Psych 333, Winter 2008, Instructor Boynton, Exam 2

**Multiple Choice (38 questions, 1 point each)**
Identify the letter of the choice that best completes the statement or answers the question.

_____ 1. In the image below tends to look like a white figure on a black background. This is because

   a. elements in the lower half of a scene tend to look like figure
   b. figures are symmetric
   c. figures are familiar
   d. figures are lighter in color

_____ 2. Of the following cell types and brain areas, where are the strongest effects of modulation by attention observed?
   a. MT
   b. photoreceptors
   c. V1
   d. Ganglion cells

_____ 3. Which of the following term means that "perceptions are created by combining elements of sensations?"
   a. pointillism
   b. structuralism
   c. Gestalt
   d. common fate

_____ 4. The inverse projection problem is that multiple _____ can create the same _____ on the retina.
   a. stimuli; image
   b. orientations; average
   c. wavelengths; color
   d. light sources; saturation

_____ 5. Milner and Goodale's patient D.F. who had damage to the ventral pathway could
   a. perceptually match the orientation of a card, but not actively.
   b. only see vertical and not horizontal orientations.
   c. not see until he was 43 years old.
   d. actively match the orientation of a card, but not perceptually.

_____ 6. Binocular rivalry is a phenomenon that allows experimenters to hold constant the physical input to the retina while manipulating _____.
   a. what is conciously perceived
   b. the focus of spatial attention
   c. whether the stimulus is processed through the dorsal or ventral stream.
   d. individual differences in contrast sensitivity

_____ 7. Which of the following is evidence that we have neurons selective to specific properties of faces?
  a. Face adaptation
  b. The face-vase illusion
  c. The fact that humans have a fusiform face area
  d. The hollow face illusion

_____ 8. Biederman's recognition-by-components theory states that
  a. "geons" are the basic units of objects.
  b. the sum is more than its parts.
  c. natural scenes tend to have more vertical and horizontal components.
  d. object recognition occurs after learning multiple viewpoints.

_____ 9. Seeing faces in clouds is an example of
  a. illusory contours   d. pareidolia
  b. insanity   e. structuralism
  c. prosopagnosia

_____ 10. Ungeleider and Mishkin named the ventral pathway the _____ pathway.
  a. who   d. when
  b. how   e. what
  c. where

_____ 11. The figure below illustrates which Gestalt law?
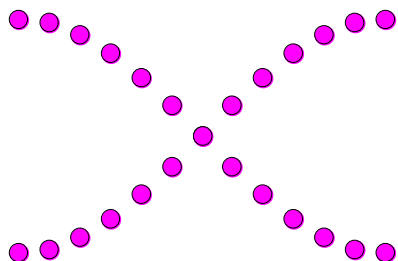
  a. good continuation   c. synchrony
  b. common region   d. familiarity

_____ 12. Subject G.Y. has damage to V1 in one hemisphere. When a stimulus is presented in the visual hemifield contralateral to the damaged V1, he
  a. can easily identify the stimulus, but is unable to point toward it.
  b. is unaware of the stimulus but can guess above chance certain properties of the stimulus.
  c. is unaware of the stimulus but pretends that he can see it.
  d. is aware of the stimulus but is unable to identify certain properties of the stimulus.

_____ 13. Spatial attention to a location can have all of the following effects EXCEPT:
  a. create the perception of illusory conjunctions at that location.
  b. induce a perception of higher contrast at that location.
  c. modulate the response of neurons with receptive fields at that location.
  d. yield fast reaction times to stimuli presented at that location.

____ 14. Posner's precuing studies demonstrated that attention
   a. increases the response time for detecting a cued object.
   b. increases the contrast of a cued object.
   c. decreases the response time for detecting a cued object.
   d. decreases the perceived contrast of a cued object.

____ 15. Training on naming 'Greeble' stimuli leads to
   a. decreased fMRI responses n the FFA to Greeble stimuli
   b. increased fMRI responses in the FFA to Greeble stimuli
   c. poorer discrimination performance on face stimuli.
   d. better discrimination performance on face stimuli.

____ 16. When an object was presented to subject G.Y.'s visual field contralateral to the V1 damage,
   a. weak fMRI responses were found in area MT.
   b. strong fMRI responses were found in area V1.
   c. strong fMRI responses were found in area MT.
   d. he could correctly name the object.

____ 17. The way your computer monitor can show all colors is an example of
   a. magic.   c. subtractive color mixing.
   b. pointillism.   d. additive color mixing.

____ 18. A green object illuminated by a red monochromatic light will appear _____.
   a. green   c. red
   b. blue   d. yellow

____ 19. Which Gestalt law best explains the phenomenon of pareidolia?
   a. familiarity   c. symmetry
   b. common fate   d. proximity

____ 20. Feature-based attention directed within the receptive field of a V4 or MT neuron
   a. can either increase or decrease the firing rate.
   b. can only increase the firing rate.
   c. does not influence the firing rate.
   d. can only decrease the firing rate.

____ 21. Suppose you have two paints. Paint A reflects red and green light. Paint B reflects green and blue light. If you mix the two paints together, the mixture will reflect _____ light.
   a. white   c. green
   b. purple   d. red, green and blue

____ 22. The _____ of a light's spectral distribution affects its perceived saturation.
   a. orientation   c. location of the peak
   b. intensity   d. spread

____ 23. Which of the following is **not** a psychological dimension of color
   a. wavelength   c. brightness
   b. saturation   d. hue

____ 24. The figure below illustrates which Gestalt law?
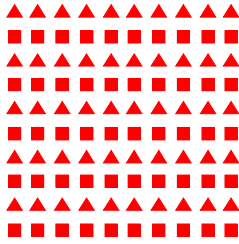
a.	symmetry	c.	similarity
b.	familiarity	d.	good continuation

____ 25. While searching for a red button that fell on a multicolored carpet, the visual system highlights the red elements of the scene. This is an example of _____ attention.

a.	change blindness	c.	bottom-up
b.	spatial	d.	feature-based

____ 26. Responses in _____ are NOT affected by spatial attention.

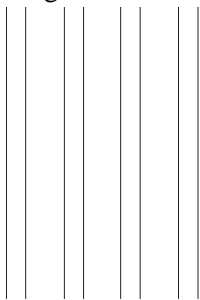|			
a.	the ganglion cells	c.	area V4
b.	area MT	d.	area V1

____ 27. A bright, saturated green color would be reflected by a spectral distribution with a _____ high peak and a _____ distribution.

a.	short, narrow	c.	short, broad
b.	tall, narrow	d.	tall, broad

____ 28. The "Margaret Thatcher" and "hollow face" illusions both illustrate that
   a. there is a special module devoted to face processing.
   b. activation of FFA depends upon whether or not a face is detected.
   c. famous faces are processed differently from other faces.
   d. upside-down or hollow faces are processed just like any other upside-down or inverted objects.

____ 29. In the figure below, we tend to see four pairs of parallel lines instead of eight separate lines. Which of the following Gestalt laws best explains this?

a.	symmetry	c.	familiarity
b.	proximity	d.	good continuity

____ 30. When spatial attention is directed to the right side of the visual field, the fMRI response in V1 of the
_____ hemisphere _____.
    a. right; increases   c. left; increases
    b. damaged; deteriorates   d. parietal; decreases

____ 31. A light flashes in your far left peripheral vision, causing you to orient your attention over there. The flash is
an example of an _____ cue to attention
    a. extraneous   c. endogenous
    b. ingenious   d. exogenous

____ 32. _____ cones respond best to blue light, _____ cones respond best to green light, and _____ cones
respond best to red light.
    a. L, S, M   c. S, M, L
    b. M, S, L   d. L, M, S

____ 33. Your inability to notice large changes between alternating images in a scene is called
    a. blindsight   c. attentional blink
    b. divided attention   d. change blindness

____ 34. In addition to the pathway from the LGN to the cortex, another pathway passes from the optic nerve to the
    a. cerebellum.   c. prefrontal cortex.
    b. medulla oblongata.   d. superior colliculus.

____ 35. After adapting to a female face, gender-neutral faces tend to look more _____.
    a. female   d. angry
    b. male   e. asian
    c. frustrated

Short Answer (3 questions, 2 points each)

36. Describe how the rule of good continuity has been supported by recordings of brain responses in area V1.

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37. Describe an example of a 'structural-description model' of object recognition.

38. Explain why shining two colored spots on the wall creates a lighter color, while mixing two colors of paint together makes a darker color.

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Answer Section

MULTIPLE CHOICE

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

SHORT ANSWER

36. ANS:
The rule of good continuity is supported by single-cell recordings in which a response to a line with the cell's preferred orientation is enhanced by collinear oriented lines placed outside the receptive field.

37. ANS:
The main one is Biederman's 'recognition-by-components' theory in which our ability to recognize three-dimensional objects is based on recognizing three-dimensional volumes, called Geons, that can be combined to create the overall shape of an object.

38. ANS:
Shining lights together creates an additive color mixture which contains the union of all of the wavelengths of the two lights. Mixing paints is an example of subtractive color mixing in which the combined paint reflects in intersection of the wavelengths reflected by the two paints. Additive mixtures always broaden the spectrum and add light. Subtractive mixtures always 'take away' wavelengths of light with each successive source.