

**Study Guide for the second examination (Wednesday, 16 March 2005).** Be able to answer the following questions and be familiar with the concepts involved in the answers.

1. Describe the human contrast sensitivity function. In what way does it change as the average light level is reduced?
2. Discuss the evidence that our color vision is based on three different types of cone receptors. What is the evidence supporting the existence of opponent process color mechanisms.
3. What are the major types of color defective vision and what are their causes? What kind of color experiences might a deuteranope have?
4. Assume that the following equations describe the reaction of the red-green and of the yellow-blue chromatic opponent processes. What would the color be of an object that caused the three cone types to absorb the following amount of light:  $L=5$ ,  $M=20$ ,  $S=5$ ?

$$(\text{red} - \text{green}) = 1.89 \cdot L - 2.79 \cdot M + 0.45 \cdot S$$

$$(\text{yellow} - \text{blue}) = 0.85 \cdot L + 0.22 \cdot M - 1.72 \cdot S$$

5. Name and illustrate three laws or principles of Gestalt organization.
6. When a person loses one eye, why is depth perception not lost?
7. What is retinal disparity? How much disparity do you need for normal stereoscopic acuity?
8. In stereoscopic vision, where must an object be located in relation to the Vieth-Müller circle to have zero retinal disparity?
9. Describe the “size/distance” (size constancy) hypothesis of certain visual illusions. Pick two such illusions and explain them in terms of this hypothesis.
10. How can you enhance the impression of depth in a photograph or representational painting while viewing it? Why?
11. What do the McCollough effect and the spiral aftereffect have in common? What implications does the later have for models of motion perception?