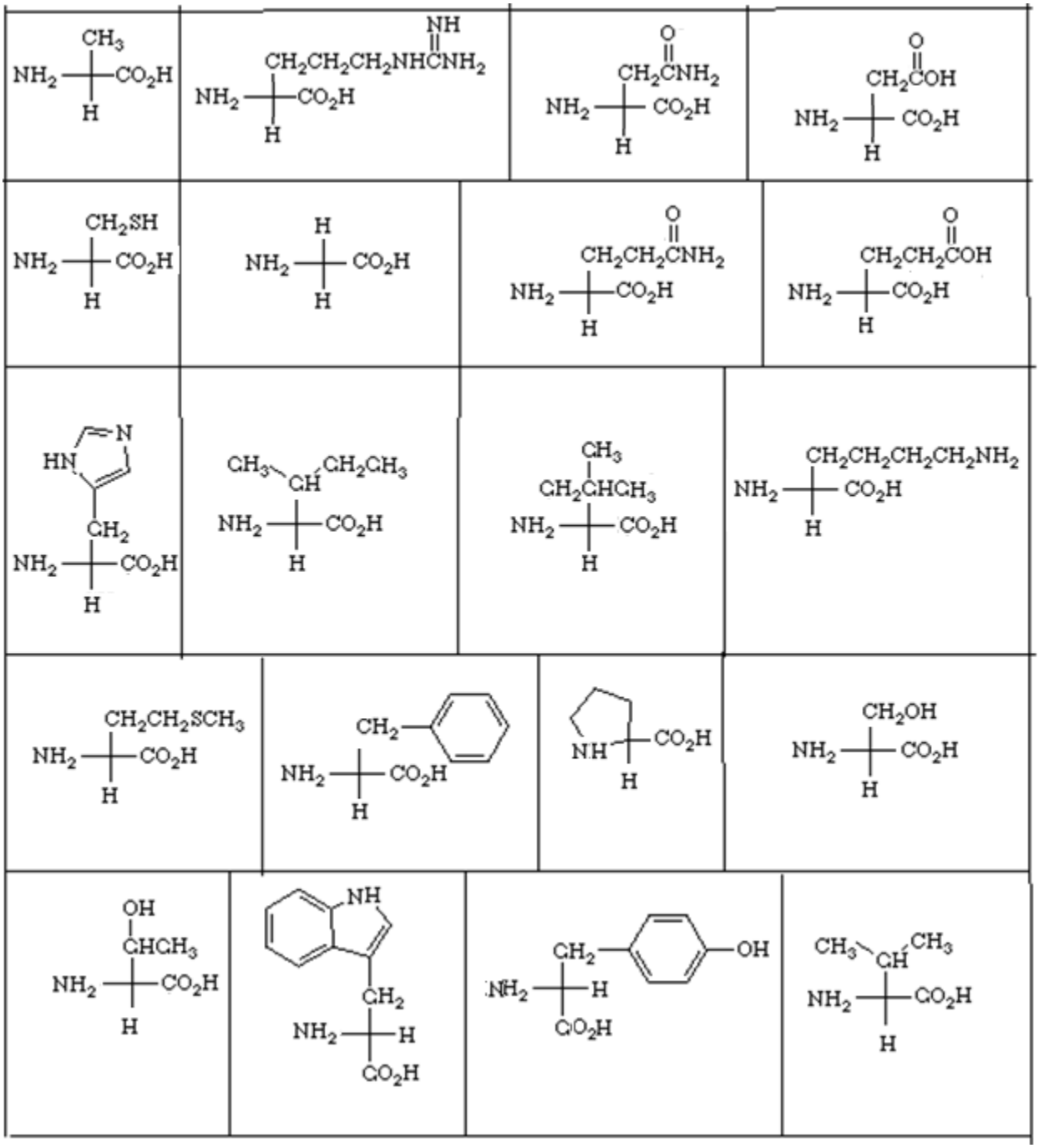
HOMEWORK #10

CHEM 121, section 1 Winter 2015 **Printed Name:** _____

Background for the Chapter. 20. Proteins

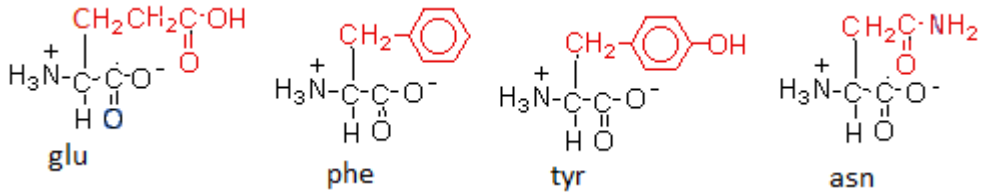
Homework Feb 23, 2015 by 12:15 PM! **Group Name:** _____

1) (3 pts) Give name, abbreviation and types (neutral, polar, non-polar, basic and acidic).



2) Draw the optical and L isomers for: cys.

3) Use the following amino acids to answer the questions below:



a. Which amino acid is most polar?
b. Which amino acid is most non-polar?
c. Which amino acid gives an acidic solution?
d. Which amino acid gives a basic solution?

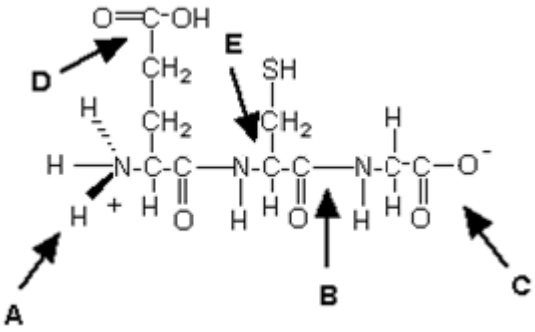
4) Draw the following:

a) Dipeptide bond between **ala** and **asp,** and identify C- and N-terminal**.**

b) Tripeptide, ile-cys-thr, and identify N- (left) and C-terminal(right).

c) How many possible isomers are in the tripeptide formed with ile, cys and thr? Come up with a formula for linear chain with " n" amino acids.

d) Give the IUPAC name of the tripeptide with the sequence, ile-cys-thr.



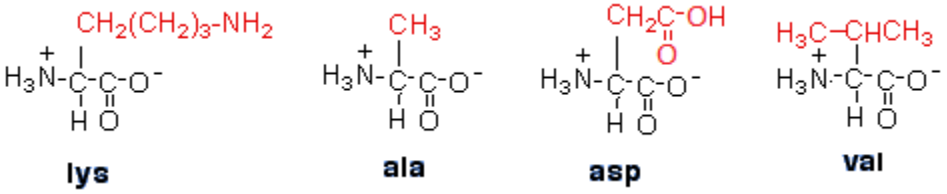
5) Use the structure to answer the questions below

a. Which letter arrow points the end of the peptide that is the "amine" end-N-terminal?
b. Which letter arrow points the end of the peptide that is the "carboxyl" end, C-terminal?
c. Which letter arrow points to an amide or peptide bond?

6) Explain the differences between primary, secondary, tertiary, and quaternary protein structures by giving brief definitions of each. What types of bonding are used in each?

Primary Secondary Tertiary Quaternary

7)



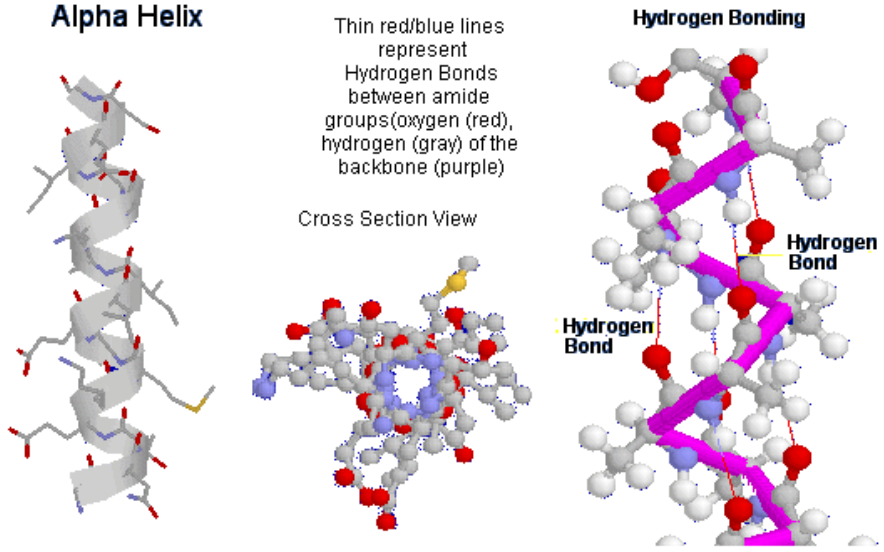
Use the above structures to answer the questions below:

a. Which two amino acids may link in a salt bridge in tertiary protein structure?

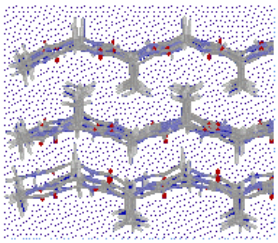
b. Which two amino acids may link in hydrophobic interactions in tertiary protein structure?

c. Which two amino acids may link in hydrogen bonding interactions in tertiary protein structure?

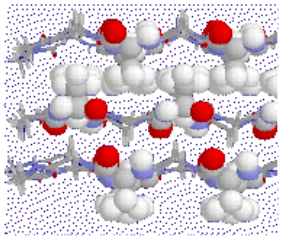
8) Explain the difference between the alpha helix and the beta pleated sheet protein structures. What are the differences in the hydrogen bonding?



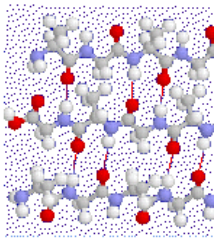
Edge View - Pleats



Alanine Spacefilled,
Glycine Wireframe

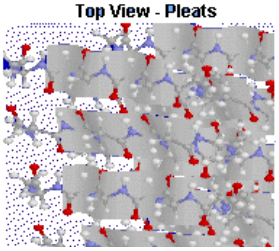


Beta-Pleated
Sheet - Silk



Hydrogen
Bonding
thin red lines

Top View - Pleats



Layer Packing