

# **Multimodal Perception and Cognition Examination**

**Medialogy 7th Semester, Aalborg and Esbjerg**

**Thursday 17 January 2013, 09.00 - 12.00**

## **Instructions and information**

- There are 11 questions and you should attempt to answer all of them.
- You are not allowed to bring any written material or electronic devices into the examination room.
- You have 3 hours to complete the examination.
- The maximum number of marks for each question is 10. You must get at least 50 marks in total to pass the examination.
- You are advised to spend about 15 minutes on each question.

**DO NOT TURN OVER UNTIL TOLD TO DO SO!**

## Questions

1

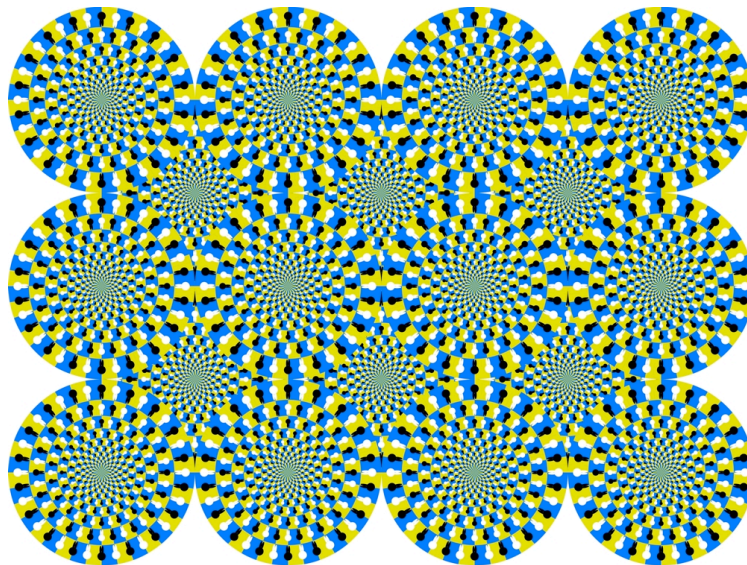
- a. Explain, with examples, the difference between *bottom-up* and *top-down* processing in the context of experimental cognitive psychology. (5 marks)
- b. Explain, with examples, what is meant by the *task impurity issue* in cognitive psychology. (5 marks)

2

- a. Explain, with examples, the difference between *cognitive psychology* and *cognitive neuropsychology*. (5 marks)
- b. What is the *assumption of subtractivity* in cognitive neuropsychology? In what way can brain plasticity cause this assumption to be invalid? (5 marks)

3

- a. The following image shows “U-zu-maki glasses” by the artist Akiyoshi Kitaoka. What illusory effect does it demonstrate? Briefly explain how this effect comes about. (5 marks)



- b. Briefly explain the difference between the *inflow* and *outflow* theories of motion perception. Which of the two theories is more plausible and why? (5 marks)

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4

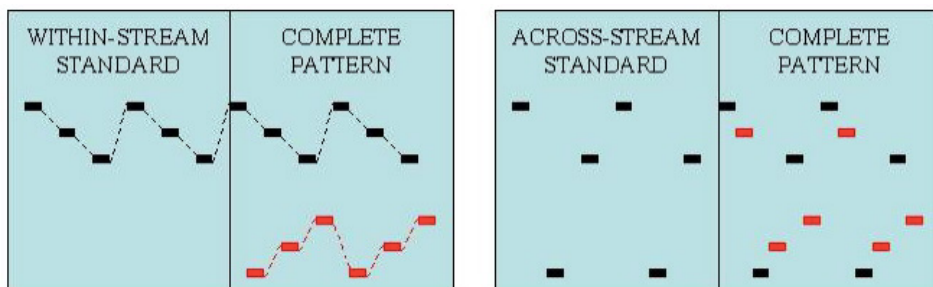
- a. Explain why predators generally have their eyes facing forwards, while herbivores often have them on the sides of their heads. (5 marks)
- b. Explain, with an appropriate diagram, the concept of *retinal disparity*. Define what is meant by *negative (or crossed) disparity* and *positive (or uncrossed) disparity*. (5 marks)

5

- a. Sketch a pressure-vs.-time waveform for a simple tone. Label the following on your diagram: (i) maximum amplitude, (ii) period, (iii) any pair of points on the curve that have a phase difference of  $\pi$ . (5 marks)
- b. In granite, a sound of frequency 660Hz has a wavelength of 10m. What is the speed of sound in granite? Suppose we have two sounds with the same frequency and amplitude. One wave travels in granite and the other travels in air. If we assume the speed of sound in air is 330 m/s, which sound is more powerful and by how much? (5 marks)

6

- a. Explain the terms *sequential integration* and *stream segregation* in auditory perception. How do they relate to each other? (5 marks)
- b. Study the following diagram, which shows an experimental paradigm used in the study of auditory streaming. The experiment was in two parts. In each part, the listener had to listen for a three-tone standard embedded in a repeating pattern of six tones. In which case do you think the standard was easier to perceive and why? (5 marks)



TURN OVER

7

- a. Explain how the *preferential looking* paradigm can be used to investigate an infant's visual acuity and contrast sensitivity. (5 marks)
- b. Explain what is meant by *vernier acuity*. In infants, which is better, vernier acuity or grating acuity? What about in adults? How does this relate to the relative rates of development of early and more central parts of the human visual system? (5 marks)

8

- a. Briefly describe the *covert cueing paradigm*. What aspect of attention is this paradigm designed to investigate? Explain what is meant by *valid*, *invalid* and *neutral* trials in this paradigm. (5 marks)
- b. Explain the difference between an *endogenous* and an *exogenous* cue. How do such types of cue relate to top-down and bottom-up processing? (5 marks)

9

- a. Briefly explain why Cartesian dualism is not a tenable theory of consciousness. (5 marks)
- b. Explain what is meant by the *philosopher's zombie* and discuss briefly whether such zombies are possible in principle. (5 marks)

10

- a. Explain what is meant by the term *chimeric face*. Are the original faces used to create a chimeric face easier or harder to recognize when the chimeric face is plausible or implausible? If the two halves are unaligned, does that make it easier or harder to recognize the original faces? (5 marks)
- b. In the study of face perception, define what is meant by the terms *caricature* and *anti-caricature*. Are people more likely to confuse a caricature or an anti-caricature with a person's actual face? (5 marks)

11

- a. Briefly describe, with a sketch, the *dorsal* and *ventral* pathways in the human visual system. What are the functional differences between the two streams? (5 marks)
- b. Briefly describe the phenomenon of *blindsight*. In what way might the superior colliculus route be involved in explaining blindsight? (5 marks)

END OF EXAMINATION