

Name \_\_\_\_\_

Score \_\_\_\_\_

I. For each of the IPA symbols in 1-4, provide an appropriate IPA symbol, and for each of the articulatory descriptions given in 5-8, provide the articulatory description of the sound. (16 pts.)

1. [ ] -- creaky open back rounded vowel

2. [ ] -- raised voiced bilabial fricative

3. [ ] -- devoiced, voiced retroflex fricative

4. [ ] -- labialized voiceless palatal plosive

5. [œ] -- \_\_\_\_\_

6. [ɔ] -- \_\_\_\_\_

7. [ɲ] -- \_\_\_\_\_

8. [ɖ] -- \_\_\_\_\_

II. For sounds in #9-10, provide a description of each sound in terms of *airstream mechanism*, *direction of airflow* (*ingressive/egressive*), *voicing*, *place*, and *manner* of articulation. (6 pts.)

9. [g̚] -- \_\_\_\_\_

10. [q'] -- \_\_\_\_\_

III. For the following questions (11-12), all sounds share the same phonetic properties (e.g., voicing, manner and/or place of articulation for consonants, and height, backness and/or roundness for vowels). Provide an articulatory description of the shared properties. (8 pts.)

Shared feature

Example: [b, m, β, ʙ] voiced bilabials

11. [ð, z, ʝ, ʑ, ɦ] \_\_\_\_\_

12. [ɣ, ʌ, ʊ, ɑ] \_\_\_\_\_

IV. Provide a short answer to the following questions #1-6(i). Then, for questions #6(ii) and 7, answer in a few sentences.

1. What are the three phonation types of voicing that are known to be distinctive in languages in the world? (6 pts.)

Among these, what is the phonation type produced with lax vocal folds vibrating loosely while slightly open? Then, provide the diacritic symbol of this phonation type with a vowel [a]. (4 pts.)

2. (i) List all *primary* cardinal vowels. (8 pts.)

(ii) Among the primary cardinal vowels, two are defined by articulation. What are these? For each of these vowels, provide a corresponding secondary cardinal vowel. (4 pts.)

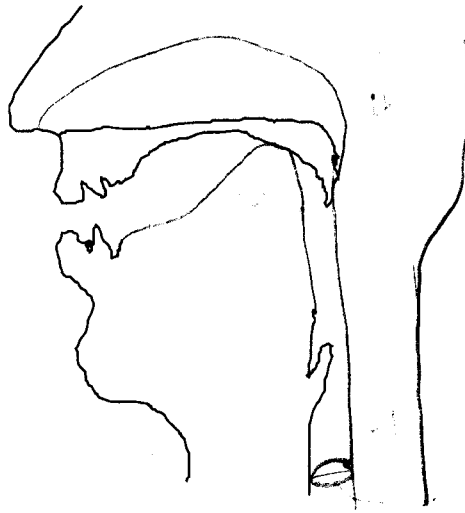
(iii) Some of the IPA vowels are not a cardinal vowel. Provide the symbol for any *three* of these vowels. (3 pts.)

(iv) What is the main difference between the primary cardinal vowels and their corresponding *secondary* cardinal vowels? (3 pts.)

3. "VOT" stands for Voice Onset Time. In producing [pa], vocal folds are not vibrating during the stop closure. Then, as soon as the stop is released, vocal folds start vibrating. This creates a voiceless unaspirated stop. This means voicing starts right after the stop release, creating no aspiration. This type of VOT is called \_\_\_\_\_. On the other hand, to produce [p<sup>h</sup>a] in English, vocal folds are apart, i.e., open, during the stop closure and stay open until around 60 ms after the release of the oral closure. That is, the voicing for the following vowel [a] starts 60ms after the stop release. This type of stop is voiceless aspirated and the type of VOT is called \_\_\_\_\_. (6 pts.)

4. What is the transcription method where the IPA symbols refer to the underlying representation of sound, which is distinctive to the native speaker of a language and is not influenced by the surface realization of the sound? (3 pts.)
5. The status of vocal folds (e.g., open, approximate/vibrating, closed) determines the voicing feature of a sound. In English, voiceless stops are made with an open glottis except for one sound. What is it? Name the sound and describe the status of vocal folds for this sound. (4 pts.)
6. In the IPA chart for the consonants, a grey cell means that a combination of the place of articulation and the manner of articulation of that cell is impossible for various reasons.
- i) Which place of articulation has the highest number of grey cells? (3 pts.)
- ii) Nasals are not possible in the pharyngeal place of articulation. Explain why. (4 pts.)
7. i) What is the aerodynamic requirement of voicing? ii) How is this related to the fact that voiced bilabial stops are more common than voiced velar stops across languages? Answer in a few sentences. (6 pts.)

V. 1. Complete the diagram below so as to show the positions of the vocal organs (e.g., tongue, glottis, pharyngeal wall, nasal cavity) in producing the last sound of the word, *psych*. (6 pts.)



2. Complete a diagram below so as to show the positions of the vocal organs (e.g., tongue, glottis, pharyngeal wall, nasal cavity) in producing [ŋ]. Describe the sequence of events by numbering and labeling each event so that the sequence of events is clear. Also mention any changes in the air pressure related to some of the events. (10 pts.)

