MK-20 / KM-37 Portable Surface Supplied Diving Systems Practice Test (Sample)

Study Guide

BY EXAMZIFY

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Questions

1. Name one psychological effect divers may face during deep dives.

A. Increased euphoria or excitement

B. Anxiety or claustrophobia

C. Disconnection from reality

D. Overconfidence in diving abilities

2. What are the primary components of the MK-20 system?

A. The diver's suit, buoyancy control device, air tank, and regulator

B. The air supply, umbilical, diver's helmet, and communication system

C. The dive computer, weight belt, diving mask, and fins

D. The underwater camera, diving light, wetsuit, and oxygen meter

3. What is included in the composition of an umbilical?

A. A minimum 3/8 I.D. breathing gas hose

B. A 1 1/4 inch I.D. pneumofathometer hose

C. A comm cable and a str cable

D. All of the above

4. In FADS3, what is the main purpose of the isolation valves on the top ports of each flask?

A. To release trapped air

B. To control individual flask operation

C. To prevent overpressure

D. To regulate air flow

5. What happens to the thermal fuse at elevated ambient temperatures?

A. It expands and seals

B. It opens and relieves pressure

C. It melts and causes a leak

D. It becomes inactive

6. What is the maximum depth the MK20 Mod 1 can support in SCUBA mode?

A. 180 FSW

B. 190 FSW

C. 200 FSW

D. 210 FSW

7. What critical safety aspect does the mini test kit assess besides check valve seal?

A. Water tightness

B. Equipment buoyancy

C. Emergence protocol

D. Anchor security

8. How can underwater visibility be improved during a dive?

A. Utilizing flashlights and avoiding stirring up sediment

B. By swimming faster

C. By wearing polarized goggles

D. By ascending to shallower depths

9. How should the diver respond to experiencing a rapid pressure change?

A. Ascend immediately

B. Equalize pressure in the ears and ascend slowly

C. Hold their breath

D. Begin using their breathing apparatus

10. What should be verified when using a multi-meter to test an umbilical?

A. Pressure rating

B. Continuity of each wire

C. Diameter of hoses

D. Material composition

Answers

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

Explanations

1. Name one psychological effect divers may face during deep dives.

A. Increased euphoria or excitement

B. Anxiety or claustrophobia

C. Disconnection from reality

D. Overconfidence in diving abilities

During deep dives, divers may experience anxiety or claustrophobia, which can arise due to various factors in the underwater environment. The confined spaces typical of diving, combined with the pressure and isolation of being underwater, can amplify feelings of unease. This can be particularly true for divers who are not accustomed to deep diving or those who may already have predispositions to anxiety in enclosed spaces. The psychological effects experienced by divers can significantly impact their performance and decision-making underwater. Recognizing these emotions and managing them is crucial for safety and efficiency during dives. This phenomenon highlights the importance of psychological preparedness and support as part of a diver's training regimen. Understanding that anxiety can manifest in different forms can help divers develop strategies to cope with these feelings, ensuring a safer diving experience.

2. What are the primary components of the MK-20 system?

A. The diver's suit, buoyancy control device, air tank, and regulator

B. The air supply, umbilical, diver's helmet, and communication system

C. The dive computer, weight belt, diving mask, and fins

D. The underwater camera, diving light, wetsuit, and oxygen meter

The primary components of the MK-20 system include the air supply, umbilical, diver's helmet, and communication system. Each of these components plays a crucial role in the functionality and safety of the diving operation. The air supply refers to the source of breathable air provided to the diver while submerged, which is vital for sustaining life underwater. The umbilical is the crucial connection that supplies air and may also carry communication lines to and from the diver, ensuring that they have a continuous supply without being restricted by the length of the dive. The diver's helmet is designed to protect the diver and provide clear visibility while maintaining an airtight environment that delivers the air supply. Lastly, the communication system allows for constant contact with the surface team, which is essential for safety and operational coordination during dives. In contrast, other options include components that are not central to the MK-20 diving system. Some of those elements, like fins or a weight belt, are related to diving practices but do not form part of the MK-20's structure.

3. What is included in the composition of an umbilical?

A. A minimum 3/8 I.D. breathing gas hose

B. A 1 1/4 inch I.D. pneumofathometer hose

C. A comm cable and a str cable

D. All of the above

The composition of an umbilical in diving systems is a critical aspect as it ensures the diver is provided with all necessary support during underwater operations. An umbilical typically includes various components that each serve a specific purpose essential for the safety and efficiency of diving. One component is the breathing gas hose, which is crucial for delivering breathable air to the diver from the surface. The specification of a minimum 3/8 inch inner diameter (I.D.) for this hose is important as it allows for sufficient airflow while maintaining manageable flexibility for the diver. Additionally, a pneumofathometer hose is included, which serves to transmit pressure readings from the underwater environment back to the surface. A 1 1/4 inch I.D. for this hose ensures that pressure changes can be transmitted effectively without any significant loss of signal integrity. Moreover, an umbilical must also include communication (comm) cables and strength (str) cables. The communication cables enable voice communication between the diver and surface support teams, which is vital for coordination and safety. The strength cables are included as a safety feature, providing additional support to the diver and helping to manage the umbilical's weight and flexibility underwater. By incorporating all these components, the umbilical ensures that

4. In FADS3, what is the main purpose of the isolation valves on the top ports of each flask?

A. To release trapped air

B. To control individual flask operation

C. To prevent overpressure

D. To regulate air flow

The primary function of the isolation valves on the top ports of each flask in the FADS3 system is to control individual flask operation. These valves allow a diver or operator to isolate one flask from the system while allowing others to remain functional. This feature is critical when maintenance or repair is needed on a specific flask without affecting the overall functionality of the other flasks in the system. By enabling the management of gas flows and functionality on a flask-by-flask basis, the isolation valves enhance operational flexibility and safety. For example, if one flask encounters an issue, the isolation valve can be closed to prevent any potential adverse effects on the diver's supply, ensuring that other flasks continue to function normally. This design is essential for maintaining the integrity of diving operations, particularly in environments where divers depend on reliable gas supply systems. Other choices may refer to aspects of air management or safety, but they do not directly address the specific role of these isolation valves in managing individual flask operation within the system.

5. What happens to the thermal fuse at elevated ambient temperatures?

A. It expands and seals

B. It opens and relieves pressure

C. It melts and causes a leak

D. It becomes inactive

In the context of thermal fuses, their primary purpose is to enhance safety by preventing equipment failure due to overheating. When temperatures exceed a certain threshold, the thermal fuse is designed to react by opening its circuit. This action effectively relieves pressure that may build up due to heat, protecting the surrounding elements from potential damage or hazard. Elevated ambient temperatures lead the thermal fuse to activate as a safety measure. By opening, the fuse interrupts the flow of electricity or the operation of a system, thereby preventing excessive heat buildup that could result in dangerous conditions. The other choices do not accurately describe the function of a thermal fuse. For example, expansion and sealing would imply an increase in pressure, whereas melting would suggest complete failure without managing the overheating condition. Inactivation of a thermal fuse would mean it fails to perform its duty when needed, which contradicts its safety design. Therefore, recognizing that opening and relieving pressure is the mechanism by which a thermal fuse protects systems is essential for understanding its role in safety protocols.

6. What is the maximum depth the MK20 Mod 1 can support in SCUBA mode?

A. 180 FSW

B. 190 FSW

C. 200 FSW

D. 210 FSW

The maximum depth that the MK20 Mod 1 can support in SCUBA mode is indeed 190 feet of seawater (FSW). This specification is critical for divers who need to understand the operational limits of their equipment to ensure safety and effectiveness underwater. The MK20 Mod 1 is designed to operate within these depth constraints due to the pressure effects on SCUBA gear, where the increased pressure at greater depths can impact the diver's ability to breathe properly and manage buoyancy. Exceeding these limits could potentially lead to a range of diving-related complications, including equipment failure or physiological risks such as nitrogen narcosis or oxygen toxicity, depending on the gas mixtures used. Understanding the maximum operational depth is essential for planning dives, ensuring divers remain within the safety parameters of the equipment, and effectively managing the risks associated with underwater diving. The specified maximum depth reflects both the engineering capabilities of the equipment and the physiological limits of divers operating in SCUBA mode.

7. What critical safety aspect does the mini test kit assess besides check valve seal?

A. Water tightness

B. Equipment buoyancy

C. Emergence protocol

D. Anchor security

The mini test kit is designed to verify several critical safety aspects of the diving system, one of which is water tightness. Ensuring that the equipment is watertight is essential to prevent water intrusion, which can lead to equipment failure or pose a serious risk to the diver's safety. A watertight system ensures that the air supply remains uncontaminated by water, allowing the diver to operate safely under the water. While other aspects are also important for overall safety, they do not directly relate to the initial assessment of the system's integrity regarding preventing water ingress. For example, equipment buoyancy is crucial for ensuring the diver can maintain a stable position in the water and for ease of movement, but it does not impact the immediate safety provided by a watertight design. Similarly, emergence protocols and anchor security are important for operational procedures and conducting safe dives, but they are not part of the critical assessments conducted during the initial testing phase of the diving equipment. Therefore, the focus on water tightness in the mini test kit highlights its fundamental role in ensuring diver safety by maintaining a secure air supply.

8. How can underwater visibility be improved during a dive?

A. Utilizing flashlights and avoiding stirring up sediment

B. By swimming faster

C. By wearing polarized goggles

D. By ascending to shallower depths

Utilizing flashlights and avoiding stirring up sediment is a practical approach to improving underwater visibility during a dive. Flashlights can enhance visibility by illuminating dark areas, making it easier to see surrounding objects, marine life, and potential hazards. Additionally, maintaining a careful swimming technique that minimizes sediment disturbance is crucial. Stirring up the bottom can lead to a cloud of silt that significantly hampers visibility, making it difficult for divers to see even short distances. By combining the use of artificial light and a mindfully cautious approach to movement, divers can significantly enhance their ability to see clearly underwater, leading to a safer and more enjoyable dive experience. The other options may not effectively contribute to improving visibility: swimming faster could actually create more turbulence, stirring up sediment; polarized goggles are useful for surface glare but may not significantly enhance visibility underwater; and ascending to shallower depths might not guarantee better visibility if the water conditions remain the same.

9. How should the diver respond to experiencing a rapid pressure change?

A. Ascend immediately

B. Equalize pressure in the ears and ascend slowly

C. Hold their breath

D. Begin using their breathing apparatus

When a diver experiences a rapid pressure change, the appropriate response is to equalize pressure in the ears and ascend slowly. This approach helps to prevent barotrauma, which can occur if the pressure in the middle ear is not equalized with the surrounding water pressure. During a rapid ascent, the pressure on the diver's body decreases quickly, potentially leading to discomfort or injury. Equalizing the pressure in the ears—often achieved by performing the Valsalva maneuver, where the diver pinches their nose and attempts to breathe out—helps to balance the internal and external pressures. Following this, ascending slowly allows the body to adjust to the changing pressure gradually, reducing the risk of decompression sickness and other injuries associated with rapid changes in pressure. Holding their breath can be dangerous, as it may lead to lung overexpansion injuries if the diver ascends without allowing air to escape from their lungs. Ascending immediately without equalization also poses significant risks, including ear damage. Using a breathing apparatus is not necessary in this scenario unless the situation requires it, and proper procedures should always be followed to ensure safety during diving activities.

10. What should be verified when using a multi-meter to test an umbilical?

A. Pressure rating

B. Continuity of each wire

C. Diameter of hoses

D. Material composition

When using a multi-meter to test an umbilical, verifying the continuity of each wire is crucial. Continuity testing involves checking each wire within the umbilical to ensure there are no breaks or faults in the electrical connections. This is essential for maintaining the integrity of the diving system, as any break in continuity can lead to malfunction of crucial systems such as communication, lighting, or other electronic devices that rely on power supplied through the umbilical. By confirming that each wire has good continuity, divers and technicians can ensure that the electrical supply is intact, which is vital for safety and operational efficiency while diving. If a wire is found to be discontinuous, it indicates a potential issue that needs immediate attention to prevent operational failures during dives.