

- 4) Which amino acid has an acidic side chain
- a
 - b
 - c
 - None of the above
- 5) Which amino acid has a side chain that can form hydrophobic interactions
- a
 - b
 - c
 - None of the above
- 6) β mercaptoethanol is used at high concentrations to:
- Cleave disulfide bonds
 - Form disulfide bonds
 - Act as a buffer
 - Cleave peptide bonds
- 7) What is the purpose of the gel in SDS-PAGE?
- It serves as an electrical conductor
 - Acts as a weak ion exchanger
 - It serves as a means to physical separate the proteins based on size
 - It serves to reduce the proteins onto their denatured form
- 8) Separation of proteins by gel filtration (SEC) chromatography take advantage of differences in:
- Isoelectric points of proteins
 - The solubility of proteins
 - The size of proteins
 - The net charge of the protein
 - all of the above
 - none of the above
- 9) A mixture of proteins was applied to a gel- filtration column. The exclusion range of the gel was 120,000 Da to 25,000 Da. What was the order of elution from the column? Was this a good choice for these proteins if you wanted to purify lactoglobulin What if you wanted to purify Urease? WHY. (10 points)
- Urease (pI = 5.1, molecular weight = 482,700)
Catalase (pI = 5.6, molecular weight = 242,500)
Lactoglobulin (pI = 5.2, molecular weight = 37,100)
Hemoglobin (pI = 6.9, molecular weight = 64,500)

10) Many times western blotting is used to determine the difference between two proteins, which contain a high homology in their primary structure. Explain what type of antibody you would use and the general properties of that antibody.

11) A protein that is normally an alpha helix at low pH is distorted and curves or bends at a neutral and higher pH. Why? The only unique feature about the primary sequence is that every fourth or third amino acid is glutamate.