

# 1 Reading Assignment 3. Section 1.1

Read Section 1.1 and answer the following:

1. What is life?

**Life is the ability to metabolize nutrients, respond to external stimuli, grow, reproduce, and, most importantly, evolve.**

2. What is special about a peptidic bond?

**There are two resonance forms of the peptide bond (i.e. that differ only in the placement of electrons). The resonance between these makes the peptide bond intermediate between a single and a double bond. As consequence, all peptide bonds in protein structures are found to be almost planar. Because of delocalization of the electrons, the peptide bond has the character of a partial double bond and this limits its freedom of rotation.**

3. What kind of protein is pepsin?

**Belongs to a class of enzymes called proteases, proteins from the diet or "used" proteins inside the body.**

4. How many residues are there between both D's of the active site of pepsin?

**182 residues.**

5. What do antibodies and proteases have in common?

**While performing their respective jobs, their functional amino acids, that are in different regions of the linear amino acid sequence and far apart from each other, are brought together in exactly the right position by the protein three-dimensional structure.**