

# PSYCH 260.003

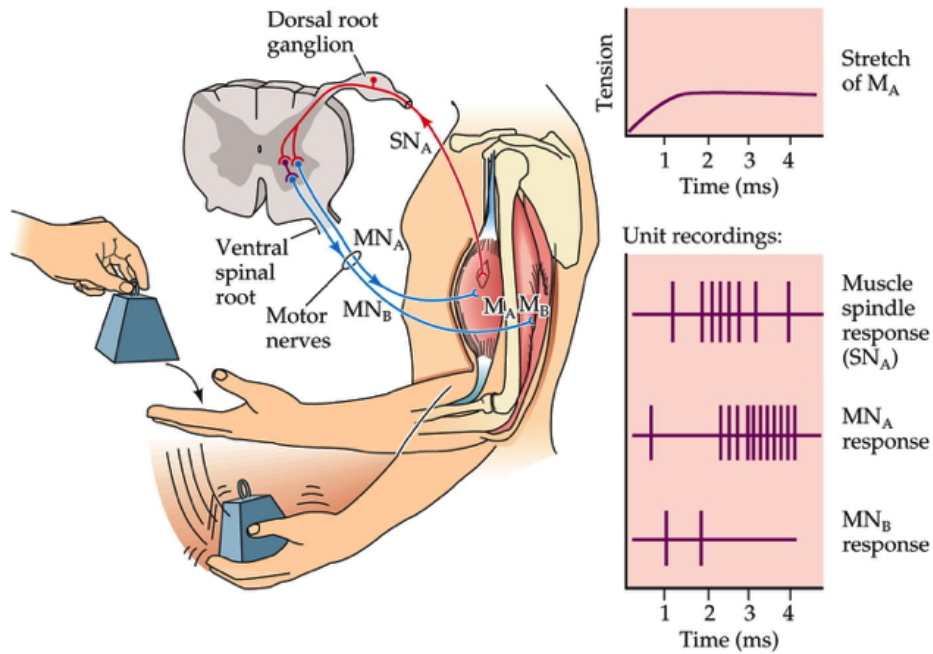
April 7, 2017

Answer the questions using the Scantron form.

Name: \_\_\_\_\_

# 1 Main

Questions 1 and 2 refer to the figure below.



**Biological Psychology 6e, Figure 11.10**

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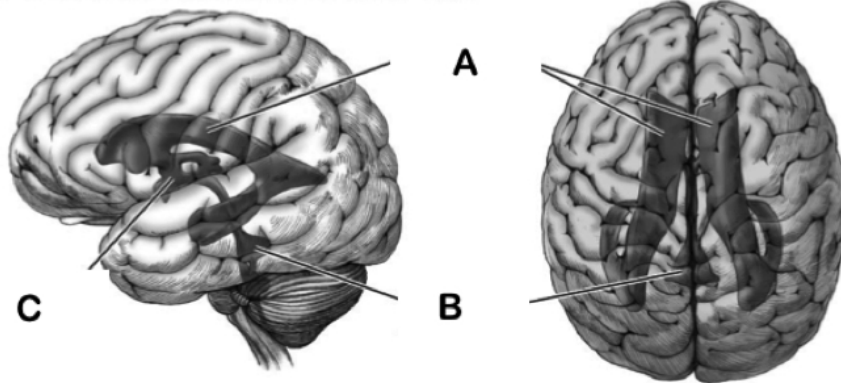
1. The figure depicts the \_\_\_\_\_, one of the simplest circuits in the nervous system. It regulates \_\_\_\_\_.  
 A. biceptual reflex; balance.  
**B. myotatic/stretch reflex; muscle length/position.**  
 C. optokinetic reflex; muscle strength.  
 D. Cartesian reflex; skeletal-muscular activity.
2. This circuit has a/an \_\_\_\_\_ branch in which stretch receptors in intrafusal muscle fibers \_\_\_\_\_ the extrafusal muscle fibers from the *antagonist* muscle.  
**A. polysynaptic; inhibit.**  
 B. autonomic; inhibit.  
 C. monosynaptic; excite.  
 D. monosynaptic; inhibit.

3. Plutchik's biological approach to emotion focuses on an emotion's \_\_\_\_\_ and \_\_\_\_\_.
- A. subjective feelings; facial expressions.
  - B. action tendencies (tendency to approach or avoid); valence (positive/negative).**
  - C. intensity; subjective feelings.
  - D. influence on on reproduction; link to defense behavior.
4. The serotonin hypothesis of depression suggests that \_\_\_\_\_.
- A. lowered 5-HT levels are part of the disorder.**
  - B. increased 5-HT levels are part of the disorder.
  - C. lower ACh levels exacerbate the disorder's positive symptoms.
  - D. higher DA levels are linked to the disorder's positive symptoms.
5. The primary purpose of the *extrafusal* muscle fibers is to \_\_\_\_\_.
- A. Generate force.**
  - B. Inhibit the contraction of muscles.
  - C. Sense tension/length.
  - D. All of the above.
6. Which of the following is true regarding fibers that link somatosensory receptors to the central nervous system?
- A. Fibers that are smallest in diameter conduct information the fastest.
  - B. Thin fibers are generally the most heavily myelinated.
  - C. Temperature-related information is conducted faster than touch-related information.
  - D. Muscle spindle receptor axons are thickest and most heavily myelinated.**
7. All of the following are treatments for bipolar disorder *EXCEPT*:
- A. Lithium.
  - B. Anticonvulsants.
  - C. Antipsychotics.
  - D. Dopamine agonists.**
8. One might be tempted to call the fingertips "the somatosensory fovea" for all of the following reasons *EXCEPT*:
- A. Both the fingertips and the fovea have high receptor cell densities.
  - B. Both the fingertips and the fovea have high perceptual acuity.
  - C. Both the fingertips and the fovea activate small areas of the cerebral cortex.**
  - D. The scanning movements of both the fingertips and the fovea are precisely controlled by the motor system.
9. Parkinson's Disease involves the degeneration of \_\_\_\_\_-releasing neurons in the \_\_\_\_\_.
- A. Acetylcholine; Thalamus.
  - B. Dopamine; Substantia Nigra.**
  - C. Dopamine; Inferior Colliculus.
  - D. Acetylcholine; Substantia Nigra.

10. The neurotransmitter \_\_\_\_\_ is released by  $\alpha$  motor neurons at the neuromuscular junction; this event leads to an \_\_\_\_\_ within the muscle fiber and eventually, muscle fiber contraction.
- Glutamate; EPSP.
  - Acetylcholine; IPSP.
  - Glutamate; IPSP.
  - Acetylcholine; EPSP.**
11. Which of the following events must occur in order for neurotransmitter to be released from an axon's presynaptic terminal?
- Voltage-gated  $K^+$  channels must open to permit  $K^+$  to enter the cell.
  - Voltage-gated  $Ca^{++}$  channels must open to permit  $Ca^{++}$  to enter the cell.**
  - Neurotransmitters must diffuse through the cytoplasm to the presynaptic membrane.
  - None of the above.
12. The human cerebellum is \_\_\_\_\_ the rest of the brain when comparing it to related animal groups.
- larger than
  - smaller than
  - the same size as**
  - less dense than

For the next three (3) questions match the correct label to the letters in the figure below.

(a) Cerebral ventricles of the brain



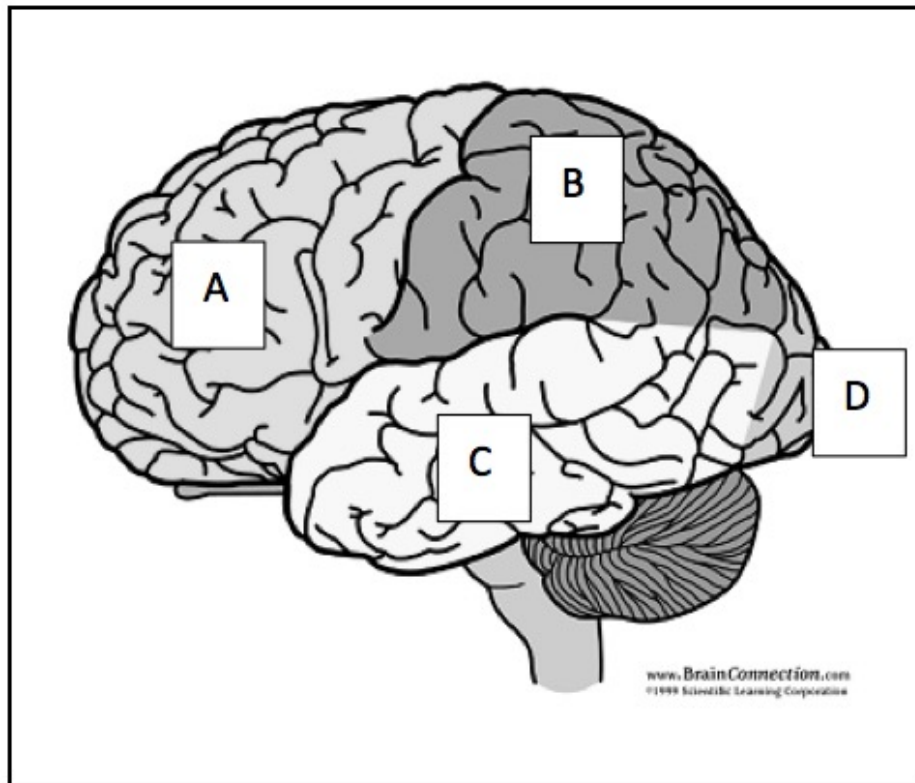
- Third Ventricle
- Lateral Ventricle
- Fourth Ventricle

16. Visual information from the \_\_\_\_\_ projects to the suprachiasmatic nucleus (SCN) of the \_\_\_\_\_. This is one way that light information influences circadian rhythms.
- A. **retina; hypothalamus.**
  - B. LGN; hippocampus.
  - C. MGN; inferior colliculus.
  - D. V1; thalamus.
17. When you tap your eyeball, the world \_\_\_\_\_. This \_\_\_\_\_ Dr. Wolpert's suggestion that the brain computes predictions about future sensory states.
- A. **seems to move; supports.**
  - B. remains still; supports.
  - C. seems to move; undermines.
  - D. remains still; undermines.
18. Diffusion Tensor Imaging (DTI) is a/an \_\_\_\_\_ MRI method that provides information about \_\_\_\_\_.
- A. functional; how neurotransmitters diffuse across the synaptic cleft
  - B. functional; the blood oxygen-level dependent (BOLD) response
  - C. **structural; connectivity between brain areas**
  - D. structural; the branching structure of neuronal dendrites
19. Schizophrenia is characterized by which of the following brain abnormalities?
- A. Increased size of ventricles.
  - B. Reduced hippocampal volume.
  - C. Accelerated gray matter loss.
  - D. **All of the above.**
20. Why might the dopamine (DA) hypothesis not provide a comprehensive explanation for schizophrenia?
- A. Changes in DA levels have not been shown to disturb memory function.
  - B. The hypothesis cannot explain the strong developmental origins of the disease.
  - C. **Some drugs increase DA levels but reduce schizophrenic symptoms.**
  - D. DA antagonists only relieve the negative symptoms of schizophrenia.
21. More recent theories about schizophrenia point to a disturbance in \_\_\_\_\_, one of the \_\_\_\_\_ common neurotransmitters released in the CNS.
- A. endorphins; least
  - B. norepinephrine; most
  - C. CO; least
  - D. **glutamate; most**

22. Woody Guthrie and his mother died of \_\_\_\_\_, a disease that targets the \_\_\_\_\_.
- A. Parkinson's Disease; basal ganglia.
  - B. Parkinson's Disease; cerebellum.
  - C. Huntington's Disease; basal ganglia.**
  - D. Huntington's Disease; cerebellum.
23. Touch receptors enervating the skin on the \_\_\_\_\_ have especially *small* receptive fields.
- A. Face.**
  - B. Calf.
  - C. Neck.
  - D. Back.
24. Perceptual sensitivity is *NOT* related to which of the following?
- A. Receptor density.
  - B. Speed of propagation.**
  - C. Receptive field size.
  - D. Size of the cortical area.
25. In response to a typical environmental stressor, cortisol levels \_\_\_\_\_.
- A. involve activation of the SAM axis.
  - B. rise, fall below baseline levels, then return.
  - C. rise and stay elevated.
  - D. rise then return to normal after a short period.**
26. Which of the following statements about individuals with depression is NOT true?
- A. Resting state studies have found a *decrease* in connectivity between the orbitofrontal cortex (OFC) and other areas of the brain**
  - B. Activity levels between the amygdala and dorsolateral prefrontal cortex have been found to be inversely related**
  - C. Studies have found persistent activation in the amygdala**
  - D. Scientists have found an *increase* in connectivity between the lateral prefrontal cortex and other areas**

*Accepting because of lack of clarity in question/lecture.*

Indicate the letter of the lobe that corresponds to the location of each sensory or motor cortical area.



27. Location of the primary somatosensory cortex.
28. Location of the primary auditory cortex.
29. Location of the primary motor cortex.
30. Location of the primary visual cortex.

Select the best answer for the following questions.

31. The uterus consists of \_\_\_\_\_ muscle fibers that contract involuntarily in the presence of the hormone \_\_\_\_\_.
  - A. Striated; cortisol.
  - B. Striated; oxytocin.
  - C. Smooth; oxytocin.**
  - D. Smooth; melatonin.

32. The \_\_\_\_\_ of your smartphone is analogous to the pressure receptors in your skin.
- A. accelerometer
  - B. cellular radio
  - C. touch screen**
  - D. GPS transmitter
33. Cognitive behavior therapy is *less* successful than drugs in treating depression.
- A. True.
  - B. False.**
34. Milner and Olds discovered that electrical stimulation of the medial forebrain bundle connecting the \_\_\_\_\_ and \_\_\_\_\_ caused experimental animals to change their behavior in order to seek out ever more frequent stimulation.
- A. ventral tegmental area; nucleus accumbens**
  - B. hippocampus; amygdala
  - C. temporal cortex; striatum
  - D. hypothalamus; pituitary
35. Serotonin/Norepinephrine reuptake inhibitors (SNRIs) act on presynaptic \_\_\_\_\_ and cause extracellular levels of these \_\_\_\_\_ to be increased.
- A. metabotropic receptors; hormones.
  - B. ion pumps; amino acids.
  - C. transporters; monoamines.**
  - D. Ionotropic receptors; indolamines.
36. Spicy foods can seem 'hot' even at room temperature because \_\_\_\_\_.
- A. thermoreceptors in the skin don't respond to temperature differences
  - B. thermoreceptors in the skin also respond to certain chemical substances**
  - C. flavor involves the olfactory system and the gustatory system
  - D. receptive fields for temperature overlap with those for flavor
37. Elephants have high levels of dexterity (fine motor control) in their trunks. Somatosensory neurons in the trunk region of the elephant's S1 are likely to have \_\_\_\_\_.
- A. Small receptive fields.**
  - B. Large receptive fields.
  - C. Weak projections to corresponding regions of M1.
  - D. Low levels of myelination.
38. Which of these is an effective treatment of Huntington's Disease?
- A. Dopamine Agonists
  - B. NMDA Agonist
  - C. Selective Serotonin Reuptake Inhibitors
  - D. None of the above**



39. A somatosensory neuron's receptive field consists of \_\_\_\_\_.
- A. the skin between cutaneous receptor dendrites
  - B. the region of the skin that influences the neuron's firing when stimulated**
  - C. all the inputs to the neuron's dendrites and soma
  - D. its response pattern to 'donut'-shaped inputs
40. Lesions of the \_\_\_\_\_ block fear conditioning in experimental animals.
- A. hippocampus
  - B. cerebral cortex
  - C. amygdala**
  - D. striatum

Turn the page to answer the bonus questions.

## 2 Bonus

41. Which of these is *NOT* true about individuals with schizophrenia?
- A. **About half of them have a moderate form that is manageable.**
  - B. **About a third of them have a mild form that resolves.**
  - C. They show decreased cortical thickness in adolescence.
  - D. They can exhibit delusional thoughts, hallucinations, mood issues, and behavioral abnormalities.
- Allowing two answers because of lack of clarity in lecture.*
42. The projection from the \_\_\_\_\_ to the \_\_\_\_\_ is a major pathway in the brain's 'reward' system.
- A. **Ventral tegmental area (VTA); nucleus accumbens/ventral striatum.**
  - B. Substantia nigra; striatum.
  - C. Ventral tegmental area (VTA); amygdala.
  - D. Hypothalamus; adrenal medulla.
43. What did Dr. Wolpert say the sea squirt does after it finds a home on a rock?
- A. Looks for something to eat.
  - B. **Eats its own brain.**
  - C. Rests and digests.
  - D. Starts seeking a mate.
44. An acute stressor is one that \_\_\_\_\_.
- A. **lasts only a short period of time**
  - B. is especially intense and long-lived
  - C. rarely triggers the HPA axis
  - D. overstimulates cortisol receptors in the spinal cord