Name: _____ ID #: _____ ID: B

Psych 333, Winter 2008, Instructor Boynton, Exam 3

Multiple Choice (36 questions, 1 point each)
Identify the letter of the choice that best completes the statement or answers the question.

____ 1. Paintings can make use of all of the following depth cues *except*:
a. binocular disparity
b. perspective convergence
c. atmospheric perspective
d. occlusion

____ 2. A picture of which stimulus is likely to produce the largest response in the parahippocampal gyrus?
a. an empty room
b. a blender
c. a face
d. an object made out of Legos

____ 3. fMRI responses in area MT+ of the human are likely to be greatest for which *stationary* image:
a. a house
b. a man throwing a basketball
c. a single frame from a point-light walker
d. an indoor scene

____ 4. According to opponent processing theory, activation of S-cones will _____ the perception of the color green.
a. create
b. magnify
c. inhibit
d. not affect

____ 5. A standard television screen presents moving objects by showing a new picture 60 times a second. This type of motion is an example of
a. the motion aftereffect
b. induced motion
c. retinal motion
d. apparent motion

____ 6. Frequency can be coded by firing rate at or near the peak of the sine-wave stimulus. This is called
a. Fourier analysis.
b. motile response.
c. phase locking.
d. place theory.

____ 7. Which of the following does *not* produce the percept of motion?
a. Willing your eyes to move while under paralysis.
b. Moving the eyeball by pushing on it with your finger.
c. Tracking a moving object with your eyes.
d. Making a saccade across a stationary scene.

____ 8. Suppose a plaid stimulus is created by adding an upward moving horizontal grating to a rightward moving vertical grating. The *pattern* cell that would produce the largest response is one that has maximum selectivity for motion which direction?
a. upward and to the right
b. upward
c. upward and to the left
d. rightward

____ 9. Adding higher harmonics to a pure tone affects its
a. fundamental frequency
b. apex
c. pitch
d. timbre

____ 10. According to opponent processing theory, activation of L-cones will _____ the perception of the color green.
a. magnify
b. create
c. inhibit
d. not affect

____ 11. Which aspect of visual processing is most spared in subject Mike May after visual deprivation?
a. depth perception
b. face recognition
c. motion processing
d. visual acuity

____ 12. While watching a film with 3-D glasses, you can make use of all of the following depth cues *except*:
a. motion parallax
b. accommodation
c. binocular disparity
d. perspective convergence

____ 13. The aperture problem is best illustrated by showing that
a. the perceived direction of a moving grating seen through an aperture is ambiguous.
b. the apparent size of the moon varies with its height above the horizon.
c. yellow dots disappear when blue lines rotate underneath them.
d. the actual direction of a moving grating seen through an aperture is ambiguous.

____ 14. Newsome and colleagues found monkeys were _____ accurate at judging the direction of motion as coherence of motion increases. When the MT cortex is lesioned, the coherence *threshold* for reliable motion judgments _____.
a. more; increases
b. less; increases
c. less; decreases
d. more; decreases

____ 15. The focus of expansion of optic flow indicates where the observer is _____.
a. looking
b. heading
c. attending
d. standing

____ 16. Doubling the frequency of a sound increases the pitch by
a. one octave on the 12 tone scale
b. one decibel
c. one note on the 12 tone scale
d. one JND

____ 17. The perceived loudness of a tone approximately doubles when you
a. double the amplitude of its sound waves.
b. double its intensity in decibels.
c. double its frequency.
d. add 20 decibels to its intensity.

____ 18. Playing a tone backwards will change all of the following properties EXCEPT:
a. attack
b. decay
c. pitch
d. timbre

____ 19. A motor-dominant neuron that responds when a monkey pushes a button in the dark could located in:
a. V1
b. the LGN
c. the temporal lobe
d. the parietal lobe

____ 20. Someone with an age-related hearing impairment will have the most trouble hearing which of the following speech sounds?
a. ‘ah’
b. ‘mm’
c. ‘ss’
d. ‘oo’

____ 21. A 60 decibel 2000 Hz pure tone _____ a 60 decibel 10,000 Hz pure tone.
a. appears louder than
b. is higher in pitch than
c. appears less loud than
d. is equal in loudness as

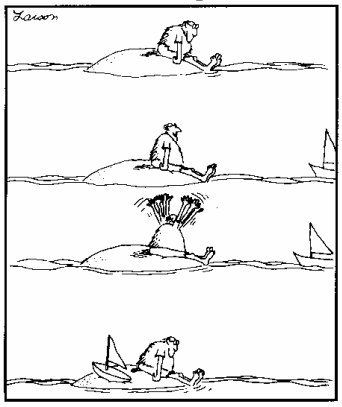
____ 22. For dichromats, adjusting the intensity of _____ wavelengths of light is sufficient to perceptually match any other spectral distribution of light.
a. one
b. four
c. three
d. two

____ 23. A person who cannot use binocular disparity for a cue to depth would most impaired at:
a. reading text on a computer screen
b. driving a car
c. landing a plane
d. threading a needle

____ 24. A common explanation for the moon illusion is that the moon appears _____ on the horizon because the depth processing system treats it as _____ than when it is overhead.
a. larger; farther away
b. smaller; farther away
c. smaller; closer
d. larger; closer

____ 25. Murray's fMRI study on size constancy showed that changing the _____ size of a stimulus changes the _____ of its response in area V1.
a. perceived; spatial extent
b. physical; spatial extent
c. perceived; magnitude
d. physical; magnitude

____ 26. Which cue to depth has this man in the cartoon suffered from?



a. atmospheric perspective
b. motion parallax
c. relative size
d. familiar size

____ 27. Retinal images of objects located at the horopter fall at _____ points on each retina.
a. uncrossed
b. opposite
c. crossed
d. corresponding

____ 28. Neurons that respond to rotation and expansion of optic flow patterns can be found in area
a. PPA
b. V1
c. MT
d. MST

____ 29. Neurons that respond either to a monkey's own actions or to an observed action are called
a. active vision neurons
b. mirror neurons
c. corollary discharge neurons
d. binocular neurons

____ 30. Simple auditory sounds produce most activation in which cortical area?
a. The organ of corti
b. The core
c. The belt
d. The parabelt

____ 31. Objects forming crossed disparity are always
a. in front of the horoptor.
b. in front of the plane of fixation
c. behind the horoptor
d. behind the plane of fixation

____ 32. A high-amplitude, high-frequency sound wave is perceived as:
a. a loud, low-pitched sound
b. a soft, high-pitched sound
c. a soft, low-pitched sound
d. a loud, high-pitched sound

____ 33. The patient RW suffered brain damage which prevented the generation of corollary discharge signals but left his visual system otherwise unaffected. What is the result of this damage?
a. He was unable to pour coffee or tea without spilling.
b. He perceived motion anytime he moved his eyes.
c. He was unable to experience the percept of motion.
d. He had poor depth perception.

____ 34. The Young-Helmholtz trichromatic theory explains all of the following phenomena *except:*
a. metameric color matches
b. additive color mixing
c. subtractive color mixing
d. lack of perceived "reddish-greens"

____ 35. An example of 'cross modal plasticity' is:
a. auditory cortex being larger in blind subjects
b. changes in somatosensory cortex in Braille readers
c. an auditory stimulus influencing visual perception
d. visual cortex responding to tactile stimuli in blind subjects

____ 36. The kinetic depth effect refers to the following phenomenon:
a. A stationary object appears to be moving in depth because other objects are moving in the opposite direction.
b. Movement of a two-dimensional image creates the perception of a three dimensional object.
c. Judgments of depth are inaccurate when the observer is moving in the depth plane.
d. Objects moving in the depth dimension create a motion aftereffect.

Short Answer (3 questions, 3 points each)

37. In this famous drawing by M.C. Escher, name two cues that conflict to make this drawing 'impossible'.

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38. From what you know about cues to depth perception, why do you think Mount Rainier appears closer on some days than other days?

39. What was Von Bekesy's main discovery about the way frequency is encoded by the basilar membrane, and how have his findings been more recently modified?

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Psych 333, Winter 2008, Instructor Boynton, Exam 3
Answer Section

MULTIPLE CHOICE

1. ANS: A
2. ANS: A
3. ANS: B
4. ANS: D
5. ANS: D
6. ANS: C
7. ANS: D
8. ANS: A
9. ANS: D
10. ANS: C
11. ANS: C
12. ANS: B
13. ANS: D
14. ANS: A
15. ANS: B
16. ANS: A
17. ANS: B
18. ANS: C
19. ANS: D
20. ANS: C
21. ANS: A
22. ANS: D
23. ANS: D
24. ANS: A
25. ANS: A
26. ANS: D
27. ANS: D
28. ANS: D
29. ANS: B
30. ANS: B
31. ANS: A
32. ANS: D
33. ANS: B
34. ANS: D
35. ANS: D
36. ANS: B

SHORT ANSWER

37. ANS:
The river flowing from the water wheel to the top of the waterfall appears flow from front to back because of the cues of linear perspective, shading, occlusion and relative height. These cues conflict with the cues of occlusion and familiarity (we know that water falls straight down) that make the top of the waterfall and the water wheel appear to be in the same depth plane.

38. ANS:
The cue to atmospheric perspective can be affected by the clarity of the atmosphere. Mt. Rainier appears closer n clear days because there is little change in the bluishness or contrast of the mountain on the horizon compared to days when the air is more hazy.

39. ANS:
Von Bekesy discovered that the location of maximum vibration on the basilar membrane varies with the frequency of auditory stimulation. A pure tone will only cause a vibration at a specific place along the basilar membrane, hence the name 'place theory' of hearing. His original measurements showed a broader spread of vibration along the basilar membrane than more recent experiments, probably because more recent experiments were conducted on healthier cochleas. The newer results are better able to explain how we can detect such small differences in frequency.