

Study Guide for the final examination (Saturday, 16 December 2006, 10:30–13:00). Be able to answer the following questions and be familiar with the concepts involved in the answers.

1. Diagram the three parts of the auditory system: Outer, middle and inner ear. How is sound frequency mapped onto the basilar membrane?
2. What are the three main physical dimensions of the sound stimulus? What are the three main psychological dimensions of the sound experience? What are the relationships and interdependencies among them?
3. What is the critical band? Describe three methods for measuring the critical band. Illustrate how each method would measure the critical band at a frequency of 1000 Hz, where it is about 150 Hz wide.
4. According to Plomp and Levelt (1965), how far apart in frequency must two sine wave tones be in order to sound maximally unpleasant? Why do some musical notes (e.g., the octave or the fifth) sound consonant when played together with the tonic and some other notes (e.g., the second or the seventh) sound dissonant when played with the tonic note?
5. What are the three main components of the speech production system? In speech sounds, what is the relationship among the fundamental frequency and its harmonics and the frequencies of the main formants? What factors influence the frequency of the first and second formants?
6. What are the four main types of specialized nerve endings (“receptors”) in the skin? What are the properties of the nerves that lead from them to the brain (make a 2 x 2 table of the properties of their receptive field size and time characteristics of response).
7. Describe how you measure the two-point threshold. How do somatosensory receptive fields, as inferred from the two-point acuity thresholds, differ on different parts of the body?
8. Be able to identify the major components of the olfactory and the gustatory systems (not including the projections to the brain).
9. Are there primary tastes? Discuss evidence for or against. Discuss John Amoore’s “lock and key” concept of taste and smell perception. What is the status of this theory today? Discuss two pieces of evidence relevant to evaluating this theory.
10. What is the distinction between taste and flavor? What role does the sense of smell play in the taste and the flavor of food?
11. What is the definition of a pheromone? Discuss two pieces of evidence that humans are able to communicate with each other by means of chemical stimuli.
12. Why can’t you tickle yourself? If you try to move your paralyzed eyes (which means that they don’t actually move) to the left, what visual experience do you have?
13. Consider the **functional** properties of the visual system and the auditory system such as localization, object identification, basic sensory experiences. Discuss two ways in which these systems are similar and one way in which they are different.
14. There have several recurrent themes about perceptual processing in this class. Pick one of these themes and discuss how it applies to two sensory systems of your choice by comparing and contrasting them with each other.