Enriched Air Nitrox (SC-EAN) Practice Test (Sample)

Study Guide

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Questions

1. Which factors might require a change in the planned Nitrox mix?

A. Experience levels and dive equipment ratings

B. Environmental conditions and diver health

C. Dive time and environmental conditions

D. Water temperature and dive buddy proximity

2. What can occur if silicone lubricants exposed to high concentrations of oxygen are used in scuba equipment?

A. Damage to the second stage only

B. Nothing

C. Fire and Explosion

D. Bad taste

3. When using Nitrox, what is an essential first step before a dive?

A. Identifying dive buddies

B. Checking weather conditions

C. Analyzing the tank contents

D. Setting dive time limits

4. Which of the following practices enhances safety when diving with EANx?

A. Rapid ascents to the surface

B. Always diving alone

C. Performing thorough pre-dive checks

D. Using only one air tank

5. Name a physiological effect of using EANx at depth.

A. Decreased nitrogen absorption

B. Reduced breathing rates

C. Enhanced oxygen uptake leading to increased potential for hyperoxia

D. Increased carbon dioxide buildup

6. What are the recommended limiting ppO2 values for recreational nitrox dives?

A. 0.21/0.16

B. 0.21/0.79

C. 1.3/1.6

D. 1.4/1.6

7. Why is it important to analyze the oxygen percentage in a nitrox tank before diving?

A. To determine the weight of the tank

B. To ensure safe dive parameters and avoid oxygen toxicity

C. To check for nitrogen quality

D. To calculate ascent rates

8. What is one critical piece of equipment necessary for diving with EANx?

A. A tank labeled with the specific gas mix

B. A standard air tank without modifications

C. A personal oxygen monitor

D. A compass for navigation

9. Which gas is primarily responsible for increased narcosis effects during deeper dives?

A. Nitrogen

B. Oxygen

C. Helium

D. Carbon Dioxide

10. After what depth does nitrogen absorption become particularly dangerous when using Nitrox?

A. 20 meters (66 feet)

B. 30 meters (100 feet)

C. 40 meters (130 feet)

D. 50 meters (164 feet)

Answers

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

Explanations

1. Which factors might require a change in the planned Nitrox mix?

A. Experience levels and dive equipment ratings

B. Environmental conditions and diver health

C. Dive time and environmental conditions

D. Water temperature and dive buddy proximity

The correct answer is influenced by how dive time and environmental conditions can impact the planned Nitrox mix. Adjusting the Nitrox mix based on dive time is crucial because longer dive times can lead to increased exposure to nitrogen, meaning that a higher oxygen content in the gas can help minimize nitrogen absorption, while also considering the potential for oxygen toxicity. Environmental conditions, such as depth, currents, or water clarity, can also necessitate changes in the gas mix. For example, diving in deeper water or strong currents may require a mix that allows for safer ascent profiles and reduces decompression obligations. Therefore, it becomes essential to modify the planned Nitrox mix when dive time and external conditions change, ensuring safety and compliance with the diver's training and experience level. The other options do contain elements that can affect diving, such as diver health and equipment ratings, but they do not directly relate to the required adjustments in Nitrox mix calculations as significantly as dive time and environmental conditions do.

2. What can occur if silicone lubricants exposed to high concentrations of oxygen are used in scuba equipment?

A. Damage to the second stage only

B. Nothing

C. Fire and Explosion

D. Bad taste

Using silicone lubricants in scuba equipment that is exposed to high concentrations of oxygen can result in fire and explosion. This is primarily due to the fact that silicone can become unstable when exposed to certain conditions, particularly elevated levels of oxygen, which can significantly increase the risk of combustion. In environments where enriched air nitrox, which has a higher oxygen content than regular air, is used, any lubricant that is not specifically rated for high-oxygen use can ignite. This is particularly dangerous in underwater environments where ignition sources may be limited, yet the consequences of a fire or explosion can be catastrophic, potentially leading to serious injury or death. The other choices do not accurately reflect the risks associated with using inappropriate lubricants in high-oxygen scenarios. While damage to the equipment or a bad taste might occur from improper materials, the most critical and dangerous outcome is the potential for a fire or explosion. Therefore, it is essential for divers and equipment manufacturers to use lubricants that are specifically designed and rated for high-oxygen applications to ensure safety.

3. When using Nitrox, what is an essential first step before a dive?

A. Identifying dive buddies

B. Checking weather conditions

C. Analyzing the tank contents

D. Setting dive time limits

Analyzing the tank contents is critical before a dive with Nitrox because it ensures that the diver is aware of the exact mix of gases they will be breathing underwater. Nitrox typically has a higher concentration of oxygen than regular air, and improper gas mixtures can lead to oxygen toxicity or other diving-related risks. By analyzing the tank, divers confirm the oxygen percentage and the corresponding maximum operating depth for that specific mixture, allowing for safe dive planning and execution. This step is fundamental in preventing potential dangers associated with incorrect gas mixes, establishing a safe diving environment, and ensuring adherence to the guidelines for the specific Nitrox blend being used.

4. Which of the following practices enhances safety when diving with EANx?

A. Rapid ascents to the surface

B. Always diving alone

C. Performing thorough pre-dive checks

D. Using only one air tank

Performing thorough pre-dive checks is crucial for enhancing safety when diving with Enriched Air Nitrox (EANx). This practice involves systematically reviewing equipment, verifying that gas mixtures are correct, ensuring that all safety gear is operational, and confirming dive plans. By conducting these checks, divers can identify potential issues before they become serious problems underwater. Pre-dive checks also help to ensure that divers are familiar with their equipment and understand the specific characteristics of diving with EANx, such as its different decompression requirements and how to monitor oxygen exposure. A thorough pre-dive check can prevent emergencies, increase confidence, and improve overall dive safety. It equips divers with the knowledge and assurance needed to safely enjoy their diving experience.

5. Name a physiological effect of using EANx at depth.

A. Decreased nitrogen absorption

B. Reduced breathing rates

C. Enhanced oxygen uptake leading to increased potential for hyperoxia

D. Increased carbon dioxide buildup

Using Enriched Air Nitrox (EANx), which contains a higher percentage of oxygen than regular air, can lead to enhanced oxygen uptake at depth. This physiological effect is significant because deeper dives increase the partial pressure of gases, including oxygen, which can lead to greater oxygen availability in the lungs and thus more efficient oxygen uptake into the bloodstream. However, this increased oxygen exposure at depths also poses a risk of hyperoxia, a condition that results from having too much oxygen in the body, which can be detrimental to divers. The risk of hyperoxia rises as the diver descends deeper and the partial pressure of oxygen increases, potentially leading to symptoms ranging from visual disturbances to seizures. While decreased nitrogen absorption is a benefit of using EANx compared to regular air, the direct physiological effect at depth pertains more to oxygen and the risk of hyperoxia. Reduced breathing rates and increased carbon dioxide buildup are also physiological effects, but they are not directly linked to the specific impact of using EANx at depth in the same way that increased oxygen uptake is. Therefore, the correct choice focuses on the critical relationship between oxygen exposure and depth in EANx diving.

6. What are the recommended limiting ppO2 values for recreational nitrox dives?

A. 0.21/0.16

B. 0.21/0.79

C. 1.3/1.6

D. 1.4/1.6

The recommended limiting partial pressures of oxygen (ppO2) values for recreational nitrox dives are set to ensure diver safety and minimize the risk of oxygen toxicity. The limits generally accepted in the diving community for recreational diving are a maximum ppO2 of 1.4 ATA during the entirety of the dive for avoiding oxygen toxicity, and a maximum of 1.6 ATA as a limit for short durations, such as in emergencies or safety stops. Selecting a limit of 1.4 ATA allows divers to enjoy extended bottom times while reducing the risk of experiencing oxygen toxicity effects, which become more pronounced as the ppO2 increases. At the same time, allowing a maximum of 1.6 ATA offers some flexibility for brief periods without significantly increasing risk. The other options either suggest values that do not align with established safety guidelines for recreational diving or include incorrect comparisons between partial pressure of oxygen and atmospheric conditions. Thus, the chosen answer aligns well with standard nitrox diving practices and safety protocols.

7. Why is it important to analyze the oxygen percentage in a nitrox tank before diving?

A. To determine the weight of the tank

B. To ensure safe dive parameters and avoid oxygen toxicity

C. To check for nitrogen quality

D. To calculate ascent rates

Analyzing the oxygen percentage in a nitrox tank before diving is crucial for ensuring safe dive parameters and avoiding oxygen toxicity. Different nitrox mixes have varying levels of oxygen content, which directly influences the maximum operating depth and the risk of oxygen toxicity during a dive. If the oxygen percentage is too high and a diver exceeds the recommended depth limits, they could experience harmful effects, such as seizures or other serious health issues associated with elevated partial pressures of oxygen. By accurately assessing the oxygen content, divers can plan their dive more effectively, adhere to no-decompression limits, and maintain safe ascent rates. This precaution enhances overall dive safety and contributes to a more enjoyable diving experience.

8. What is one critical piece of equipment necessary for diving with EANx?

A. A tank labeled with the specific gas mix

B. A standard air tank without modifications

C. A personal oxygen monitor

D. A compass for navigation

Diving with Enriched Air Nitrox (EANx) requires a tank that is labeled with the specific gas mix. This is crucial for several reasons. First and foremost, accurately labeling the tank ensures that divers are aware of the exact composition of the gas they will be breathing. Different gas mixtures in diving can significantly affect the maximum operating depth and the planning of dives, especially regarding narcosis and oxygen toxicity risks. Without a proper label, there would be a higher risk of mistakenly using the wrong gas mix, which could lead to dangerous situations, such as oxygen toxicity or decompression sickness during the dive. In addition to safety, this labeling practice adheres to best practices in diving operations and is often mandated by diving organizations to ensure that divers have accurate information about their breathing gas at all times. Other equipment, while important in certain contexts, does not directly address the critical need to identify the gas being used in EANx.

9. Which gas is primarily responsible for increased narcosis effects during deeper dives?

A. Nitrogen

B. Oxygen

C. Helium

D. Carbon Dioxide

Nitrogen is primarily responsible for increased narcosis effects during deeper dives due to its properties and behavior under pressure. As a diver descends, the partial pressure of nitrogen increases, which enhances its solubility in body tissues. This can lead to a narcotic effect similar to alcohol intoxication, which impairs judgment, coordination, and other cognitive functions. Narcosis, often referred to as "depth narcosis" or "the rapture of the deep," occurs when the brain becomes flooded with nitrogen due to the increasing pressure, making divers less aware of their surroundings and more prone to make poor decisions. The effects of nitrogen narcosis can be exacerbated at greater depths, as the nitrogen saturation increases significantly. While other gases like oxygen, helium, and carbon dioxide can affect a diver's experience, nitrogen is the predominant gas linked with narcosis at depth, particularly when diving with air or standard nitrox mixtures. Oxygen toxicity, which can occur at high partial pressures of oxygen, and high levels of carbon dioxide, which can lead to hypercapnia, do not directly correlate with depth-related narcotic effects like nitrogen does. Helium is often used in technical diving to reduce narcosis symptoms, as it has a

10. After what depth does nitrogen absorption become particularly dangerous when using Nitrox?

A. 20 meters (66 feet)

B. 30 meters (100 feet)

C. 40 meters (130 feet)

D. 50 meters (164 feet)

The correct answer relates to the significant changes in nitrogen absorption dynamics as depth increases. At approximately 30 meters (100 feet), the partial pressure of nitrogen increases substantially, leading to higher nitrogen absorption by the body. This results in an elevated risk of nitrogen narcosis, which can impair judgment, coordination, and overall cognitive function. While nitrogen can begin to have effects at shallower depths, particularly around 20 meters (66 feet), the risks become markedly more pronounced around 30 meters due to the higher pressures encountered. As divers approach this depth, it is crucial to recognize the potential for increased narcosis, necessitating careful planning and monitoring when utilizing Nitrox blends that are designed to mitigate some issues associated with nitrogen.