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Practice Questions

ANP1106 Final Exam

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Questions – Physiology of the Nervous System A

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1. Membrane potential becomes more positive when _____ and becomes more negative when _____



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1. Membrane potential becomes more positive when **depolarized** and becomes more negative when **hyperpolarized**



2. A graded potential is characterized by:
- a) Degrade over distance
 - b) Current flow increases with distance
 - c) One graded potential can create an action potential
 - d) All of the above



2. A graded potential is characterized by:

- a) **Degrade over distance**
- b) Current flow increases with distance
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- d) All of the above



3. During the absolute refractory period of an action potential you can create _____ new action potentials

a) <5

b) >5

c) <2

d) 0



3. During the absolute refractory period of an action potential you can create _____ new action potentials

a) <5

b) >5

c) <2

d) 0



4. Action potentials can only occur at Nodes of Ranvier because...

- a) They are unmyelinated
- b) Their Na channels are exposed
- c) They are myelinated
- d) None of the above
- e) Only a and b



4. Action potentials can only occur at Nodes of Ranvier because...

- a) They are unmyelinated
- b) Their Na channels are exposed
- c) They are myelinated
- d) None of the above
- e) Only a and b**



5. The GABA neurotransmitter....

- a) The most powerful excitatory neurotransmitter in the brain
- b) Can allow calcium to enter through NMDA
- c) Is inhibitory because it acts like a ligand to open up chloride channels
- d) All of the above



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Questions – Physiology of the Nervous System B

NATIONAL SPONSORS:



1. Proprioceptors ...
 - a) Respond to stimuli arising outside the body
 - b) Are found in internal viscera and blood vessels
 - c) Are simple and include encapsulated and unencapsulated varieties
 - d) Respond to the degree of stretch of the organs they occupy



1. Proprioceptors ...
 - a) Respond to stimuli arising outside the body
 - b) Are found in internal viscera and blood vessels
 - c) Are simple and include encapsulated and unencapsulated varieties
 - d) Respond to the degree of stretch of the organs they occupy**



2. Intrafusal muscle fibers are innervated by _____ motor neurons, whereas, extrafusal muscle fibers are innervated by _____ motor neurons

- a) Alpha; beta
- b) Alpha; gamma
- c) Gamma; sigma
- d) Gamma; alpha



2. Intrafusal muscle fibers are innervated by _____ motor neurons, whereas, extrafusal muscle fibers are innervated by _____ motor neurons

- a) Alpha; beta
- b) Alpha; gamma
- c) Gamma; sigma
- d) Gamma; alpha**



3. List 4 different receptor classifications by stimulus types

1)

2)

3)

4)



3. List 4 different receptor classifications by stimulus types

- 1) Mechanoreceptors: respond to touch, pressure, vibration, stretch, and itch
- 2) Thermoreceptors: sensitive to changes in temperature
- 3) Photoreceptors: respond to light energy
- 4) Chemoreceptors: respond to chemicals (smell, taste, changes in blood chemistry)
- 5) Nociceptors: sensitive to pain causing stimuli





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Questions – Physiology of the Nervous System - Somatosensory

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1. The 3 main levels of integration in the somatosensory system are:
 - a) Input level, output level, circuit level
 - b) Output level, circuit level, perceptual level
 - c) Circuit level, perceptual level
 - d) Receptor level, circuit level, perceptual level



1. The 3 main levels of integration in the somatosensory system are:
 - a) Input level, output level, circuit level
 - b) Output level, circuit level, perceptual level
 - c) Circuit level, perceptual level
 - d) Receptor level, circuit level, perceptual level**



2. At the receptor level, adaptation will cause which of the following?
- a) Receptor membranes become less responsive
 - b) Receptor potentials increase in frequency or stop
 - c) Reduction in action potentials
 - d) All of the above
 - e) Only a and c



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3. Which of the following is/are correct?

- a) First order neurons: transmit impulses to the thalamus or cerebellum.
- b) Second order neurons: transmit impulses to spinal cord or brainstem.
- c) Third order neurons: transmit impulses to the somatosensory cortex of the cerebrum
- d) All of the above



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4. Some of the main aspects of sensory perception is/are:

- a) Perceptual detection
- b) Magnitude estimation
- c) Spatial discrimination
- d) Feature detection
- e) None of the above
- f) All of the above



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5. Regeneration of nerve fibers involves the activity of:

- a) Macrophages
- b) Dendrites
- c) Schwann cells
- d) Axons
- e) Only a, c, and d
- f) All of the above



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Questions – Physiology of Smell and Taste

NATIONAL SPONSORS:



1. The secondary messenger used in smell transduction is:
 - a) cAMP
 - b) cGMP
 - c) ATP
 - d) GTP



1. The secondary messenger used in smell transduction is:

a) **cAMP**

b) cGMP

c) ATP

d) GTP



2. Which of the following characteristics about olfactory neurons is/are correct?
- a) Found in the roof of the nasal cavity
 - b) Are replaced every 4-8 weeks
 - c) Their dendrites are immersed in mucus to help capture the odorants
 - d) All of the above



2. Which of the following characteristics about olfactory neurons is/are correct?
- a) Found in the roof of the nasal cavity
 - b) Are replaced every 4-8 weeks
 - c) Their dendrites are immersed in mucus to help capture the odorants
 - d) All of the above**



3. In order for a chemical to be tasted, it must...
- a) Be dissolved in saliva and come in contact with olfactory neurons
 - b) Be dissolved in saliva and come in contact with gustatory hairs
 - c) Come in contact with gustatory hairs only
 - d) None of the above



3. In order for a chemical to be tasted, it must...
- a) Be dissolved in saliva and come in contact with olfactory neurons
 - b) Be dissolved in saliva and come in contact with gustatory hairs**
 - c) Come in contact with gustatory hairs only
 - d) None of the above



4. Which characteristics apply to gustatory cells?
- a) Gustatory cells have microvilli called gustatory hairs that detect chemicals
 - b) Gustatory receptor cells are replaced every 20 days
 - c) Binding of a tastant to gustatory cells causes a hyperpolarization
 - d) All of the above



4. Which characteristics apply to gustatory cells?

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- b) Gustatory receptor cells are replaced every 20 days
- c) Binding of a tastant to gustatory cells causes a hyperpolarization
- d) All of the above



5. Choose the correct statement(s)

- a) Supporting Cells are taste cells
- b) Basal Cells insulate the receptor
- c) Gustatory Cells are dynamic stem cells
- d) All of the above
- e) None of the above



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Questions – Physiology of Vision

NATIONAL SPONSORS:



1. Choose the correct statement concerning the structures of eyelids:
 - a) Palpebral fissure separates eye lids
 - b) Tarsal plates of connective tissue gives the upper eyelid mobility
 - c) Levator palpebrae superioris support eyelids internally
 - d) All of the above



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 - a) **Palpebral fissure separates eye lids**
 - b) Tarsal plates of connective tissue gives the upper eyelid mobility
 - c) Levator palpebrae superioris support eyelids internally
 - d) All of the above



2. The conjunctiva is a transparent membrane that...

a) Lines the eyelids as the palpebral conjunctiva

b) Covers the whites of the eyes as the ocular conjunctiva

c) Lubricates and protects the eye

d) All of the above



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b) Covers the whites of the eyes as the ocular conjunctiva

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d) All of the above



3. The correct order in which light passes to reach the retina is...
- a) cornea, aqueous humor, lens, vitreous humor, neural layer of retina, photoreceptors
 - b) aqueous humor, cornea, lens, vitreous humor, neural layer of retina, photoreceptors
 - c) cornea, aqueous humor, vitreous humor, lens, neural layer of retina, photoreceptors
 - d) None of the above



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- b) aqueous humor, cornea, lens, vitreous humor, neural layer of retina, photoreceptors
- c) cornea, aqueous humor, vitreous humor, lens, neural layer of retina, photoreceptors
- d) None of the above



4. Far point vision is defined as:

- a) the distance beyond which the lens does not need to change shape to focus (20ft.)
- b) the distance beyond which the lens does need to change shape to focus (20ft.)
- c) the distance beyond which the lens does not need to change shape to focus (50ft.)
- d) None of the above



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- b) the distance beyond which the lens does need to change shape to focus (20ft.)
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- d) None of the above



5. When observing an object at a close distance, the eye must accommodate, constrict, and converge. Which of the following statements properly defines accommodation, constriction and/or convergence
- a) accommodation: changing the lens shape by ciliary muscles to increase refractory power
 - b) constriction: medial rotation of an eyeball towards the object being viewed
 - c) convergence: the papillary reflex constricts the pupil to prevent divergent light rays from entering the eye



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6. Muscular contraction to decrease pupil size is initiated by the _____ nervous system, whereas, muscular contraction to increase pupil size is initiated by the _____ nervous system
- a) Sympathetic; parasympathetic
 - b) Parasympathetic; sympathetic
 - c) Somatic; sympathetic
 - d) Parasympathetic; somatic



6. Muscular contraction to decrease pupil size is initiated by the _____ nervous system, whereas, muscular contraction to increase pupil size is initiated by the _____ nervous system

- a) Sympathetic; parasympathetic
- b) Parasympathetic; sympathetic**
- c) Somatic; sympathetic
- d) Parasympathetic; somatic



7. There are 3 types of cones which are:

- a) Blue, green, red
- b) Yellow, blue, red
- c) Purple, green, blue
- d) None of the above



7. There are 3 types of cones which are:

a) **Blue, green, red**

b) Yellow, blue, red

c) Purple, green, blue

d) None of the above



8. Adaptation in bright light involves:

- a) rhodopsin accumulates in the dark and retinal sensitivity is restored
- b) dramatic decreases in retinal sensitivity (rod function is lost)
- c) switching from the rods to the cones system (to gain visual acuity)
- d) Only b and c
- e) All of the above



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9. During thalamic processing, the lateral geniculate nuclei of the thalamus...
- a) relay info on movement
 - b) segregate the retinal axons in preparation for depth perception
 - c) sharpen the contrast information received by the retina
 - d) All of the above



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Questions – Physiology of Balance and Hearing

NATIONAL SPONSORS:



1. List the 3 structures of the external ear

1)

2)

3)



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1. List the 3 structures of the external ear

1. Auricle

2. External auditory canal

3. Tympanic membrane



2. The ampula is the swollen end of each semicircular canal that...
- a) Houses the equilibrium receptors that respond to angular movements of the head
 - b) Houses the equilibrium receptors that do not respond to angular movements of the head
 - c) Directly respond to angular movements of the head



2. The ampula is the swollen end of each semicircular canal that...

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3. Audible sound waves will...

- a) travel around the helicotrema
- b) vibrate the basilar membrane
- c) excite specific hair cells according to frequency of the sound
- d) Only b and c
- e) All of the above



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e) All of the above



4. Which of the following words is properly defined?

- a) Conduction Deafness: labyrinth disorder that affects the cochlea and the semicircular canals causing vertigo, nausea, and vomiting
- b) Sensorineural Deafness: results from damage to the neural structures at any point from the cochlear hair cells to the auditory cortical cells
- c) Tinnitus: something hampers sound conduction to the fluids of the inner ear (earwax, perforated eardrum, osteosclerosis of ossicles)
- d) Meniere's Syndrome: ringing or clicking sounds in the ears in the absence of auditory stimuli



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5. Characteristics of maculae include:

- a) Maculae are the sensory receptors for static equilibrium
- b) They contain supporting cells and hair cells
- c) They depolarize vestibular nerve fibers
- d) All of the above
- e) Only a and b



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Questions – Physiology of the Motor System

NATIONAL SPONSORS:



1. Which of the following statements is/are correct concerning the direct motor pathway ?
 - a) Parts of the direct pathway, called corticoculbar tracts, innervate cranial nerve nuclei
 - b) The direct pathway regulates slow movements
 - c) Direct pathways originate within the pyramidal neurons in the precentral gyri
 - d) All of the above
 - e) Only a and c



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2. Innervation of skeletal muscles involves which neurotransmitter?

- a) Glutamate
- b) GABA
- c) Acetylcholine
- d) Dopamine



2. Innervation of skeletal muscles involves which neurotransmitter?

a) Glutamate

b) GABA

c) Acetylcholine

d) Dopamine



3. Which of the following terms concerning paralysis is properly define?
- a) Paraplegia: loss of motor function
 - b) Quadriplegia: transection in the cervical region
 - c) Paralysis: transection between T1 and L1
 - d) All of the above
 - e) Only a and b



3. Which of the following terms concerning paralysis is properly define?

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e) Only a and b



4. The indirect pathways includes...

- a) Rubrospinal tracts to control flexor muscles
- b) Reticulospinal tracts to maintains balance
- c) Tectospinal tracts to mediate head movements
- d) Includes all of the above



4. The indirect pathways includes...

- a) Rubrospinal tracts to control flexor muscles
- b) Reticulospinal tracts to maintains balance
- c) Tectospinal tracts to mediate head movements
- d) Includes all of the above**



5. Characteristics of the basal ganglia include

- a) Movement initiation
- b) Receiving inputs from widespread regions of the cortex
- c) Requires glutamate from substantia nigra
- d) All of the above
- e) Only a and b



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Questions – Physiology of the Autonomic Nervous System

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1. The ANS consists of motor neurons that:
 - a) Innervate smooth and cardiac muscles and glands
 - b) Make adjustments to ensure optimal support for body activities
 - c) Operate via subconscious control
 - d) Have viscera as most of their effectors
 - e) All of the above



1. The ANS consists of motor neurons that:
 - a) Innervate smooth and cardiac muscles and glands
 - b) Make adjustments to ensure optimal support for body activities
 - c) Operate via subconscious control
 - d) Have viscera as most of their effectors
 - e) All of the above**



2. To mobilizes the body during extreme situations we use the _____nervous system and to perform maintenance activities and conserve body energy we use the _____ nervous system

- a) Sympathetic; parasympathetic
- b) Parasympathetic; sympathetic
- c) Somatic; sympathetic
- d) Visceral; parasympathetic



2. To mobilizes the body during extreme situations we use the _____nervous system and to perform maintenance activities and conserve body energy we use the _____ nervous system

- a) **Sympathetic; parasympathetic**
- b) Parasympathetic; sympathetic
- c) Somatic; sympathetic
- d) Visceral; parasympathetic



3. What is sympathetic tone?

The answer is: Controls blood pressure and keeps the blood vessels in a continual state of partial constriction. Sympathetic tone will constrict blood vessels and causes blood pressure to rise as needed. And, it will prompt vessels to dilate if pressure is to be decreased.



4. What is parasympathetic tone?



4. What is parasympathetic tone?

The answer is: It slows the heart rate and dictates normal activity levels of the digestive and urinary systems. The sympathetic system can override these effects during time of stress.



5. In the ANS, all preganglionic fibers release _____ and postganglionic fibers can release _____ or _____

- a) ACh; ACh; norepinephrine
- b) Norepinephrine; ACh; Ach
- c) ACh; norepinephrine; glutamate
- d) Glutamate; Norepinephrine; ACh



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- c) ACh; norepinephrine; glutamate
- d) Glutamate; Norepinephrine; ACh





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Questions – Physiology of the Nervous System – Higher Mental Function

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1. The reticular formation is located in _____ and is crucial for _____
 - a) Frontal cortex; maintaining a state of consciousness and control respiration and cardiac rhythms
 - b) Brainstem; filtering out unnecessary information
 - c) Brainstem; maintaining a state of consciousness and control respiration and cardiac rhythms
 - d) None of the above



1. The reticular formation is located in _____ and is crucial for _____
 - a) Frontal cortex; maintaining a state of consciousness and control respiration and cardiac rhythms
 - b) Brainstem; filtering out unnecessary information
 - c) Brainstem; maintaining a state of consciousness and control respiration and cardiac rhythms**
 - d) None of the above



2. Which of the following brainwaves is properly described?
- a) Alpha – regular and rhythmic, slow, synchronous waves
 - b) Beta – rhythmic, more irregular waves occurring during the awake and mentally alert state
 - c) Theta – high amplitude waves seen in deep sleep and when reticular activating system is damped
 - d) Delta – more irregular than alpha, common in children but abnormal in adults
 - e) Only a and b



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3. Which of the following sleep disorders are properly defined?

- a) Narcolepsy – temporary cessation of breathing with age
- b) Insomnia – chronic inability to obtain the amount or quality of sleep needed
- c) Sleep apneas: lapsing abruptly into sleep from the awake state
- d) All of the above



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a) Narcolepsy – temporary cessation of breathing with age

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c) Sleep apneas: lapsing abruptly into sleep from the awake state

d) All of the above



4. Define/characterize the 4 stages of NREM

S1:

S2:

S3:

S4:



4. Define/characterize the 4 stages of NREM

- **S1** – eyes are closed and relaxation begins; the EEG shows alpha waves; one can be easily aroused
- **S2** – EEG pattern is irregular with sleep spindles; arousal is more difficult
- **S3** – sleep deepens; theta and delta waves appear; vital signs decline; dreaming is common
- **S4** – EEG pattern is dominated by delta waves; skeletal muscles are relaxed; arousal is difficult



5. The transfer from short term memory to long term memory involves...

- a) Emotional state
- b) Rehearsal
- c) Association
- d) Automatic memory
- e) All of the above



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- b) Rehearsal
- c) Association
- d) Automatic memory
- e) All of the above**



6. Define fact memory and skilled memory



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6. Define fact memory and skilled memory

The answer is

- **Fact memory:** entails learning explicit info. Is related to our conscious thoughts and our language ability. Is stored with the context in which it was learned
- **Skilled memory:** less conscious and involves motor activity. It is acquired through practice. These memories are not retained in the context in which they were learned.



7. The structures involved in skilled memory are:
- a) Hippocampus and the amygdala
 - b) Specific areas of the thalamus and hypothalamus of the diencephalon
 - c) Ventromedial prefrontal cortex and the basal forebrain
 - d) None of the above



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