PSYCH 260-BBH 203 Exam 3

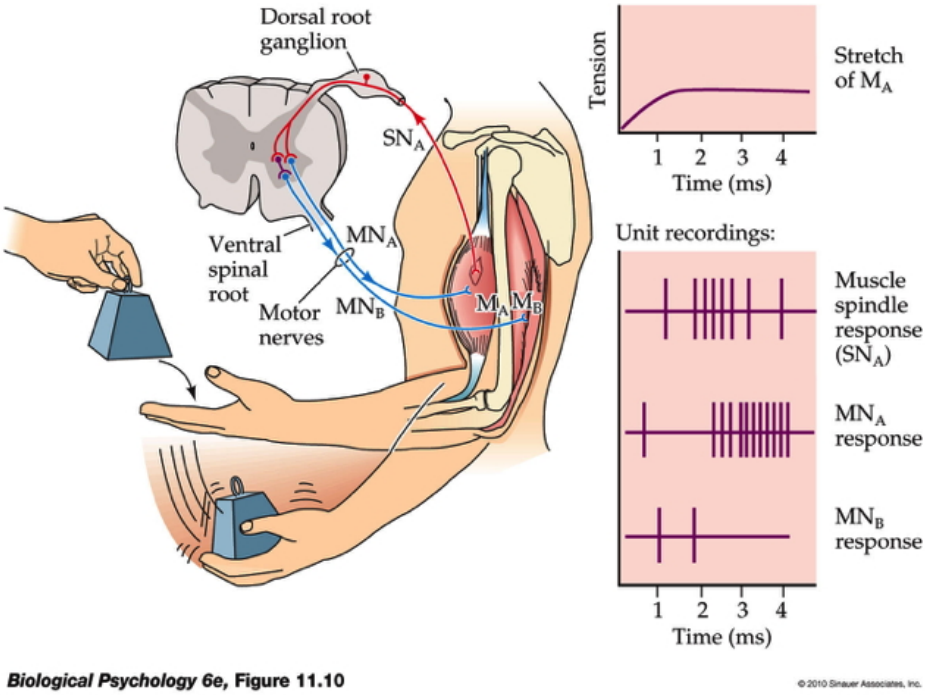
November 20, 2015

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

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. Descartes; optokinetic reflex; muscle strength.

   D. Descartes 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 *same* muscle.

   A. polysynaptic; excite.

   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 exascerbate 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 α motor neurons at the neuromuscular junction; this event leads to the inflow of _____ions and eventually, muscle fiber contraction.

    A. Glutamate; Mg++.

    B. Acetylcholine (Ach); Mg++.

    C. Glutamate; Ca++.

    D. Acetylcholine; Ca++.

11. Which of the following events must occur in order for neurotransmitter to be released from an axon's presynaptic terminal?

    A. Voltage-gated K+ channels must open to permit K+ to enter the cell.

    B. Voltage-gated Ca++ channels must open to permit Ca++ to enter the cell.

    C. Neurotransmitters must diffuse through the cytoplasm to the presynaptic membrane.

    D. None of the above.

12. The maleus, incus, and stapes in the middle ear serve to _____.

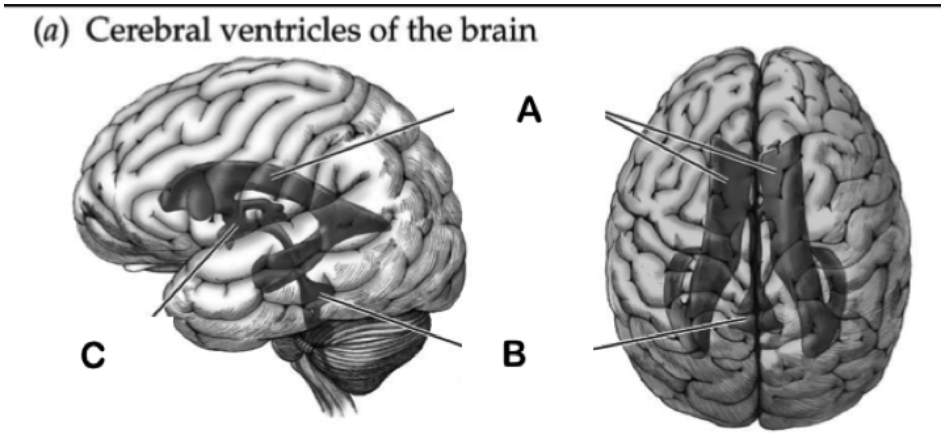
    A. convert sound into neural signals.

    B. filter sound frequencies.

    C. amplify vibrations impinging on the tympanic membrane.

    D. dampen or reduce the amplitude of vibrations.

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



13. Third Ventricle

14. Lateral Ventricle

15. Fourth Ventricle

16. The pineal gland's release of _____is activated by _____signals that originate in the suprachiasmatic nucleus (SCN) of the hypothalamus.

    A. melatonin; sympathetic nervous system.

    B. serotonin; sympathetic nervous system.

    C. vasopressin; parasympathetic nervous system.

    D. melatonin; somatic nervous system.

17. The anatomy of the retina seems "backwards" in that:

    A. Light receptive cells are positioned closest to the front of the eye.

    B. Amacrine cells connect cells horizontally, while bipolar cells connect vertically.

    C. Light-receptive photoreceptors are positioned at the back of the eye.

    D. The optic chiasm swaps information from the left and right visual fields.

18. 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.

19. All of the following are components of the auditory projection from the cochlea to the cortex *EXCEPT*:

    A. XIII (8th) cranial nerve.

    B. Lateral geniculate nucleus (LGN).

    C. Inferior colliculus.

    D. Superior olivary nucleus.

20. 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.

21. 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 originals of the disease.

    C. Some drugs increase DA levels but reduce schizophrenic symptoms.

    D. DA antagonists only relieve the negative symptoms of schizophrenia.

22. One of the *last* events in the development of the nervous system is _____.

    A. The formation of the neural tube.

    B. The differentiation of the pluripotent cells into neurons.

    C. Synaptogenesis in the cerebral cortex.

    D. Myelination of cortical axons.

23. 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.

24. Touch receptors enervating the skin on the _____have especially large receptive fields.
    A. Face.
    B. Calf.
    C. Toes.
    D. Thumb.

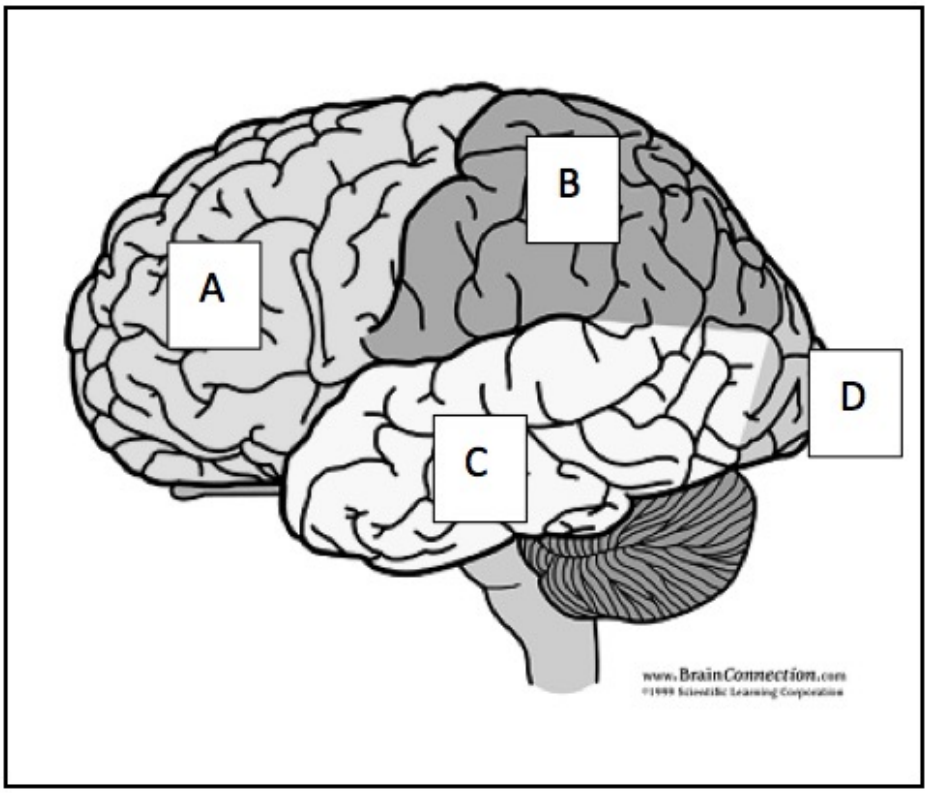
25. Perceptual sensitivity is *NOT* related to which of the following?
    A. Receptor density.
    B. Speed of propagation.
    C. Receptive field size.
    D. Size of the cortical area.

26. 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.

27. Outside the fovea, the retina contains _____but has _____.
    A. More rod photoreceptors; lower visual acuity.
    B. Fewer rod photoreceptors; greater visual acuity.
    C. More cone photoreceptors; fewer total ganglion cells.
    D. Fewer cone photoreceptors; more ganglion cells.

28. If long wavelength cones respond best to lights which we perceive as red, _____wavelength cones respond best to _____light.
    A. Short; green.
    B. Medium; yellow.
    C. Short; blue.
    D. Medium; blue.

Indicate the letter of the lobe that corresponds to the location of each sensory cortex.



29. Location of the primary somatosensory cortex.

30. Location of the primary auditory cortex.

31. Location of the primary motor cortex.

32. Location of the primary visual cortex.

33. 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.

34. Which two sensory streams provide the most precise information about objects or animals at a distance – distal to the observer?

    A. vision and audition.

    B. somatosensation and gustation.

    C. olfaction and the temperature sense.

    D. vestibular sense and vision.

35. Cognitive behavior therapy is *less* successful in treating depression than drugs.

    A. True.

    B. False.

36. 90% of projections from the retina go to which brain region?

    A. Ventral lateral thalamus.

    B. Lateral Geniculate Nucleus.

    C. Somatosensory cortex.

    D. Hypothalamus.

37. Serotonin/Norepinephrine reuptake inhibitors (SNRIs) act on presynaptic _____and cause levels of these _____to be increased.

    A. Metabotropic receptors; hormones.

    B. Pumps; amino acids.

    C. Transporter molecules; monoamines.

    D. Ionotropic receptors; indolamines.

38. The fiber crossing at the optic chiasm serves what purpose?

    A. Auditory and visual information end up on the same side of the brain.

    B. Visual information from the left eye projects to the right brain and vice versa.

    C. Visual information originating from the right side of space projects to the same hemisphere, and vice versa.

    D. Visual information originating from the left side of space projects to the opposite hemisphere, and vice versa.

39. 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. Hypothalamus.

40. The CNS compares auditory signals between the two ears in order to calculate _____.

    A. distance to an auditory target.

    B. the shape or form of an auditory target.

    C. the left/right position of an auditory target.

    D. the timbre of an auditory target.

2 Bonus

41. Why is the retina "physiologically backwards"?

    A. Light hyperpolarizes photoreceptors, decreasing neurotransmitter release.

    B. Light depolarizes ganglion cells; increasing neurotransmitter release.

    C. Different colors of light change a photoreceptor's resting potential in similar ways.

    D. Photoreceptors respond both to chemical and thermal signals.

42. 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.

43. 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.

44. 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