


Distribution Class I

1. If you come upon a co-worker who is not breathing, you should immediately
 - a. apply cold compresses to the worker's forehead.
 - b. check for bleeding.
 - c. run for help.
 - d. start artificial respiration.

2. What is the pressure at the bottom of a standpipe filled to a height of 47 ft?
 - a. 10 psi
 - b. 15 psi
 - c. 20 psi
 - d. 25 psi

3. A connection from the municipal water supply directly to the packing gland of a centrifugal wastewater pump
 - a. is a hazard to the safety of the potable water supply.
 - b. is necessary to dilute the wastewater.
 - c. is undesirable because too much water is required.
 - d. reduces the power consumption of the motor driving the pump.

4. A waterborne disease that can be transferred to humans if proper disinfection is not provided is
 - a. gonorrhea.
 - b. malaria.
 - c. mumps.
 - d. typhoid.

5. Rising-stem valves are most often used
 - a. before and after house meters.
 - b. in pumping stations.
 - c. on blowoffs.
 - d. on hydrants.

6. The device used in checking water flow to consumers is a
 - a. backflow device.
 - b. pressure-sensing unit.
 - c. waterline valve.
 - d. water meter.

7. Which one of the following types of meters has no moving parts?
 - a. propeller
 - b. proportional
 - c. rotometer
 - d. Venturi

8. Distribution system pressure (even during fire-fighting demands) should not be allowed to drop below _____ psi.
 - a. 0
 - b. 5
 - c. 20
 - d. 40

9. To determine whether an intersecting sewer line crosses over or under a water main, one would look at the
 - a. architectural detail.
 - b. elevation view.
 - c. general site.
 - d. plan view.

10. The chlorine residual in water may be determined using the reagent
 - a. diethyl-p-phenylenediamine (DPD).
 - b. ethylenediaminetetraacetic acid (EDTA).
 - c. polychlorinated biphenyls (PCB).
 - d. sodium thiosulfate ($\text{Na}_2\text{S}_2\text{O}_3$).

11. Customer services are most commonly metered with _____ meters.
 - a. remote-reading
 - b. positive-displacement
 - c. nutating-disc
 - d. miniturbine

12. A toxic substance is always
 - a. distasteful.
 - b. infectious.
 - c. poisonous.
 - d. repulsive.

13. The primary reason for a dry-barrel fire hydrant is to
 - a. allow easy maintenance of the hydrant.
 - b. keep the barrel from rusting.
 - c. keep the hydrant from freezing.
 - d. prevent water hammer.
14. The rotating element in centrifugal pumps is commonly called a(n)
 - a. fan.
 - b. impeller.
 - c. rotor.
 - d. volute.
15. First aid for first-degree burns is to
 - a. bandage tightly.
 - b. cover liberally with a salve.
 - c. immerse in warm water.
 - d. submerge the burned area in cold water.
16. Sodium hypochlorite is
 - a. a chemical compound that can be purchased in liquid solution or dry tablet form and can be used for disinfection.
 - b. a dry neutralizing powder for chlorine burns.
 - c. is classified as an acid.
 - d. the salt that is formed when hydrochloric acid is neutralized by sodium hydroxide.
17. What information must be on a warning tag attached to a switch that has been locked out?
 - a. directions for removing the tag
 - b. name of nearest physician to call in case of emergency
 - c. signature of person who locked out switch
 - d. telephone number of collection system supervisor
18. Killing of pathogenic organisms is called
 - a. disinfection.
 - b. oxidation.
 - c. pasteurization.
 - d. sterilization.
19. Temporary cloudiness in a freshly drawn sample of tap water may be caused by
 - a. air.
 - b. chlorine.
 - c. hardness.
 - d. silica.

20. Vent openings on reservoirs and storage tanks should be
 - a. chlorinated frequently.
 - b. provided with an overlapping cover.
 - c. sealed during winter.
 - d. screened.
21. Fire fighting may cause low pressure in an area of a distribution system. The low pressure might lead to
 - a. contamination of the system by backsiphonage.
 - b. ice formation in the pipes.
 - c. loss of chlorine residual.
 - d. muddy water.
22. Hydrogen sulfide gas smells like
 - a. dead fish.
 - b. fuel gas.
 - c. rotten cabbage.
 - d. rotten eggs.
23. When using "chlorine tablets" to disinfect pipelines, it is best to place the tablets
 - a. anywhere, it makes no difference.
 - b. at the end you fill first.
 - c. on the inside top.
 - d. on the bottom.
24. Static head is defined as the
 - a. energy of motion of the water.
 - b. pressure due to depth or elevation of the water.
 - c. pressure loss in the line due to friction.
 - d. all of the above.
25. When using the company vehicle, utility personnel should
 - a. always use the flashing red or yellow light.
 - b. follow the same traffic laws as everyone else.
 - c. follow the special traffic laws applicable to municipal vehicles.
 - d. maintain a speed that is at least 10 mph less than the posted limit because of the vehicle's size.
26. A connection between a safe and an unsafe water supply is called a
 - a. cross connection.
 - b. intersection.
 - c. loss of head.
 - d. vacuum breaker.

27. Velocity of flow in mains is usually expressed in terms of
- feet per second.
 - gallons per minute.
 - litres per foot.
 - milligrams per litre.
28. When collecting a distribution-system sample for bacteriological testing, the person collecting the sample should allow the water to run _____ before filling the sample bottle.
- as long as necessary to permit clearing of the service line
 - 1 h.
 - 30 min
 - only a few seconds
29. When opening and closing valves in high-pressure lines, the valves should be opened
- and closed as rapidly as possible.
 - and closed slowly.
 - rapidly and closed slowly.
 - slowly and closed rapidly.
30. Pressure is usually measured in
- cubic feet per second.
 - feet per second.
 - gallons per minute.
 - pounds per square inch.
31. The field service crew drives their truck 36 mi on Monday, 11 mi on Tuesday, 48 mi on Wednesday, 0 mi on Thursday, and 19.7 mi on Friday. What is the total number of miles driven this week?
- 23 mi
 - 95 mi
 - 103.7 mi
 - 114.7 mi
32. A water main should be disinfected
- when the pipe is in the storage yard.
 - after the pipe is laid in place.
 - after the pipe is delivered to the job site.
 - at the manufacturer's plant.

33. A new section of water main has just been laid. Before it is completely backfilled and put into service, several things must be done. What is the correct order for doing them?
- collect bacti samples, flush, pressure test, disinfect, flush
 - flush, disinfect, collect bacti samples, pressure test
 - pressure test, disinfect, collect bacti samples, flush
 - pressure test, flush, disinfect, flush, collect bacti samples
34. Coliform bacteria are reported in organisms per
- litre.
 - 100 millilitres.
 - millilitre.
 - plate.
35. Samples taken for routine analysis should be preserved by
- boiling.
 - filtering.
 - refrigerating.
 - sterilizing.
36. The "hydrant bury" is the
- cubic yards of cover over the hydrant branch or connecting pipe.
 - depth of the auxillary valve.
 - depth to which the hydrant base is buried.
 - vertical distance between the ground and the bottom of the hydrant branch or pipe connection.
37. The letters or units "gpm" appearing on a flow-rate indicator in a pumping station means
- gallons per man.
 - gallons per man-hour.
 - gallons per mile of sewer line.
 - gallons per minute.
38. Determining the pH of water is one of the important tests of water quality. The results of the pH test indicate the
- balance between acidic and basic conditions.
 - chlorine residual.
 - presence of coliform organisms.
 - presence of iron.

39. The presence of coliform bacteria in amounts greater than allowed by standards indicates
- that the chlorine residual is not effective.
 - that pathogenic bacteria may be present.
 - that the water will positively cause disease.
 - that water is leaking out of the pipe.
40. Dry barrel fire hydrants have their operating valves
- in the base.
 - in the head.
 - in the street.
 - none of the above.
41. One waterborne disease believed to be caused by a virus is
- cholera.
 - dysentery.
 - hepatitis.
 - tuberculosis.
42. Prepared water sample bottles used for collecting samples for bacteriological examination contain sodium thiosulfate crystals. It is important not to rinse out the sample bottle because the sodium thiosulfate
- eliminates the need for refrigerating the sample.
 - holds the pH at a constant value.
 - kills any pathogens that may be present in the sample.
 - neutralizes any chlorine present in the sample.
43. One of the purposes of water storage tanks is to
- decrease the oxygen content.
 - improve the taste.
 - increase the carbon dioxide content.
 - supply water at peak demands.
44. A valve that joins a customer's service to the water main is called the
- bypass valve.
 - control flume.
 - corporation cock.
 - pressure-regulating valve.
45. pH is a measure of
- alkalinity.
 - chlorine residual.
 - hydrogen ion activity.
 - sulfuric acid.

46. The difference between the static level and the pumping level of a well is called the
- a. cone of depression.
 - b. drawdown.
 - c. radius of influence.
 - d. zone of saturation.
47. Which of the following is a correct statement about chlorine?
- a. Chlorine gas is colorless, odorless, and toxic.
 - b. Chlorine gas is heavier than air.
 - c. Chlorine gas is insoluble in water.
 - d. Chlorine gas will liquify if heated above the boiling point of water.
48. If you are having problems achieving adequate disinfection, possible causes include
- a. chlorinator overfeeding.
 - b. chlorine being consumed by organic matter.
 - c. contact time too long.
 - d. insufficient turbidity in water.
49. Chlorine is used in water to
- a. disinfect.
 - b. prevent corrosion.
 - c. raise the pH level.
 - d. stabilize the water.
50. When employees are working in trenches 5-ft deep or more, an adequate means of exit, such as a ladder or steps, must be located no more than _____ ft away from them.
- a. 5
 - b. 10
 - c. 25
 - d. 45
51. An aquifer is a(n)
- a. flowing well.
 - b. impervious stratum below bedrock.
 - c. structure for conveying a canal over a river or open space.
 - d. water-bearing stratum of rock, sand, or gravel.

52. In instances where nonpotable water or toxic waste systems are found to be connected directly with a potable water system, the preferred method for prevention of contamination is
- carrying 0.5 mg/L chlorine residual in the potable water system.
 - installing physical separation (air gap) between the two systems.
 - maintaining a high pressure on the safe water system.
 - providing rapid cutoff valves in several locations.
53. A pump needs new packing
- if no more packing will fit into the stuffing box.
 - if there is any leakage from the packing gland.
 - when no more packing can be added.
 - when the gland follower is pulled all the way down.
54. The carrying capacity of water mains is often reduced by
- lining.
 - looping.
 - tuberculation.
 - vacuum breakers.
55. When installing service lines, it is a good practice to provide for movement due to settling by installing a(n)
- bend or gooseneck in the pipe.
 - expansion joint.
 - flexible coupling.
 - service line on the side of the pipe.
56. The term water table is used in reference to the
- elevation to which water would rise in a vertical fine-bore tube connected to the crown (top arch) of a sewer during maximum flow.
 - level to which the soil or rock voids are saturated with groundwater.
 - "round table" or "conference" of agency representatives allocating interstate discharge permits.
 - table of charges for water service or water delivered through a customer's meter.
57. A pneumatic ejector lifts water from low points to higher levels. The device used to achieve this is a(n)
- air compressor.
 - axial-flow pump.
 - centrifugal pump.
 - plunger-type pump.

58. The subsurface component parts of a well include the
- rotameter.
 - sampling taps.
 - well casing.
 - well-casing vent.
59. Why are fractured limbs supported with splints?
- to make sure that the fractured bone fuses together properly
 - to prevent infection
 - to relieve pain and to prevent further injury
 - a and c
60. In determining the purity of a water sample, it is usually tested for the presence of the coliform organism because
- it can be done in the field.
 - it is one of the major disease-bearing organisms.
 - its presence indicates the water has been polluted.
 - its presence is indicated rapidly.
61. If your well pump broke down, your storage tank contained 1 mil gal, and water was being withdrawn at a rate of 0.5 mgd per day, how long would it take for the tank to empty?
- 1 day
 - 2 days
 - 3 days
 - 4 days
62. The first time a distribution system water sample report comes back marked unsafe, you should
- increase the chlorine dose.
 - notify the public to boil their drinking water.
 - take a sample from the well.
 - take another sample from the same location.
63. When a centrifugal pump with new packing is started and the packing seems to leak air, the proper procedure is to
- stop the motor and repack the stuffing box.
 - put in some heavy oil and then gradually tighten the gland.
 - put in more packing.
 - ignore the condition.

64. The component of a centrifugal pump that is sometimes installed on the end of the suction pipe to hold the priming is known as a
- casing.
 - drain.
 - foot valve.
 - ventilator.
65. A standpipe is 84 in. in diameter and 20-ft high. How many gallons are in it when the water is 16-ft deep?
- 615 gal
 - 763 gal
 - 4606 gal
 - 5754 gal
66. After using a hydrant, the hydrant should be
- closed quickly.
 - closed slowly to reduce surges.
 - closed using the hydrant guard valve.
 - left running for the next load.
67. The primary purpose of fire hydrants is
- public fire protection.
 - main flushing.
 - flow measurement.
 - all of the above.
68. When a section of water main is replaced, any organic material allowed to remain inside the pipe will increase
- alkalinity and decrease turbidity.
 - chlorine demand and decrease chlorine residual.
 - corrosion and head loss.
 - friction, scaling, and decrease head loss.
69. Why is it important to thoroughly flush out a newly installed backflow-prevention device before testing?
- to allow water to flow in both directions through the unit
 - to equalize the pressures throughout the system
 - to rid the unit of corrosive chemicals
 - to rid the unit of foreign objects and particles
70. Chlorine leaks in metal containers tend to
- become larger.
 - become smaller.
 - remain the same size.
 - seal themselves.



ANSWERS

Distribution Class I

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|-------|-------|-------|
| 1. d | 19. a | 37. d |
| 2. c | 20. d | 38. a |
| 3. a | 21. a | 39. b |
| 4. d | 22. d | 40. a |
| 5. b | 23. c | 41. c |
| 6. d | 24. b | 42. d |
| 7. d | 25. b | 43. d |
| 8. c | 26. a | 44. c |
| 9. b | 27. a | 45. c |
| 10. a | 28. a | 46. b |
| 11. b | 29. b | 47. b |
| 12. c | 30. d | 48. b |
| 13. c | 31. d | 49. a |
| 14. b | 32. b | 50. c |
| 15. d | 33. d | 51. d |
| 16. a | 34. b | 52. b |
| 17. c | 35. c | 53. d |
| 18. a | 36. d | 54. c |

- 55. a
- 56. b
- 57. a
- 58. c
- 59. d
- 60. c

- 61. b
- 62. d
- 63. a
- 64. c
- 65. c
- 66. b

- 67. a
- 68. b
- 69. d
- 70. a