

## Practice Problems

### Predominant Forms of Amino Acids

When drawing these structures, refer to the handout "Relationship of pK and pH to Charge". On exams, you will be able to use the chart at the bottom of that handout and the amino acid side chain sheet.

1. Draw histidine in its predominant form at pH = 7.0.
2. Draw histidine in its predominant form at pH = 2.0.
3. Draw histidine in its predominant form at pH = 10.0.
4. Draw arginine in its predominant form at pH = 7.0.
5. Draw arginine in its predominant form at pH = 2.0.
6. Draw arginine in its predominant form at pH = 10.0.
7. Draw arginine in its predominant form at pH = 13.0.
8. Draw Cys-Glu in its predominant form at pH = 7.0.
9. Draw Cys-Glu in its predominant form at pH = 10.0.
10. Draw Cys-Glu in its predominant form at pH = 2.5.
11. Draw Asn-Thr in its predominant form at pH = 7.0.
12. Draw Glu in its predominant form at pH = 3.7.