

Special Senses // Vision and Hearing  
Chapter 17 Study Guide  
Tortora & Derrickson

Note: The anatomy of the ear is covered in the anatomy lab. The physiology of vision and hearing is covered in the lecture. You need to learn the structures in order to understand the function!

1. What is the function of the outer, middle, and inner ear?
2. What is sound? What is the difference between frequency and amplitude?
3. What is the relationship between the tectorial membrane and the cochlear hair cells? What type of regulated gate is activated by the “tip link”?
4. Where along the cochlear duct will a low-frequency sound disturb the basilar membrane?
5. What is the organ of hearing called?
6. Where are the organs of equilibrium located?
7. What is the location and function of the macula utriculi and macula sacculi?
8. What type of movement does the macula utriculi and macula sacculi detect?
9. When riding in a car or an elevator, which sensor is activated?
10. How do the semicircular ducts work? Structure and functions.
11. What type of movement is sensed by the semicircular ducts?
12. What is inside of the semicircular ducts? What structure inside the semicircular duct actually senses the rotational motion ?
13. The Eye. Study Figure 17.7. // Structure and function
14. What are the three layers of the eye? Structure and function
15. What layer of the eye detects light energy and converts it into an action potential?
16. Fluid Compartments of the Eye. Study & 17.11 Structure & Function.
17. Posterior of Eye. Study 17.10. Structure & Function.

18. What functions are associated with the rods and cones?
19. Which photoreceptor requires more stimulation, rods or cones?
20. Which type of photoreceptor is concentrated at the center of the macula lutea?
21. Do we have photoreceptor at the optic disc? Explain. What is this location's nickname?
22. What is the photo-pupillary reflex? What muscles control this reflex?
23. What is emmetropia? Why is this "logical" from an evolutionary perspective?
24. What is hyperopia? What is myopia? What occurs with the shape of the eyeball to cause these conditions?
25. What are the three events that occur to adjust for a "near response"?
26. Explain eye strain in terms of accommodation. Why does "close up vision" need the ciliary muscle to contract?
27. What are the two components which make up the photo-pigment?
28. What are the two "states" of retinal? What is the precursor for retinal?
29. What happens to the eye when you have a Vitamin A deficiency? What may happen if you eat too much preformed Vit A?
30. Define the following conditions: prebyopia, astigmatism, cataract, glaucoma
31. What nerve is associated with equilibrium?
32. What nerve is associated with hearing?
33. What is the name for cranial nerve eight?