Homework for test 4

Chapter 6.
Problems: 31, 37, 47, 49, 51, 55, 57, 63, 67, 73, 64, 75, 77, 81, 83, 84, 85, 86, 87

Chapter 8.
Problems: 31, 33bcd, 34 bcef, 37, 41, 49, 50, 55, 59a, 61, 63, 65c, 66c, 67, 68, 83, 85, 87, 89, 99, 104, 107, 108, 113

Extra Problems:
1. Given a 6.00 M solution of HCl, describe how you would make 11.0 liters of a 0.100 M solution of HCl?
2. Describe how you would make 6.0 liters of a 0.60 M solution of sodium hydroxide (NaOH) using solid sodium hydroxide.

Chapter 9.

Extra Problems:
1. Please complete the following table. If given the pH, please provide the hydrogen ion concentration (or hydronium ion concentration).

<table>
<thead>
<tr>
<th></th>
<th>[H⁺] or [H₃O⁺]</th>
<th>pH</th>
<th>[OH⁻]</th>
<th>pOH</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00100 M HCl</td>
<td>0.0100 M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.100 M NH₃</td>
<td></td>
<td>8.26</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. What are the products of the following reactions and which way does the equilibrium lie?

CH₃CO₂H + NH₃ ⇋ Equilibrium lies to the right or left? ____

NH₃ + H₂O ⇋ Equilibrium lies to the right or left? ____