Articulatory Features

<table>
<thead>
<tr>
<th>Consonants:</th>
<th>Manners of Articulation</th>
<th>Places of Articulation</th>
<th>Articulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stops: voiceless</td>
<td>p</td>
<td>t</td>
<td>k</td>
</tr>
<tr>
<td>voiced</td>
<td>b</td>
<td>d</td>
<td>g</td>
</tr>
<tr>
<td>Affricates: voiceless</td>
<td>pf</td>
<td>tθ</td>
<td>c (or ts)</td>
</tr>
<tr>
<td>voiced</td>
<td>bvc</td>
<td>dɔ</td>
<td>z (or dz)</td>
</tr>
<tr>
<td>Fricatives: voiceless</td>
<td>ð</td>
<td>f</td>
<td>θ</td>
</tr>
<tr>
<td>voiced</td>
<td>β</td>
<td>v</td>
<td>θ</td>
</tr>
<tr>
<td>Nasals: (voiced)</td>
<td>m</td>
<td>n</td>
<td>ŋ (or ŋ)</td>
</tr>
<tr>
<td>Liquids: (voiced)</td>
<td>l</td>
<td>r</td>
<td>r</td>
</tr>
<tr>
<td>Glides: (voiced)</td>
<td>w</td>
<td>y (or j)</td>
<td>(w)</td>
</tr>
</tbody>
</table>

Vowels: (always voiced in English)

<table>
<thead>
<tr>
<th>front</th>
<th>central</th>
<th>back</th>
</tr>
</thead>
<tbody>
<tr>
<td>high:</td>
<td>tense</td>
<td>i</td>
</tr>
<tr>
<td>lax</td>
<td>i</td>
<td>i</td>
</tr>
<tr>
<td>mid:</td>
<td>tense</td>
<td>ð</td>
</tr>
<tr>
<td>lax</td>
<td>ð</td>
<td>a</td>
</tr>
<tr>
<td>low:</td>
<td>æ</td>
<td>ʌ</td>
</tr>
</tbody>
</table>

(u, U, ɔ, and ɔ are rounded)

Diacritics:
- After a symbol : = long
- h = aspirated
- Below a symbol = voiceless
- = syllabic (vowel-like)
- Above a vowel ~ = nasalized
- ' = stress on following syllable
- Examples: [ʊ] is a front version of the back vowel [u]
- [ʊ] is a voiceless [l] (as in Welsh words with ʊ)

The Vocal Tract
1. bilabial
2. labiodental
3. interdental
4. dental
5. alveolar
6. palatal
7. velar
8. uvular
9. pharyngeal
10. glottal

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