used to detect amino acids, produces a blue product with most amino acids.

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4. Which of the following are nucleophiles?

Nucleophile?  
If yes, indicate strong, medium, or weak

If a nucleophile  
Proceed through S<sub>N</sub>1 or S<sub>N</sub>2?



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5. For each compound, determine whether the leaving group is excellent, good, or bad.

