

17 ROPES, CHAINS, AND SLINGS

QUIZ 1 (20 POINTS TOTAL)

True/False (5 points)

1. Splices made in synthetic fiber rope can develop nearly the full strength of the rope.
 - a. true
 - b. false
2. If a natural fiber rope is overloaded, its inside fibers will break into short lengths in proportion to the degree of overload.
 - a. true
 - b. false
3. A kink in a wire rope can be removed without creating a weak spot.
 - a. true
 - b. false
4. Wire rope fittings are important for safety because they can develop up to 100% of the breaking strength of the rope.
 - a. true
 - b. false
5. Even if they are used with the recommended chain size, sling hooks, rings, and oblong links cannot offer a safety factor greater than that of alloy steel chain itself.
 - a. true
 - b. false

Multiple Choice (6 points)

6. Which of the following types of fiber rope offer the best uniform strength and service?
 - a. Manila
 - b. polyester
 - c. henequen
 - d. polypropylene
7. If a rope is being used under ordinary conditions, it should be inspected every _____.
 - a. week
 - b. 10 days
 - c. two weeks
 - d. 30 days
8. The arc of support in the groove of a sheave should measure _____.
 - a. 115 degrees
 - b. 135 degrees
 - c. 150 degrees
 - d. 175 degrees

9. The safety of a rope sling depends on the _____.
- a. type of hitch used
 - b. kind of rope used
 - c. method of fastening the rope to the fittings
 - d. all the above
10. Whenever the throat opening of a hook on a chain sling exceeds _____ of the normal opening, the hook should be replaced.
- a. 10%
 - b. 15%
 - c. 20%
 - d. 25%
11. Which of the following is true of synthetic web slings?
- a. They are generally not repaired.
 - b. They are proof tested to a minimum of 200% of their rated load capacity.
 - c. They are highly resistant to abrasion.
 - d. They can be used at temperatures up to 200 F.

Short Answer (7 points)

12. What can happen if fiber rope is dragged from one location to another?
13. The _____ of a wire rope determines the size, number, and arrangement of wires, the number of strands, the lay, and the type of core used.
14. What is the minimum strength recommended for hoisting rope?

15. What are OSHA's minimum inspection requirements for wire rope or cable?

16. What four points do riggers need to know to be ready for a job?

17. What four factors determine the safety of a chain sling assembly?

18. What information must be shown on a synthetic web sling?

Short Essay (2 points)

19. If at all possible, multiple layers of wire rope should not be wound on drums. Why? If rope must be layered, what is the best way to do it?

20. What are two tips for increasing the life of wire rope slings? What is one problem using load tables to assess the capacity of slings?

QUIZ 2 (20 POINTS TOTAL)

True/False (5 points)

1. The breaking strengths of sisal rope are generally lower than those of Manila.
 - a. true
 - b. false
2. The more wires per strand, the more abrasion and crush resistant a wire rope is.
 - a. true
 - b. false
3. Cutting a short section off the socket end of a wire rope changes the positions of critical wear points.
 - a. true
 - b. false
4. OSHA does not prohibit the use of reconditioned fiber rope slings.
 - a. true
 - b. false
5. Centering a load in the bowl of a hook prevents point loading on the hook.
 - a. true
 - b. false

Multiple Choice (6 points)

6. Which of the following is not characteristic of nylon rope?
 - a. Its strength is affected by drying oils, such as linseed oil.
 - b. It is well suited to shock loading.
 - c. It starts to burn at 300 F.
 - d. It is highly resistant to mildew and rot.
7. The best general-purpose rope, especially for critical uses, is made from _____.
 - a. polyethylene
 - b. polyester
 - c. nylon
 - d. polypropylene
8. There should be at least _____ dead turns on a smooth-faced drum when a wire rope is fully unwound during normal operation.
 - a. 1
 - b. 2
 - c. 3
 - d. 4

9. The single most important rigging precaution is to know _____.
- which lifting device to use
 - which rigging gear to use
 - the distance to be traveled
 - the weight of the load
10. Which of the following slings is best to use when flexibility, high strength, and resistance to rotation are essential?
- braided slings
 - cable-laid slings
 - fiber rope slings
 - strand-laid slings
11. Which of the following is true of alloy steel chains?
- They should not be used in situations where failure of the chain would result in serious property damage.
 - They are suitable for high-temperature operations.
 - They should never be used for slings.
 - Their tensile strength decreases in proportion to their hardness.

Short Answer (7 points)

12. What is a “finger test” and how does it work?
13. Why is wire rope used more often than fiber rope?
14. What are the advantages of preformed wire rope?

15. What causes the changes in rope length and/or diameter that signal a wire rope is near the end of its useful life?

16. Fatigue of wire rope resulting from bending stresses depends on the _____ of drums and sheaves: the _____, the more favorable a rope's service life will be.

17. In general, synthetic web slings are ideally suited for what kinds of loads? Why?

18. The safe use of a metal sling depends primarily on two factors. Name these factors.

Short Essay (2 points)

19. Working load figures do not apply when fiber rope is used regularly for dynamic loading. Why? Does dynamic loading affect some types of fiber rope more than others?

20. What are the three types of inspections that chain slings require?