Questions for the model building exercise

Q1:
In groups of 2-3 persons build two di-peptides - make sure that you build L-amino acids

The di-peptide that you should build is indicated in table below. Each group only make “their own” two di-peptides, but fill in the 3-letter codes for all empty fields in the table.

<table>
<thead>
<tr>
<th>Group</th>
<th>Di-peptide 1</th>
<th>Di-peptide 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-letter</td>
<td>3-letter</td>
</tr>
<tr>
<td>1</td>
<td>A-L</td>
<td>F-S</td>
</tr>
<tr>
<td>2</td>
<td>T-H</td>
<td>C-V</td>
</tr>
<tr>
<td>3</td>
<td>I-V</td>
<td>L-H</td>
</tr>
<tr>
<td>4</td>
<td>Y-E</td>
<td>F-D</td>
</tr>
<tr>
<td>5</td>
<td>N-L</td>
<td>Q-A</td>
</tr>
<tr>
<td>6</td>
<td>W-V</td>
<td>H-I</td>
</tr>
<tr>
<td>7</td>
<td>S-L</td>
<td>T-V</td>
</tr>
<tr>
<td>8</td>
<td>P-C</td>
<td>A-E</td>
</tr>
<tr>
<td>9</td>
<td>G-H</td>
<td>I-K</td>
</tr>
<tr>
<td>10</td>
<td>R-M</td>
<td>Y-I</td>
</tr>
</tbody>
</table>

After making sure that you have build L-amino acids, connect the two di-peptides such that they are in an extended beta-strand conformation

Q2:
What is the difference between a beta-strand and a beta-sheet.
What atoms form hydrogen bonds in a beta-sheet

Q3:
Draw a simple schematic representation of the two types of beta-sheets. Use an arrow to indicate a beta-strand.
Q4:
Draw a di-peptide on paper with sidechain indicated with R
What are the names for the 4 backbone atoms
Write 1-letter codes for amino acids in these groups:
- Hydrophobic
- Acidic
- Basic
- Aromatic
- Special amino acids
NB! There may be an overlap of amino acids between the groups

Q6:
Use the modelling kit and build a normal alpha-helix composed of 10 Ala.
What is the hydrogen bonding pattern for this structure