



**UA STAR
MASTERY EXAM**

**Sprinkler Fitter
Study Guide**

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Table of Contents

Chapter

1. Overview	Page 3
2. Study Elements	Page 4
3. Sample Questions	Page 6

Overview

This study guide is an instructional aide for the sprinkler fitter prior to taking the UA Star Sprinkler Fitter Mastery Exam.

The UA Star Sprinkler Fitter Mastery Exam will be proctored by a third party, who will be supplied by the National ITC Corporation.

The sprinkler fitter will be permitted to bring three documents as reference material to the place of the exam:

1. NFPA 13 *Installation of Sprinkler Systems* 1999 Edition
2. NFPA 25 *Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems* 2002 Edition
3. NFPA 20 *Standard for the Installation of Stationary Pumps for Fire Protection* 1999 Edition

The aforementioned NFPA manuals should be reviewed. A good understanding of the use of these documents is a necessity while taking the exam. The exam taker should be capable of locating, within an NFPA manual, the needed code language with respect to specific questions dealing with the manuals listed above. The exam will cover items which **are not** in the aforementioned NFPA manuals. These items will be covered in Chapter 2, Study Elements.

The exam taker will be given 4 hours to take the exam. He will not be permitted to speak to other exam takers while the exam is in process, or seek assistance from others.

Study Elements

Listed below are the elements which will be on the UA Star Sprinkler Fitter Master Exam. The sprinkler fitter should have a good understanding of the following elements prior to taking the exam.

Elements:

Water Supply Systems

This element will cover the installation and service of underground piping. And will include alternative water supplies; installation and maintenance of fire pumps; fire department connections (FDC), and backflow preventers and water meters.

System Components

This element will cover the installation and maintenance of appropriate pipe; protection of such pipe; drainage; pipe joining methods; control valves, hangers, sprinklers, and alarms.

Spacing, Location and Positioning of Sprinklers

This element will cover the spacing of sprinklers in all system hazard types; obstruction rules, and location and positioning of sprinklers for various construction types.

Wet-Pipe Systems

This element will cover the installation and maintenance of grid, pipe schedule, antifreeze, standpipe, tri-water, network and multi-purpose systems.

Dry-Pipe Systems

This element will cover the installation and maintenance of dry valves and dry barrel sprinklers; proper drainage, and the pitch of piping on dry systems.

Preaction and Deluge Systems

This element will cover the installation and maintenance of preaction and deluge valves; proper drainage and pitch of piping on preaction system, and combined dry pipe and preaction systems.

Specialty Systems

This element will cover the installation and maintenance of foam, gas (CO₂), dry chemical, FM 200 and water mist systems. (The exam taker should acquire access to the respective NFPA manuals for the aforementioned systems so as to get an overview of each system type.)

Inspection

This element will cover testing and inspection of the elements listed; which include acceptance testing and maintenance inspection, and testing of various system types.

Sample Questions

Below you will find sample questions for each of the aforementioned elements.

Water Supply Systems

1. The top of the pipe in an underground installation shall be not less than what depth below the frost line for a locality?
 - a. 2 ft.
 - b. 1 ft.
 - c. 1½ ft.
 - d. ½ ft.

2. Which type of piping is no longer permitted to be used as underground supply piping?
 - a. Ductile Iron
 - b. Cast Iron
 - c. Plastic
 - d. Cement Asbestos

3. The sensing line on a fire pump requires that the distance between the check valves to be how far apart?
 - a. 3 ft.
 - b. 4 ft.
 - c. 5 ft.
 - d. 6 ft.

System Components

4. You can not thread which type of piping listed below?
 - a. Thin wall schedule 10
 - b. Schedule 40 steel pipe
 - c. Schedule 40 galvanized
 - d. Schedule 30 steel pipe

5. The tops of risers, in an installation requiring seismic protection, require what type of bracing?
 - a. Three-way bracing
 - b. No bracing is required
 - c. Four-way way bracing
 - d. Bracing every 10 ft.

6. Which type of valve has its yoke exposed when the valve is in the open position?
 - a. OS & Y valve
 - b. Butterfly valve
 - c. Relief valve
 - d. All of the above

Spacing, Location and Positioning of Sprinklers

7. The maximum area of coverage of any sprinkler shall not exceed which of the following?
 - a. 200 sq ft.
 - b. 300 sq ft.
 - c. 400 sq ft.
 - d. It depends on the type of hazard

8. A minimum of _____ between a sprinkler deflector and any storage shall be permitted for special sprinklers.
 - a. 12 in.
 - b. 18 in.
 - c. 24 in.
 - d. 36 in.

9. For ordinary hazard occupancies, the area of protection per sprinkler shall not exceed _____.
 - a. 90 sq. ft.
 - b. 130 sq. ft.
 - c. 200 sq. ft
 - d. 400 sq. ft.

Wet-Pipe Systems

10. Gridded sprinkler systems require what type of valve attached to the system?
 - a. OS & Y valve
 - b. Butterfly valve
 - c. Relief valve
 - d. All of the above

11. It is permitted to have what number of sprinklers on 1 ½ inch pipe on a pipe schedule systems?
 - a. 2 sprinklers
 - b. 3 sprinklers
 - c. 4 sprinklers
 - d. 5 sprinklers

12. The check valve on an antifreeze system shall have an orifice of what size drilled into the clapper?
 - a. 1/32 inch
 - b. 1/4 inch
 - c. 1/2 inch
 - d. 5/8 inch

Dry-Pipe System

13. The capacity of a dry system can not exceed which of the following?
 - a. 300 gallons
 - b. 450 gallons
 - c. 500 gallons
 - d. 750 gallons

14. Dry barrel sprinkler heads shall be installed into which type of fitting?
 - a. Tee
 - b. 90° ell
 - c. Weld-o-let
 - d. Cross

15. Branch lines in a dry system must be pitched so that they meet which of the following?
- a. ½ inch per 10 ft.
 - b. ½ inch per 15 ft.
 - c. ¼ inch per 10 ft.
 - d. ¼ inch per 15 ft.

Preaction and Deluge Systems

16. Which of the following is not a type of detection system for a preaction system?
- a. Smoke detector
 - b. Pilot line
 - c. On-off sprinklers
 - d. HAD
17. Which of the following is not a type of preaction system?
- a. Single interlock
 - b. Non interlock
 - c. Double interlock
 - d. Triple interlock
18. A combined dry pipe and preaction system is to be used in which type of installation?
- a. Warehouse
 - b. Shopping Mall
 - c. Piers and wharves
 - d. Residential

Specialty Systems

19. Which of the following is a type of foam used for fire protection?
- a. AFFF
 - b. FFFP
 - c. a and b
 - d. b and c

20. CO₂ gas will displace oxygen in the area of coverage and will become deadly in which amount of time?
- a. 20 seconds
 - b. 30 seconds
 - c. 60 seconds
 - d. 1 minute and 30 seconds
21. All piping in FM200 systems must be
- a. Seamless schedule 40 after the restrictors and schedule 80 before the restrictors.
 - b. Seamless schedule 80 after the restrictors and schedule 80 before the restrictors.
 - c. Seamless schedule 40 after the restrictors and schedule 40 before the restrictors.
 - d. Seamless schedule 30 after the restrictors and schedule 40 before the restrictors.

Inspection

22. The alarm on a wet system must ring within what amount of time?
- a. 30 seconds
 - b. 1 minute
 - c. 3 minutes
 - d. 5 minutes
23. Pressure reducing valves on a standpipe system must be tested every _____.
- a. 2 years
 - b. 3 years
 - c. 4 years
 - d. 5 years
24. A fire pump test must show that the pump will perform to meet which of the following?
- a. The test determines that a pump will operate at 100% of the rated capacity and 65% of the rated head.
 - b. The test determines that a pump will operate at 150% of the rated capacity and 65% of the rated head.
 - c. The test determines that a pump will operate at 100% of the rated capacity and 60% of the rated head.
 - d. The test determines that a pump will operate at 150% of the rated capacity and 60% of the rated head.

Answers

**1. b, 2. b, 3. c, 4. a, 5. c, 6. a, 7. c, 8. d, 9. b, 10. c, 11. c, 12. a, 13. d, 14. a, 15. a,
16. c, 17. d, 18. c, 19. d, 20. c, 21. a, 22. d, 23. d, 24. a**