EPPP Physiology Practice Exam (Sample)

Study Guide

Everything you need from our exam experts!

Questions

1. Which genetic condition is also known as congenital achromatopsia?

A. Colorblindness

B. Prosopagnosia

C. Visual agnosia

D. Flaccid hemiplegia

2. What tests are often used to identify spinal cord injuries or diseases?

A. Electroencephalography (EEG) and MRI

B. X-ray and electromyography (EMG)

C. Functionality Tests and CT scans

D. Magnetic resonance imaging (MRI) and CT with myelogram

3. What is a key aspect of the Cannon-Bard theory of emotion?

A. Emotions follow physical responses

B. Emotions and bodily reactions occur simultaneously

C. Emotions are primarily cognitive

D. Emotional experiences are sequential

4. What is the role of the temporal lobe in memory?

A. It exclusively handles short-term memory

B. It encodes and retrieves long-term declarative memory

C. It processes sensory information only

D. It regulates emotional responses

5. Which system is responsible for rapid communication in the body?

A. The circulatory system

B. The immune system

C. The nervous system

D. The digestive system

6. Which two neurotransmitters are associated with social phobia?

A. Dopamine and Norepinephrine

B. Serotonin and Dopamine

C. Acetylcholine and GABA

D. Glutamate and Endorphins

7. Which area of the prefrontal cortex is primarily involved in planning and executing movements in response to stimuli?

A. Supplementary motor area

B. Premotor cortex

C. Primary motor cortex

D. Broca's area

8. Which involuntary functions are primarily regulated by the medulla oblongata?

A. Conscious movements and coordination

B. Emotional responses and memory formation

C. Breathing, heart rate, and blood pressure

D. Vision and hearing

9. What role does the hippocampus play in memory?

A. Regulating neural impulses

B. Facilitating the formation of new memories

C. Storing long-term procedural memories

D. Enhancing sensory perception

10. What is the primary difference between primary hypertension and secondary hypertension?

A. Ethnicity

B. Age factors

C. Known physiological causes

D. Gender differences

Answers

1. A
2. D
3. B
4. B
5. C
6. B
7. B
8. C
9. B
10. C

Explanations

1. Which genetic condition is also known as congenital achromatopsia?

A. Colorblindness

B. Prosopagnosia

C. Visual agnosia

D. Flaccid hemiplegia

Congenital achromatopsia refers to a genetic condition characterized by a lack of color vision, leading to an inability to perceive colors as individuals with normal vision do. This condition is primarily caused by mutations in specific genes that are essential for the functioning of cone photoreceptors in the retina, which are responsible for color vision. Individuals with congenital achromatopsia typically exhibit symptoms such as poor visual acuity, light sensitivity, and nystagmus, in addition to their color vision deficiency. The term "colorblindness" is commonly used to describe conditions that impair color perception, including congenital achromatopsia. Thus, identifying congenital achromatopsia as a form of colorblindness is accurate and aligns with how these conditions are understood in the field of vision science. In contrast, the other options provided relate to different visual and cognitive impairments. Prosopagnosia, for example, is the inability to recognize faces, while visual agnosia refers to an inability to recognize objects despite having intact vision. Flaccid hemiplegia involves muscle weakness and paralysis rather than directly impacting visual perception. Therefore, these conditions do not share the same characteristics as congenital achromatopsia, underscoring

2. What tests are often used to identify spinal cord injuries or diseases?

A. Electroencephalography (EEG) and MRI

B. X-ray and electromyography (EMG)

C. Functionality Tests and CT scans

D. Magnetic resonance imaging (MRI) and CT with myelogram

The use of magnetic resonance imaging (MRI) and computed tomography (CT) with myelogram is a common approach to identify spinal cord injuries or diseases due to their effectiveness in visualizing the spinal anatomy and potential pathologies. MRI is particularly valuable because it provides detailed images of soft tissues, including the spinal cord, intervertebral discs, and surrounding structures. It can detect contusions, tumors, herniated discs, and other abnormalities that might compress or damage the spinal cord. The high-resolution images produced by MRI allow for an accurate assessment of the extent of injury and any accompanying neurological deficits. CT scans, especially when used with a myelogram, are also crucial in the evaluation of spinal conditions. A myelogram involves the injection of a contrast dye into the spinal canal, which enhances the visualization of the spinal cord and nerve roots on the CT images. This technique is particularly useful for identifying disc herniations, spinal stenosis, and vertebral fractures that may not be as clearly visible on MRI alone. Together, these imaging techniques provide comprehensive insight into spinal cord injuries or diseases, guiding diagnosis and treatment planning effectively.

3. What is a key aspect of the Cannon-Bard theory of emotion?

A. Emotions follow physical responses

B. Emotions and bodily reactions occur simultaneously

C. Emotions are primarily cognitive

D. Emotional experiences are sequential

The Cannon-Bard theory of emotion posits that when an individual experiences an emotional stimulus, both the emotional experience and the physiological response occur simultaneously and independently. This theory was developed as a response to the limitations of earlier theories, which suggested that emotional experiences resulted from physiological changes. In this view, the brain processes the emotion and triggers the appropriate physiological responses at the same time, leading to a more holistic understanding of how we experience emotions. This means that you might feel fear while simultaneously experiencing an accelerated heart rate, rather than one causing the other. By emphasizing the simultaneous occurrence of emotion and bodily reaction, the Cannon-Bard theory highlights the interaction between the cognitive aspects of feelings and the physical responses that accompany them. This stands in contrast to other theories that suggest a linear progression of emotional experience, where a physiological response arises after an emotional state is determined. Thus, the essence of the Cannon-Bard perspective is captured in the notion that emotions and physiological responses happen concurrently, framing a significant understanding of emotional processes in psychological and physiological contexts.

4. What is the role of the temporal lobe in memory?

A. It exclusively handles short-term memory

B. It encodes and retrieves long-term declarative memory

C. It processes sensory information only

D. It regulates emotional responses

The temporal lobe plays a crucial role in memory, particularly in the encoding and retrieval of long-term declarative memory. Declarative memory refers to memories that can be consciously recalled, such as facts and events, and is further divided into semantic memory (general knowledge) and episodic memory (personal experiences). Within the temporal lobe, structures like the hippocampus and surrounding regions are essential for forming new declarative memories and retrieving previously stored information. The hippocampus is particularly well-studied in this context, as it is responsible for the consolidation of information from short-term to long-term memory, and it helps integrate new experiences with existing memory knowledge. While the temporal lobe does process sensory information and is involved in emotional responses through its connections to other brain regions, its most significant and well-established role in the context of memory relates to long-term declarative memory. Thus, the correct understanding of the function of the temporal lobe emphasizes its involvement in encoding and retrieving lasting memories, distinguishing it from functions solely associated with short-term memory or sensory processing.

5. Which system is responsible for rapid communication in the body?

A. The circulatory system

B. The immune system

C. The nervous system

D. The digestive system

The nervous system is responsible for rapid communication in the body due to its ability to transmit signals quickly through neurons. Neurons are specialized cells that can generate and propagate electrical impulses, allowing for immediate responses to stimuli. This system encompasses both the central nervous system, which includes the brain and spinal cord, and the peripheral nervous system, which connects the rest of the body to the central nervous system. The speed of communication in the nervous system is crucial for coordinating complex processes such as reflex actions, sensory perception, and motor control. For instance, when you touch something hot, sensory neurons relay that information to the brain almost instantaneously, leading to a quick reflex to withdraw your hand. In contrast, the circulatory system is primarily involved in transporting blood, nutrients, and oxygen throughout the body but does not facilitate rapid signaling; the immune system focuses on defense against pathogens and coordinating a slower response to infections; the digestive system is essential for processing food but does not contribute to fast communication within the body. Thus, the nervous system is uniquely suited for rapid communication, making it the correct answer.

6. Which two neurotransmitters are associated with social phobia?

A. Dopamine and Norepinephrine

B. Serotonin and Dopamine

C. Acetylcholine and GABA

D. Glutamate and Endorphins

Social phobia, also known as social anxiety disorder, is characterized by intense fear or anxiety in social situations. Research has indicated that neurotransmitters play a significant role in the development and manifestation of this disorder. Among the neurotransmitters identified, serotonin is particularly noted for its involvement in mood regulation and anxiety. Lower levels of serotonin are often associated with increased anxiety and mood disorders, making it a critical focus for understanding social phobia. Dopamine, while primarily known for its role in reward processing and motivation, also contributes to social interactions and the regulation of anxiety. Abnormal dopamine activity can influence how one experiences social situations and regulates fear responses. Therefore, serotonin and dopamine have been identified as key neurotransmitters implicated in the etiology and symptomatology of social phobia due to their roles in anxiety and mood regulation. In contrast, the other neurotransmitters mentioned—such as acetylcholine, GABA, glutamate, and endorphins—are not as directly linked to social phobia in the same way. While GABA plays a calming role in the central nervous system and could somewhat relate to anxiety, it is not as specifically tied to social phobia as serotonin and dopamine. Similarly, glutamate is primarily associated with excitation

7. Which area of the prefrontal cortex is primarily involved in planning and executing movements in response to stimuli?

A. Supplementary motor area

B. Premotor cortex

C. Primary motor cortex

D. Broca's area

The premotor cortex plays a crucial role in the planning and execution of movements in response to stimuli. It is located anterior to the primary motor cortex and is primarily involved in the preparation of motor actions. This area integrates sensory information and coordinates the planning of movements based on that information, allowing for more complex and purposeful actions. When a stimulus is perceived, the premotor cortex becomes activated to organize the necessary motor sequences before they are executed by the primary motor cortex. It is also involved in the learning and adjustment of motor activities based on environmental cues, which is vital for executing movements in a dynamic environment. In contrast, while the primary motor cortex is responsible for the direct execution of voluntary movements by sending signals to the muscles, it does not significantly engage in the planning stage. The supplementary motor area, although related, primarily focuses on the planning of movement sequences and coordination but is less involved in the immediate responsiveness to external stimuli than the premotor cortex. Broca's area, on the other hand, is primarily associated with language production, rather than motor movement planning.

8. Which involuntary functions are primarily regulated by the medulla oblongata?

A. Conscious movements and coordination

B. Emotional responses and memory formation

C. Breathing, heart rate, and blood pressure

D. Vision and hearing

The medulla oblongata is a critical component of the brainstem that is primarily responsible for regulating various involuntary functions essential to survival. It controls autonomic functions, including breathing, heart rate, and blood pressure. Breathing is controlled by the medulla oblongata through centers that detect carbon dioxide levels in the blood and adjust respiratory rate accordingly. The regulation of heart rate is handled by the cardiac center located in the medulla, which influences the autonomic nervous system to either speed up or slow down heart activity based on the body's needs. Similarly, the medulla oversees the vasomotor center, which regulates blood vessel diameter, thus influencing blood pressure. In contrast, conscious movements and coordination are functions primarily associated with the cerebellum and motor cortex, while emotional responses and memory formation are handled mainly by structures such as the limbic system and the hippocampus. Vision and hearing, on the other hand, are processed in the occipital and temporal lobes, respectively, not by the medulla oblongata. Thus, the correct answer emphasizes the medulla's role in vital autonomic functions essential for maintaining homeostasis in the body.

9. What role does the hippocampus play in memory?

A. Regulating neural impulses

B. Facilitating the formation of new memories

C. Storing long-term procedural memories

D. Enhancing sensory perception

The hippocampus is crucial for facilitating the formation of new memories, particularly declarative memories, which include facts and events. It acts as a key structure within the brain's limbic system, playing an essential role in the encoding and consolidation processes for new information. When experiences are encountered, the hippocampus helps to integrate and organize that information, making it easier to store and retrieve later. As new memories are formed, the hippocampus interacts with various cortical regions to help encode information, which can later be transformed into long-term memories. Over time, and especially as these memories become more stable, they may be transferred from the hippocampus to other areas of the brain for long-term storage. This makes the hippocampus particularly important in learning environments where acquiring new knowledge or skills is necessary. While other regions of the brain may be involved in regulating various neural processes, storing long-term memories, or enhancing sensory perception, it is the hippocampus that is specifically recognized for its central role in the immediate formation and consolidation of new memories.

10. What is the primary difference between primary hypertension and secondary hypertension?

A. Ethnicity

B. Age factors

C. Known physiological causes

D. Gender differences

The primary distinction between primary hypertension and secondary hypertension lies in the presence of known physiological causes. Primary hypertension, which accounts for the majority of hypertension cases, has no identifiable cause and is often linked to a combination of genetic, environmental, and lifestyle factors. In contrast, secondary hypertension results from a specific underlying condition, such as kidney disease, hormonal disorders, or particular medications. The identification of these causes can lead to targeted treatments that may resolve the high blood pressure once the underlying condition is addressed. While factors such as ethnicity, age, and gender can play a role in the prevalence and risk factors associated with hypertension, they do not define the primary difference between primary and secondary hypertension. Therefore, understanding that secondary hypertension arises from identifiable physiological conditions is key to differentiating it from primary hypertension.