

References and Correct Answers

Information on obtaining the references listed below may be found in the “Training Opportunities and Resources” section of this guidebook.

1. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 1
Answer: A
2. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 8.
Answer: B
3. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 4.
Answer: B
4. Reference: *Water Distribution System Operation and Maintenance, A Field Study Training Program*, American Water Works Association, Ch. 1.
Answer: D
5. Reference: *Water Distribution Operator Training Handbook*, American Water Works Association, Ch. 4.
Answer: C
6. Reference: *Water Distribution Operator Training Handbook*, American Water Works Association, Ch. 3.
Answer: D
7. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
Answer: A
8. Reference: USEPA 40 *Code of Federal Regulations* 141.32(b)(1)
Answer: C
9. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 6.
Answer: A
10. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 2.
Answer: A
11. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 3.
Answer: D
12. Reference: *Water Distribution System Operation and Maintenance*, California State University, Ch. 6.
Answer: B
13. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
Answer: D
14. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
Answer: B
15. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 3.
Answer: B

16. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 5.
Answer: B
17. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 4.
Answer: C
18. Reference: *Basic Science Concepts and Applications*, American Water Works Association, Ch. 6.
Answer: B
19. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 3.
Answer: C
20. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 3.
Answer: C
21. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 3.
Answer: C
22. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 3.
Answer: B
23. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 4.
Answer: D
24. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 6.
Answer: D
25. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 1.
Answer: D
26. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 6.
Answer: B
27. Reference: *Water Distribution Operator Training Handbook*, American Water Works Association, Ch. 19.
Answer: D
28. Reference: *Introduction to Water Treatment, Principles and Practices of Water Supply Operations*, American Water Works Association, Vol. 2.
Answer: C
29. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 6.
Answer: D
30. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 6.
Answer: B
31. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
Answer: C
32. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 6.
Answer: D

33. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 6.
Answer: A
34. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 6.
Answer: B
35. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 6.
Answer: D
36. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 1.
Answer: D
37. Reference: *Water Distribution Operator Training Handbook*, American Water Works Association Ch. 3.
Answer: C
38. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
Answer: A
39. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
Answer: D
40. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
Answer: A
41. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 5.
Answer: A
42. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
Answer: B
43. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
Answer: B
44. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
Answer: B
45. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
Answer: A
46. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
Answer: D
47. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
Answer: C
48. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
Answer: B
49. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
Answer: C

50. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
 Answer: A
51. Reference: *Basic Science Concepts and Applications*, American Water Works Association, Ch. 10 and 11.
 Answer: A
 Solution: $8 \text{ feet} \times 8 \text{ feet} \times 32 \text{ feet} \times .785 = 1607.68 \text{ cu ft}$
 $1607.68 \text{ cu ft} \times 7.48 \text{ gallons per cu ft} = 12,025 \text{ gallons}$
 $12,025 \text{ gallons} \times 0.90 = 10,823 \text{ gallons}$
 $10,823 \text{ gallons} / 24 \text{ gpm} = 451 \text{ minutes}$
 $451 \text{ minutes} = 7 \text{ hours } 31 \text{ minutes}$
52. Reference: *Water Distribution Operator Training Handbook*, American Water Works Association, Ch. 2.
 Answer: D
 Solution: $88 \text{ feet} \times 0.433 = \text{approximately } 38 \text{ psi.}$
53. Reference: *Small Water System Operation and Maintenance*, California State University, Appendix.
 Answer: A
 Solution: $3 \text{ ft} \times 3 \text{ ft} \times 3 \text{ ft} = 27 \text{ cubic yards}$
 $4.5 \text{ ft} \times 6 \text{ ft} \times 120 \text{ ft} / 27 \text{ cubic yards} = 120 \text{ cubic yards}$
54. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 5.
 Answer: B
 Solution: $20 \text{ ft} \times 15 \text{ ft} \times 10 \text{ ft} = 3,000 \text{ cubic feet}$
55. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
 Answer: B
 Solution: $4.0 \text{ mg/L} - 1.8 \text{ mg/L} = 2.2 \text{ mg/L}$
56. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
 Answer: A
 Solution: $60.5 \text{ }^\circ\text{F} - 32 / 1.8 = 15.8 \text{ }^\circ\text{C}$
57. Reference: *Small Water System Operation and Maintenance*, California State University, Appendix.
 Answer: A
 Solution: $35 \text{ feet} - 20 \text{ feet} = 15 \text{ feet}$
58. Reference: *Small Water System Operation and Maintenance*, California State University, Appendix.
 Answer: B
 Solution: $75 \text{ ft} \times 20 \text{ ft} \times 10 \text{ ft} = 15,000 \text{ cu ft}$
 $15,000 \text{ cu ft} \times 7.48 \text{ gal/cu ft} = 112,200 \text{ gal}$
59. Reference: *Small Water System Operation and Maintenance*, California State University, Appendix.
 Answer: B
 Solution: $3 \text{ mg/L} \times 0.2 \text{ MGD} \times 8.34 \text{ lbs/gal} = 5 \text{ lbs}$

60. Reference: *Small Water System Operation and Maintenance*, California State University, Appendix.
Answer: B
Solution: $3,000 + 4,000 + 3,500 + 2,000 + 3,000 + 3,500 + 2,000 = 21,000$ gal
 $21,000$ gallons per week / 7 days per week = 3,000 gallons per day
61. Reference: *Water Transmission and Distribution*, American Water Works Association, Ch. 5.
Answer: B
62. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 5.
Answer: A
63. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 7.
Answer: B
64. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 5.
Answer: C
65. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 5.
Answer: A
66. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 5.
Answer: D
67. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 4.
Answer: D
68. Reference: *Water Treatment*, American Water Works Association, Ch. 7.
Answer: B
69. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 5.
Answer: C
70. Reference: *Small Water System Operation and Maintenance*, California State University, Appendix -
Water Words.
Answer: C
71. Reference: *Water Distribution Operator Training Handbook*, American Water Works Association, Ch. 16.
Answer: C
72. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 3.
Answer: A
73. Reference: *Water Distribution Operator Training Handbook*, American Water Works Association, Ch.
14.
Answer: C
74. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 3.
Answer: D
75. Reference: *Small Water System Operation and Maintenance*, California State University, Ch. 5.
Answer: D

Training Opportunities and Resources

There are many sources of training for very small water system operators. Operator training classes may be offered by the American Water Works Association (AWWA), local water utilities, community colleges, vocational-technical schools, and so on. Training must be approved by the State to satisfy the certification and training requirements. Therefore, it is important to contact your State Certification Program listed in the next section of the guidebook for a list of State-approved training.

In addition to training opportunities available in your state, there are general reference materials that may help prepare you for certification. The following is a partial list of reference material available in the United States.

California State University, Sacramento

- *Small Water System Operation and Maintenance*
- *Water Distribution System Operation and Maintenance*
- *Water Treatment Plant Operation, Vol. I & II*

Materials may be ordered from:

Office of Water Programs
California State University, Sacramento
6000 J Street
Sacramento, CA 95819
Phone: (916) 278-6142
E-mail: wateroffice@csus.edu
Web site: <http://www.owp.csus.edu>

American Water Works Association

- *Water Distribution Operator Training Handbook*
- *Water Distribution System Operation and Maintenance, A Field Study Training Program*
- *Introduction to Water Treatment, Principles and Practices of Water Supply Operations*
- *Water Transmission and Distribution*
- *Water Treatment*
- *Basic Science Concepts and Applications*
- *Design and Construction of Small Water Systems*

Materials may be ordered from:

AWWA Customer Service
6666 W. Quincy Avenue
Denver, CO 80235
Phone: (800) 926-7337
E-mail: custsvc@awwa.org
Web site: <http://www.awwa.org>