MFRI Site Ops Practice Test (Sample)

Study Guide

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Questions

1. What command is used for less tension on the rope indicated by the rescuer to the belayer?

A. Slack

B. Stop

C. Hold

D. Release

2. How long should webbing be for lashing a patient into a stokes basket?

A. 20-30 ft

B. 30-40 ft

C. 40-50 ft

D. 50-60 ft

3. What does the 3 sigma method help to calculate?

A. Rope length

B. Minimum breaking strength (MBS)

C. Rope elasticity

D. Climbing speed

4. Where is the offset blade positioned when using a simple block and tackle for lowering?

A. At the base of the victim

B. Around and under the belayer's buttock

C. At the anchor point

D. On the belaying device

5. What should be done in case of a hazardous material incident?

A. Ignore the hazard

B. Contact hazmat teams only

C. Follow safety protocols and isolate the area

D. Only evacuate victims

6. According to NFPA standards, what should the pencil breaking strength of a life safety rope be for a single person load with a 15-1 safety factor?

A. 4500 lb

B. 6000 lb

C. 7500 lb

D. 9000 lb

7. What is a Prusik hitch used for?

A. Securing a load from falling

B. Descending rapidly

C. Ascending a rope and assisting in self-rescue situations

D. Attaching two ropes together

8. What is the minimum major axis breaking strength for personal/light-use carabiners and snap links with the gate closed?

A. 3000 lbf

B. 6000 lbf

C. 10000 lbf

D. 4000 lbf

9. What does abrasion refer to in climbing context?

A. The process of climbing techniques

B. The damaging wear on ropes caused by rubbing

C. A type of harness used for climbing

D. The measurement of climbing angles

10. Which system might be used when it is necessary to have an improvised seat harness?

A. Standard sit harness

B. Hasty hitch harness

C. Freestyle harness

D. Cowboy harness

Answers

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

Explanations

1. What command is used for less tension on the rope indicated by the rescuer to the belayer?

A. Slack

B. Stop

C. Hold

D. Release

The command used for less tension on the rope, indicated by the rescuer to the belayer, is "Slack." When a rescuer says "Slack," it communicates the need for the belayer to give some rope length, loosening the tension. This is often necessary in scenarios where the rescuer wants to create more comfort for the climber, adjust positioning, or allow for increased movement without the restriction of tight rope tension. This command is particularly important in climbing and rescue operations, as it helps maintain safety and ensures smooth maneuvers without causing undue stress on either the rescuer or the climber. Adjusting the tension in this way can prevent injuries and make the rescue process more efficient. In contrast, other commands such as "Stop," "Hold," and "Release" relate to maintaining or stopping tension rather than reducing it.

2. How long should webbing be for lashing a patient into a stokes basket?

A. 20-30 ft

B. 30-40 ft

C. 40-50 ft

D. 50-60 ft

The recommended length of webbing for lashing a patient into a Stokes basket is typically between 30 to 40 feet. This length provides sufficient material to secure the patient effectively while allowing for adequate flexibility and adjustment during the lashing process. It ensures that the webbing can wrap around the patient and the basket multiple times, creating a secure and stable environment for transport. Using webbing that is too short may compromise the safety and security of the patient, leading to risks of movement during transport. Conversely, excessively long webbing could introduce unnecessary complexity in securing the patient and might become tangled or cumbersome to manage. Consequently, the 30-40 feet range strikes a balance, offering plenty of material for proper lashing while maintaining ease of use.

3. What does the 3 sigma method help to calculate?

A. Rope length

B. Minimum breaking strength (MBS)

C. Rope elasticity

D. Climbing speed

The 3 sigma method is a statistical concept often used in quality control and risk management, particularly in contexts like engineering and safety assessments. When applied to determining Minimum Breaking Strength (MBS), it involves evaluating the expected strength of a material while accounting for variation in that strength. By using the 3 sigma rule, which encapsulates the idea that most data points will fall within three standard deviations from the mean in a normal distribution, one can identify the thresholds that ensure safety and reliability. In the context of ropes and climbing gear, calculating MBS using the 3 sigma method allows manufacturers and users to establish a conservative and reliable strength rating. This approach ensures that even if there are variations in material quality or manufacturing processes, the calculated MBS remains robust, providing a safety margin in critical applications where strength is paramount. The other options do not align with the objectives of the 3 sigma method. Rope length is a specific measurement, rope elasticity deals with material deformation properties, and climbing speed is related to performance and not strength assessment. Thus, focusing on MBS with the 3 sigma method supports not only safety but also enhances the performance reliability of climbing gear.

4. Where is the offset blade positioned when using a simple block and tackle for lowering?

A. At the base of the victim

B. Around and under the belayer's buttock

C. At the anchor point

D. On the belaying device

In a simple block and tackle system used for lowering, the offset blade is positioned around and under the belayer's buttock. This positioning is crucial because it allows the belayer to effectively manage the rope while maintaining control over the lowering process. By having the offset blade in this location, the belayer can leverage their body weight to ensure stability and control, reducing the risk of sudden drops or swings that could occur if the system were improperly managed. The location of the offset blade directly influences the dynamics of the lowering operation, helping to distribute forces effectively and ensuring a smooth descent for the person being lowered. Proper positioning of this component also plays a critical safety role, enabling the belayer to react quickly and appropriately as the load changes during the lowering process.

5. What should be done in case of a hazardous material incident?

A. Ignore the hazard

B. Contact hazmat teams only

C. Follow safety protocols and isolate the area

D. Only evacuate victims

In the event of a hazardous material incident, following safety protocols and isolating the area is crucial for protecting both personnel and the environment. This approach ensures that the situation is managed effectively and that emergency responders can contain the hazard without exposure to themselves or the public. By isolating the area, you minimize the risk of further contamination and potential harm. Proper protocols might include establishing an exclusion zone, notifying appropriate authorities, and ensuring that all personnel are evacuated from the danger zone. Following these guidelines also involves informing and coordinating with hazmat teams when they arrive on the scene, as they are specially trained to handle such incidents. This comprehensive response is vital for maintaining safety and mitigating the effects of hazardous materials.

6. According to NFPA standards, what should the pencil breaking strength of a life safety rope be for a single person load with a 15-1 safety factor?

A. 4500 lb

B. 6000 lb

C. 7500 lb

D. 9000 lb

To determine the pencil breaking strength of a life safety rope for a single person load with a 15-to-1 safety factor, we need to consider both the recommended load that a life safety rope is expected to support and the safety factor applied to that load. In the context of NFPA standards, a single person load is typically defined as 300 pounds, which represents the weight of an average individual along with any equipment or gear they may be carrying. To ensure safety, a safety factor of 15 is applied to account for various factors such as dynamic forces during usage, wear and tear on the rope over time, and other unforeseen stresses that may occur. When we calculate the required breaking strength based on a 15-to-1 safety factor, we multiply the single person load by the safety factor: 300 lb (single person load) x 15 (safety factor) = 4500 lb. However, this calculation corresponds to the minimum breaking strength that would meet the NFPA guidelines. The choice of 9000 lb as the required pencil breaking strength takes this standard further by providing an additional buffer beyond the basic safety factor, reflecting a more conservative approach. This reasoning illustrates that, while the minimum breaking strength threshold is 4500 lb

7. What is a Prusik hitch used for?

A. Securing a load from falling

B. Descending rapidly

C. Ascending a rope and assisting in self-rescue situations

D. Attaching two ropes together

A Prusik hitch is a versatile knot used primarily in climbing, canyoneering, caving, rope rescue, and other activities that require the use of ropes. Its primary function is to allow a climber to ascend a rope and assist with self-rescue scenarios. When tied correctly, the Prusik hitch can slide easily up and down the rope while under light tension, but it grips securely when weight is applied, making it an effective tool for climbing or for holding a person's weight in case of a fall. In self-rescue situations, a climber can use the Prusik hitch to create a foothold or handhold on the rope, helping them to ascend back to safety after a fall or when isolating a section of rope. This feature of being able to both ascend and create safety without needing additional equipment is what distinguishes the Prusik hitch in climbing safety practices. This practical application is what makes the Prusik hitch a valuable tool for climbers and rescuers, highlighting its fundamental role in rope-based safety and climbing systems.

8. What is the minimum major axis breaking strength for personal/light-use carabiners and snap links with the gate closed?

A. 3000 lbf

B. 6000 lbf

C. 10000 lbf

D. 4000 lbf

The minimum major axis breaking strength for personal/light-use carabiners and snap links with the gate closed is 6000 lbf. This standard is established to ensure that these climbing and safety equipment pieces can endure significant loads during use, providing essential safety for users who rely on them in various applications, such as climbing, rescue operations, or securing gear. The specification of 6000 lbf reflects the inherent need for carabiners and snap links to maintain a safe margin against failure in real-world scenarios, where unexpected dynamic forces can occur. It ensures that they can handle both static loads, such as when a climber is resting on the gear, and dynamic loads, which can result from falls or sudden movements. While other breaking strength requirements do exist for different uses and categories of climbing gear, the stipulation of 6000 lbf specifically applies to personal/light-use carabiners to provide adequate safety and assurance to users. The other values mentioned, such as 3000 lbf, 10000 lbf, and 4000 lbf, either do not meet the necessary safety margins or exceed typical ratings for this category, illustrating that the requirements are designed to cater to the intended use and user safety effectively.

9. What does abrasion refer to in climbing context?

A. The process of climbing techniques

B. The damaging wear on ropes caused by rubbing

C. A type of harness used for climbing

D. The measurement of climbing angles

In the context of climbing, abrasion specifically refers to the damaging wear that occurs on ropes and equipment due to friction and rubbing against surfaces, such as rock or other gear. This impact can weaken the rope's fibers and reduce its overall strength, which is critical for safety while climbing. Understanding abrasion is essential for climbers as it highlights the importance of proper rope management and choosing routes that minimize wear on equipment. Effective maintenance and awareness of gear condition are necessary to ensure safety during climbing activities. The other options do not accurately define abrasion in this context, as they relate to climbing techniques, equipment types, or measurements rather than the wear and tear that occurs due to friction.

10. Which system might be used when it is necessary to have an improvised seat harness?

A. Standard sit harness

B. Hasty hitch harness

C. Freestyle harness

D. Cowboy harness

The hasty hitch harness is specifically designed for situations where a quick and improvised seat harness is needed, particularly in emergency or rescue scenarios. This harness is versatile and can be constructed rapidly using available materials, making it highly effective when time is of the essence and traditional harnesses are not readily accessible. Its design allows for a secure fit while providing the necessary support. In contrast, the standard sit harness is more structured and is intended for climbing or safety applications, requiring time and setup that may not be feasible in urgent situations. The freestyle harness is typically associated with extreme sports, focusing less on quick assembly and more on functionality for specific activities. The cowboy harness, while useful in certain contexts, does not serve the same purpose of rapid construction for immediate use in precarious circumstances. Thus, the hasty hitch harness stands out as the most suitable choice for creating an improvised seat harness in urgency.