NYCC Neuro I Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- **Practice answering questions under realistic conditions,**
- **Improve accuracy and speed,**
- **Review explanations to strengthen weak areas, and**
- **Approach the exam with greater confidence.**

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here’s how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don’t just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There’s no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

1. Nociceptive afferents from A-delta and C fibers synapse onto neurons in which dorsal horn nucleus?

A. Nucleus Gracilis.

B. Nucleus Proprius.

C. Nucleus Cuneatus.

D. Substantia gelatinosa.

2. Pineal growth is associated with which pubertal outcome?

A. Delayed puberty

B. Precocious puberty

C. Normal puberty

D. No effect on puberty

3. The Meissner's plexus is found between which layers?

A. Between the circular smooth muscle layer and the mucosa

B. Between the external longitudinal layer and the circular layer

C. Within the muscularis externa

D. In the adventitia

4. The splanchnic nerves in turn synapse with which structure?

A. Prevertebral ganglia

B. Paravertebral ganglia

C. Adrenal medulla

D. Cerebral cortex

5. Lesion of Broca's area results in what type of aphasia?

A. Wernicke's aphasia

B. Global aphasia

C. Expressive aphasia with non-fluent speech, impaired repetition, but preserved comprehension

D. Anomic aphasia

6. Axons of the nucleus proprius cross the midline and form which tract?

A. Dorsal column-medial lemniscus.

B. Lateral spinothalamic tract.

C. Spinocerebellar tract.

D. Anterior corticospinal tract.

7. What is a homunculus?

A. The representation of the cortical areas dedicated to processing information from a particular part of the body.

B. The precentral gyrus.

C. The limbic system.

D. The visual cortex.

8. The dorsal columns consist of which fasciculi?

A. Gracilis and Cuneatus

B. Corticospinal and Rubrospinal

C. Spinothalamic and Spinocerebellar

D. Medial Lemniscus and Reticular Formation

9. Which fibers comprise the central pain pathway axons?

A. A-delta and C fibers.

B. A-beta fibers only.

C. B fibers only.

D. C fibers only.

10. Pre- and postganglionic terminals release neuropeptides that function directly onto the target tissue or have a modulatory role.

A. Acetylcholine as the sole transmitter

B. Norepinephrine as the primary transmitter

C. Neuropeptides that function directly onto the target tissue or have a modulatory role

D. Gamma-aminobutyric acid as an inhibitory transmitter

Answers

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

Explanations

1. Nociceptive afferents from A-delta and C fibers synapse onto neurons in which dorsal horn nucleus?

A. Nucleus Gracilis.

B. Nucleus Proprius.

C. Nucleus Cuneatus.

D. Substantia gelatinosa.

Nociceptive signals from small-diameter A-delta and C fibers are transmitted in the dorsal horn by second-order neurons that form the spinothalamic pathway. The nucleus proprius, located in the deeper dorsal horn (laminae III–IV), contains many of these second-order neurons that receive input from these nociceptive fibers and project onward after crossing to the contralateral side. While the substantia gelatinosa (lamina II) plays a major modulatory role and processes pain signals via interneurons, the nucleus proprius is the key relay area for the direct transmission of nociceptive information to higher centers. The other options are not correct: the dorsal column nuclei (nucleus gracilis and nucleus cuneatus) handle fine touch and proprioception, and the substantia gelatinosa is more about modulation rather than serving as the principal relay neuron site for this pathway in this context.

2. Pineal growth is associated with which pubertal outcome?

A. Delayed puberty

B. Precocious puberty

C. Normal puberty

D. No effect on puberty

Melatonin from the pineal gland helps set the timing of puberty by dampening GnRH release. When the pineal gland is enlarged or more active, melatonin levels stay higher, which keeps GnRH pulses suppressed and delays the activation of the axis that drives puberty. So pineal growth tends to result in delayed puberty. Normal puberty happens when melatonin's inhibitory influence decreases with age and GnRH rhythms rise on schedule. The idea of precocious puberty would involve early GnRH activation or ectopic hormone effects, not a straightforward result of pineal growth, and "no effect" wouldn't fit given melatonin's regulatory role.

3. The Meissner's plexus is found between which layers?

A. Between the circular smooth muscle layer and the mucosa

B. Between the external longitudinal layer and the circular layer

C. Within the muscularis externa

D. In the adventitia

Meissner's plexus is the submucosal (submucosa) nerve network of the gut. It sits in the submucosa, which lies between the mucosa (and its muscularis mucosae) and the inner circular smooth muscle layer of the muscularis externa. This position lets it regulate glandular secretion and local blood flow in the mucosa. The other major plexus, the myenteric (Auerbach's) plexus, is located between the circular and longitudinal layers of the muscularis externa and governs motility, not secretion. Adventitia is the outer connective tissue layer, not where Meissner's sits.

4. The splanchnic nerves in turn synapse with which structure?

A. Prevertebral ganglia

B. Paravertebral ganglia

C. Adrenal medulla

D. Cerebral cortex

Preganglionic sympathetic fibers carried by the splanchnic nerves are meant to reach abdominal viscera, but they don’t stop in the sympathetic chain near the spine. Instead, they descend to prevertebral (preaortic) ganglia located around the origins of the major abdominal arteries. There they synapse onto postganglionic neurons that then innervate the abdominal organs. This is why the splanchnic nerves are associated with prevertebral ganglia. The paravertebral ganglia of the sympathetic chain are not the target of these fibers, and the cerebral cortex isn’t a site of autonomic synapse for these pathways. A note: adrenal medulla can receive direct preganglionic input from these fibers and acts as a modified sympathetic ganglion, but the typical synapse relevant to abdominal viscera is in the prevertebral ganglia.

5. Lesion of Broca's area results in what type of aphasia?

A. Wernicke's aphasia

B. Global aphasia

C. Expressive aphasia with non-fluent speech, impaired repetition, but preserved comprehension

D. Anomic aphasia

Damage to Broca's area disrupts motor speech planning, producing expressive (non-fluent) aphasia. Speech becomes halting and telegraphic with simplified grammar, while understanding is relatively preserved, especially for simple sentences. Repetition tends to be impaired because articulatory planning is compromised and the circuit needed to repeat spoken language is disrupted. This pattern—the non-fluent, effortful speech with preserved comprehension and impaired repetition—is the best fit for Broca's aphasia. By contrast, Wernicke's aphasia features fluent but meaning-less speech with poor comprehension, global aphasia disrupts both production and understanding broadly, and anomic aphasia mainly shows word-finding problems with fluent speech and good comprehension.

6. Axons of the nucleus proprius cross the midline and form which tract?

A. Dorsal column-medial lemniscus.

B. Lateral spinothalamic tract.

C. Spinocerebellar tract.

D. Anterior corticospinal tract.

Pain and temperature signals rely on the spinothalamic pathway. Neurons in the nucleus proprius act as second-order neurons for these modalities, and their axons cross to the opposite side right at the level they enter the cord via the anterior white commissure. After crossing, they ascend in the contralateral lateral spinothalamic tract to the thalamus and then to the cortex. This is why the lateral spinothalamic tract is the correct choice. The dorsal column-medial lemniscus pathway carries discriminative touch and proprioception and ascends on the same side before crossing in the medulla to form the medial lemniscus. The spinocerebellar tract handles unconscious proprioception with different crossing patterns, and the anterior corticospinal tract is a motor pathway that is not the ascending pain pathway from the nucleus proprius.

7. What is a homunculus?

A. The representation of the cortical areas dedicated to processing information from a particular part of the body.

B. The precentral gyrus.

C. The limbic system.

D. The visual cortex.

A homunculus is a map of the body's parts on the cortex, showing how much brain area is devoted to processing or controlling each part. It reflects somatotopic organization, with larger areas for parts requiring fine control or heightened sensitivity (like the hands, lips, and tongue). This concept applies to both the motor and sensory cortices, even though it's often illustrated as a distorted "little person" to emphasize these differences. So the idea described—representing cortical areas dedicated to a particular body part—is what the homunculus refers to. The precentral gyrus is a location where the motor homunculus can be drawn, but the term itself is about the map, not a single brain region. The limbic system and the visual cortex are distinct networks, not the general body-part map represented by the homunculus.

8. The dorsal columns consist of which fasciculi?

A. Gracilis and Cuneatus

B. Corticospinal and Rubrospinal

C. Spinothalamic and Spinocerebellar

D. Medial Lemniscus and Reticular Formation

The dorsal columns carry fine touch, vibration, and conscious proprioception, and they are organized into two distinct fasciculi: the fasciculus gracilis and the fasciculus cuneatus. The fasciculus gracilis contains signals from the lower body (legs and trunk below the mid-thoracic level), while the fasciculus cuneatus contains signals from the upper body (arms and trunk above that level). These pathways ascend ipsilaterally to the medulla, synapse in the gracile and cuneate nuclei, then the second-order neurons cross over and form the medial lemniscus to reach the thalamus and sensory cortex. Other listed tracts belong to motor pathways or other sensory systems, not the dorsal column fasciculi.

9. Which fibers comprise the central pain pathway axons?

A. A-delta and C fibers.

B. A-beta fibers only.

C. B fibers only.

D. C fibers only.

Pain signals to the brain are carried by two small nociceptive fiber types: A-delta and C fibers. A-delta fibers are lightly myelinated and transmit fast, sharp, well-localized pain, while C fibers are unmyelinated and carry slow, dull, diffuse pain. Their central axons enter the spinal cord, synapse in the dorsal horn, cross to the opposite side, and then ascend in the spinothalamic pathway to the thalamus and onward to the cortex for perception. Other fiber types like A-beta carry touch information and B fibers are autonomic; they are not the primary components of the central pain pathway. Hence, the central pain pathway axons are A-delta and C fibers.

10. Pre- and postganglionic terminals release neuropeptides that function directly onto the target tissue or have a modulatory role.

A. Acetylcholine as the sole transmitter

B. Norepinephrine as the primary transmitter

C. Neuropeptides that function directly onto the target tissue or have a modulatory role

D. Gamma-aminobutyric acid as an inhibitory transmitter

The question hinges on co-transmission in autonomic neurons. Pre- and postganglionic terminals don't rely solely on a single fast transmitter; they can release neuropeptides that act directly on the target tissue or modulate the effect of the classical transmitter. These neuropeptides are stored in dense-core vesicles and are released with higher-frequency activity, producing slower, longer-lasting responses via metabotropic receptors. Examples include neuropeptides that accompany norepinephrine to enhance or prolong vasoconstriction, or peptides that accompany acetylcholine to shape glandular or smooth muscle responses. This combination of direct tissue effects and modulatory roles is why the statement about neuropeptides functioning directly on target tissue or modulating transmission best captures what happens at these terminals. The other options describe only a single classic transmitter or a transmitter not typical of autonomic peripheral neurons, and thus don't reflect the co-transmission reality.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

https://nyccneuro1.examzify.com

We wish you the very best on your exam journey. You've got this!