College of Massage Therapists of British Columbia (CMTBC) Practice Exam (Sample)

Study Guide

Everything you need from our exam experts!

Questions

1. **Which function is not associated with the function of the larynx?**
   - **A. Sound production**
   - **B. Air passage**
   - **C. Food transportation**
   - **D. Protection of the trachea**

2. **In the context of postural assessment, which muscle weakness is often associated with increased lumbar lordosis?**
   - **A. Rectus abdominis**
   - **B. Soleus**
   - **C. Gluteus medius**
   - **D. Erector spinae**

3. **What role does progesterone play during pregnancy?**
   - **A. Stimulates milk production**
   - **B. Regulates blood pressure**
   - **C. Thickens the lining of the uterus and maintains it during pregnancy**
   - **D. Promotes fetal growth**

4. **Which muscle is innervated by the musculocutaneous nerve?**
   - **A. Biceps brachii**
   - **B. Deltoid**
   - **C. Triceps brachii**
   - **D. Flexor carpi ulnaris**

5. **Where do the krebs cycle and electron transport chain occur?**
   - **A. SER**
   - **B. RER**
   - **C. Mitochondria**
   - **D. Golgi apparatus**

6. Does the auricularis attach to the modiolus?

- **A. Yes**
- **B. No**
- **C. Only in animals**
- **D. It varies based on ear shape**

7. With a right thoracolumbar C-curve present, how will the patient's shoulder appear?

- **A. Left shoulder will be higher**
- **B. Right shoulder will be lower**
- **C. Both shoulders will appear even**
- **D. Right shoulder will be higher**

8. What is the term for the process when liquid converts to vapor?

- **A. Condensation**
- **B. Evaporation**
- **C. Infiltration**
- **D. Filtration**

9. What hand deformity is characterized by the inability to oppose or flex the thumb?

- **A. Ape Hand Deformity**
- **B. Claw Fingers**
- **C. Bishop's Hand**
- **D. Trigger Finger**

10. What is the motor innervation of the radial nerve?

- **A. Triceps brachii**
- **B. Flexor carpi ulnaris**
- **C. Serratus anterior**
- **D. Biceps brachii**

Answers

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

Explanations

1. Which function is not associated with the function of the larynx?

A. Sound production

B. Air passage

C. Food transportation

D. Protection of the trachea

The larynx plays several key roles in the respiratory and phonatory systems. One of its primary functions is sound production, achieved through the vibration of the vocal cords. It is also crucial for protecting the airway during swallowing, as it helps prevent food and liquids from entering the trachea. Additionally, the larynx serves as a passageway for air to enter the trachea and reach the lungs. However, food transportation is not a function of the larynx. The esophagus is the structure responsible for transporting food from the mouth to the stomach. Therefore, distinguishing the larynx's functions from those of the esophagus clarifies why food transportation is not associated with the larynx.

2. In the context of postural assessment, which muscle weakness is often associated with increased lumbar lordosis?

A. Rectus abdominis

B. Soleus

C. Gluteus medius

D. Erector spinae

In postural assessment, increased lumbar lordosis is often linked to an imbalance in the muscles that control the pelvis and lumbar spine. Specifically, weakness in the rectus abdominis can contribute significantly to this condition. The rectus abdominis plays a crucial role in stabilizing the pelvis and lumbar spine, as it helps to control anterior pelvic tilt. When there is weakness in this muscle, it may not adequately counterbalance the pull of the hip flexors and back extensors, resulting in an exaggerated curve of the lumbar spine (increased lordosis). Maintaining a strong rectus abdominis is essential for a neutral spine position. When this muscle is weak, it can lead to greater anterior tilt of the pelvis and increased arching of the lower back, hence promoting excessive lumbar lordosis. Therefore, recognizing the role of the rectus abdominis in this context is critical for understanding postural deviations and developing treatment plans to correct these imbalances.

3. What role does progesterone play during pregnancy?

A. Stimulates milk production

B. Regulates blood pressure

C. Thickens the lining of the uterus and maintains it during pregnancy

D. Promotes fetal growth

Progesterone plays a crucial role during pregnancy primarily by thickening the lining of the uterus and maintaining it, which is essential for creating a suitable environment for the developing embryo. After conception, progesterone levels rise and help prepare the endometrium, making it more receptive to the implantation of the fertilized egg. This hormone also prevents contractions of the uterine muscles, which helps to maintain pregnancy and supports the growth and development of the fetus. While other hormones and processes are involved in fetal growth and milk production, progesterone's specific function in establishing and maintaining the uterine lining is vital to support early pregnancy. By ensuring that the uterine environment is stable and nourishing, progesterone is integral to the successful continuation of the pregnancy.

4. Which muscle is innervated by the musculocutaneous nerve?

A. Biceps brachii

B. Deltoid

C. Triceps brachii

D. Flexor carpi ulnaris

The biceps brachii is innervated by the musculocutaneous nerve, which arises from the brachial plexus. This nerve specifically innervates muscles in the anterior compartment of the arm. The biceps brachii is primarily responsible for flexion of the elbow and supination of the forearm. Its dual role in both elbow flexion and forearm supination is critical in various functional movements, such as lifting and pulling. Other choices include muscles that are innervated by different nerves. The deltoid is innervated primarily by the axillary nerve, which is responsible for shoulder abduction. The triceps brachii, involved in extending the elbow, is innervated by the radial nerve. Lastly, the flexor carpi ulnaris, which aids in wrist flexion and ulnar deviation, is innervated by the ulnar nerve. Each of these muscles has a specific innervation associated with its function and location in the arm, highlighting the importance of understanding neural connections in anatomy and muscle function.

5. Where do the krebs cycle and electron transport chain occur?

A. SER

B. RER

C. Mitochondria

D. Golgi apparatus

The Krebs cycle, also known as the citric acid cycle or tricarboxylic acid cycle, takes place in the mitochondria of eukaryotic cells. This is where acetyl-CoA enters and undergoes a series of enzymatic reactions that lead to the production of energy-rich molecules such as ATP, NADH, and FADH2, which are crucial for cellular metabolism. The electron transport chain, which is responsible for the majority of ATP production in aerobic respiration, also occurs within the mitochondria. Specifically, it is located on the inner mitochondrial membrane. Here, the high-energy electrons carried by NADH and FADH2 are transferred through a series of protein complexes, ultimately leading to the phosphorylation of ADP to form ATP and the reduction of oxygen to water. The other cellular structures mentioned do not perform these functions. The smooth endoplasmic reticulum (SER) is primarily involved in lipid synthesis and detoxification, while the rough endoplasmic reticulum (RER) is involved in protein synthesis and processing due to the presence of ribosomes. The Golgi apparatus is responsible for modifying, sorting, and packaging proteins and lipids for secretion or delivery to other organelles. Therefore, only the mitochondria provide

6. Does the auricularis attach to the modiolus?

A. Yes

B. No

C. Only in animals

D. It varies based on ear shape

The auricularis muscles, which are associated with the movement of the ear, do not attach to the modiolus. The modiolus is a structure that serves as a central core for the outer ear, particularly in relation to the ear cartilage and its associated musculature. The auricularis muscles primarily attach to the cartilage of the outer ear, allowing for minor movements but do not establish a direct connection with the modiolus. Consequently, the assertion that the auricularis attaches to the modiolus is incorrect. Understanding the structure of the ear and the specific muscles involved is essential for students in the field of massage therapy and anatomy, as it provides insights into the functional anatomy and the distinct role of these muscles in ear movement.

7. With a right thoracolumbar C-curve present, how will the patient's shoulder appear?

A. Left shoulder will be higher

B. Right shoulder will be lower

C. Both shoulders will appear even

D. Right shoulder will be higher

In the context of a right thoracolumbar C-curve, it is important to understand how spinal curvature can influence shoulder alignment. A thoracolumbar C-curve typically indicates a lateral deviation of the spine towards the right side. This curvature results in a corresponding change in the position of the shoulders. When a patient has a right thoracolumbar C-curve, the spine's shift can cause the right shoulder to appear elevated. This occurs because the right side of the thoracic region is effectively pushed backwards or raised relative to the left side, leading to an asymmetrical shoulder height. As a result, the right shoulder is higher compared to the left shoulder. This phenomenon is essential to recognize in the assessment of postural alignment, as it indicates that there are compensatory changes occurring in the body related to the spinal curvature. Proper identification of these changes provides valuable insights for treatment planning and intervention strategies in massage therapy and other forms of rehabilitation.

8. What is the term for the process when liquid converts to vapor?

A. Condensation

B. Evaporation

C. Infiltration

D. Filtration

The term for the process when liquid converts to vapor is evaporation. This process occurs when molecules in the liquid gain enough energy, typically from heat, to overcome intermolecular forces and transition into the gas phase. Evaporation can happen at any temperature, as long as some molecules at the liquid's surface have enough kinetic energy to escape into the air. In contrast, condensation refers to the process where gas transforms back into a liquid, often when the vapor cools down. Infiltration typically refers to the movement of water into the soil or groundwater, while filtration is a method that separates solids from liquids or gases using a porous material. These definitions highlight why evaporation is distinct as the process of liquid turning into vapor, making it the correct answer to the question.

9. What hand deformity is characterized by the inability to oppose or flex the thumb?

A. Ape Hand Deformity

B. Claw Fingers

C. Bishop's Hand

D. Trigger Finger

The condition known as Ape Hand Deformity is characterized by the inability to flex or oppose the thumb, leading to a flat appearance of the hand. This deformity often occurs due to median nerve injury, which affects the muscles responsible for thumb opposition, specifically the opponens pollicis muscle. As a result, the thumb tends to align with the fingers rather than being able to move away from them, which is essential for grasping and pinching objects. In contrast, Claw Fingers involve hyperextension of the metacarpophalangeal joints and flexion of the interphalangeal joints, primarily affecting the ulnar nerve but preserving thumb function. Bishop's Hand, or ulnar nerve palsy, has similar implications where the ring and little fingers are affected but again does not prevent thumb opposition. Trigger Finger is a condition resulting from inflammation of the tendon sheaths, leading to difficulty extending or flexing a finger but does not specifically affect thumb opposition. Thus, Ape Hand Deformity distinctly illustrates the inability to flex or oppose the thumb, marking its unique recognition among other hand deformities.

10. What is the motor innervation of the radial nerve?

A. Triceps brachii

B. Flexor carpi ulnaris

C. Serratus anterior

D. Biceps brachii

The motor innervation of the radial nerve is primarily responsible for the extension of the elbow, and the triceps brachii is a key muscle involved in this action. The radial nerve arises from the posterior cord of the brachial plexus and supplies muscles located primarily in the posterior compartment of the arm and forearm. The triceps brachii, which originates from various points on the scapula and humerus, is innervated by the radial nerve and functions to extend the forearm at the elbow joint. This is a classic example of how the radial nerve's motor innervation facilitates movement involving the extension of the arm. In contrast, the other muscles listed have different innervations: the flexor carpi ulnaris is primarily innervated by the ulnar nerve, the serratus anterior is innervated by the long thoracic nerve, and the biceps brachii is innervated by the musculocutaneous nerve. This anatomical understanding reinforces the role of the radial nerve in motor function, particularly in extension, thereby confirming why the triceps brachii is the correct answer regarding the motor innervation of the radial nerve.