1. (3 pts) Draw the structure of threonine under basic, neutral and acidic conditions.

2. (2 pts) Draw the dipeptide formed from valine and serine.

2. (5 pts) Answer the following questions.
   a) What are the three different types of secondary protein structure?
   b) In an alpha helix, how does bonding occur between the amino acids in the polypeptide chain?
   c) What is the difference between a tertiary and quaternary structure?
   d) Explain the four types of cross-links in a tertiary structure.
   e) What are the five ways a protein can be denatured?
3. (10pts) Answer the following questions based on enzymes.
   a) How do enzymes increase the rate of a reaction?

   b) How is the rate changed if the concentration of the substrate is increased in;
      1. competitive inhibition?

      2. Non-competitive inhibition?

   c) Describe the difference between a coenzyme or cofactor.

   d) Describe three factors that affect enzyme action.