

Answers for Review Questions

Module 1 Review Questions

Multiple Choice: Circle the letter of the best answer.

1. The TCEQ has primary responsibility for the quality of the water from the point of production all the way to the customer's farthest tap.
 - a. true
 - b. false**

2. Texas Health and Safety Code – Title 5 Chapter 341 §341.034(d) A person who inspects homes and businesses to identify potential or actual cross-connections or other contaminant hazards in public water systems must hold a license issued by the commission under Chapter 37, Water Code, unless the person is licensed by the Texas State Board of Plumbing Examiners as a plumbing inspector or water supply protection specialist.
 - a. true**
 - b. false

3. A customer service inspection **is required** on transfer of service.
 - a. true
 - b. false**

4. A customer service inspector **is permitted** to perform plumbing inspections.
 - a. true
 - b. false**

5. What a customer service inspector should know are listed in the _____.
 - a. TCEQ Need to Know Criteria for Customer Service Inspectors**
 - b. plumbing Codes
 - c. EPA handbook
 - d. none of the above

6. The customer service inspection is the inspection of _____.
 - a. plumbing system
 - b. the private water distribution facilities**
 - c. the fire suppression system
 - d. the water service to a facility

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7. The requirement to perform customer service inspections is based on law found in the _____.
- a. Plumbing License Law
 - b. Texas Health and Safety Code**
 - c. International Plumbing Code
 - d. TCEQ Laws
8. The customer service inspection is regulated through _____.
- a. TCEQ Rules and Regulations for Public Water Systems**
 - b. Texas Health and Safety Code
 - c. Texas State Board of Plumbing Examiners
 - d. none of the above
9. A customer service inspection must be performed _____.
- a. when the water purveyor has reason to believe that cross-connections exist
 - b. after any material improvement, corrections, or addition
 - c. prior to providing continuing water service to new construction
 - d. all of the above**
10. Which individual can **NOT** perform a customer service inspection?
- a. Licensed Plumbing Inspectors
 - b. Licensed Customer Service Inspectors
 - c. Licensed plumbers holding the Water Supply Protection Specialist endorsement
 - d. Licensed plumbers**
11. The customer service inspector has the authority to _____.
- a. grant water service
 - b. terminate water service
 - c. make requirements to obtain water service
 - d. none of the above**

12. The customer service inspector looks for which two potential sources of contamination?
- a. Cross-connections and code violations
 - b. Lead and water leaks
 - c. Cross-connections and lead**
 - d. Illegal plumbing and lead
13. To qualify for a customer service inspector license, an individual must have _____.
- a. worked one year in an approved area and have an additional 20 hours of training
 - b. one year of college (32 semester hours) and worked one year in an approved area
 - c. worked at least two years in an approved area
 - d. any of the above**
14. To renew a customer service inspector license an individual must _____.
- a. re-take the exam
 - b. re-take a CSI class
 - c. complete 16 hours of approved continuing education
 - d. either a or c**
15. Containment is described as _____.
- a. protection of the public water supply at the service connection
 - b. trapping cross-connections
 - c. premises isolation
 - d. both a and c**
16. Isolation is described as _____.
- a. both b and c**
 - b. protection at each fixture, outlet, appliance appurtenance
 - c. internal protection
 - d. none of the above

Module 2 Review Questions

Multiple Choice: Circle the letter of the best answer.

1. A customer is **not** required to follow the water purveyor's guidelines to protect the public water supply.
 - a. true
 - b. false**

2. The TCEQ licenses and provides the rules and regulations for CSI.
 - a. true**
 - b. false

3. The **TCEQ** has the primary responsibility for the quality of water.
 - a. true
 - b. false**

4. The backbone of any cross-connection control program is an ordinance that gives, in writing and enforceable by law, certain rights to the water purveyor.
 - a. true**
 - b. false

5. The customer service inspection **is** a plumbing inspection.
 - a. true
 - b. false**

6. The Clean Water Act was enacted in _____.
 - a. 1976
 - b. 1972**
 - c. 1984
 - d. 1973

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Module 2 Review Questions

7. The primary function of the Clean Water Act is to _____.
 - a. **regulate the discharge of pollutants and contaminants into waters of the U.S.**
 - b. require EPA to set rules for states
 - c. allow manufacturers and industry to discharge waste into rivers in small quantities
 - d. require chemical analysis of waters in the U.S.

8. The Safe Drinking Water Act was passed into law _____.
 - a. 1996
 - b. 1984
 - c. **1974**
 - d. 1986

9. The _____ has the primary responsibility for the quality of water.
 - a. EPA
 - b. **water purveyor**
 - c. state
 - d. TCEQ

10. RG-195 is _____.
 - a. Plumbing License Law
 - b. **Rules and Regulations for Public Water Systems**
 - c. Plumbing Board Rules and Regulations
 - d. Amendment to the Plumbing License Law

11. Which two codes are the approved plumbing codes for the State of Texas as of 2001?
 - a. National Plumbing Code and International Plumbing Code
 - b. Uniform Plumbing Code and Southern Standard Plumbing Code
 - c. **Uniform Plumbing Code and International Plumbing Code**
 - d. International and Southern Standard Plumbing Code

12. The _____ provides the rules and regulation for fireline contractors.
- a. Texas Commission on Environmental Quality
 - b. Texas Department of Insurance
 - c. Fire Marshal's office**
 - d. National Fire Prevention Association
13. Which one is NOT a minimum requirement for a cross-connection control program?
- a. Records of backflow assemblies in a water system
 - b. Licensed Backflow Prevention Assembly Testers to perform tests
 - c. Backflow Prevention Assembly Test/Repair Forms
 - d. Certificate of Insurance from Texas Department of Insurance**
14. According to TCEQ, all Backflow Prevention Assemblies are required to be tested _____.
- a. once annually
 - b. twice annually
 - c. upon installation**
 - d. at the discretion of the water purveyor
15. Backflow Prevention Assemblies installed to protect against health hazards are required to be tested _____.
- a. at least annually**
 - b. twice annually
 - c. upon installation
 - d. both a and c
16. A customer service inspection is _____.
- a. an inspection of the customer's plumbing
 - b. an examination of the private water distribution facilities**
 - c. an inspection to determine the fitness of a facility
 - d. an examination of the public water system

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17. The customer's responsibilities include_____.
- a. allowing the customer service inspection
 - b. eliminating cross-connections or protecting the cross-connection
 - c. meeting the requirements for testing of the backflow prevention assemblies
 - d. all of the above**
18. Record retention of _____ is required for a Customer Service Inspection Certificate.
- a. 12 months
 - b. 5 years
 - c. 20 years
 - d. 10 years**

Module 3 Review Questions

Multiple Choice: Circle the letter of the best answer.

1. The likelihood that an actual cross-connection will be made by connecting a hose to the faucet is very **low**.
 - a. true
 - b. false**

2. Backsiphonage is backflow that occurs when the supply pressure becomes reduced.
 - a. true**
 - b. false

3. If a pipe is physically connected to a substance that could backpressure through the connection then it is considered a direct cross-connection.
 - a. true**
 - b. false

4. Health hazard is a cross-connection involving a substance that, once introduced into the potable water supply, causes illness, death, spread disease, or has a **low** probability of causing these effects.
 - a. true
 - b. false**

5. An air gap may not be practical in some areas where a connection to a potential sewage hazard may exist. For example, the water supply to a toilet.
 - a. true**
 - b. false

6. Potable water connected to water of unknown quality would be _____.
 - a. backpressure
 - b. cross-connection**
 - c. backflow
 - d. backsiphonage

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Module 3 Review Questions

7. Reduced or negative pressure on supply would be _____.
- a. backpressure
 - b. cross-connection
 - c. backflow
 - d. backsiphonage**
8. A direct cross-connection will support _____.
- a. backpressure**
 - b. cross-connection
 - c. backflow
 - d. backsiphonage
9. A cross-connection that affects the aesthetic quality of the water is _____.
- a. an indirect cross-connection
 - b. a health hazard
 - c. a non-health hazard**
 - d. of no consequence
10. Proper installation for an air gap is _____.
- a. 2 times pipe diameter but not less than 1”**
 - b. 1-1/2 times the pipe diameter but not less than 1-1/2”
 - c. 2 times pipe diameter but not less than 3/4”
 - d. 1” or 3 times the pipe diameter
11. An AVB must be installed above all downstream piping and openings a minimum of _____.
- a. 6 inches**
 - b. 12 inches
 - c. 18 inches
 - d. should never be used

12. A PVB must be installed above all downstream piping and openings a minimum of _____.
- a. 6 inches
 - b. 12 inches**
 - c. 18 inches
 - d. none of the above
13. An SVB is a modified _____.
- a. AVB
 - b. PVB**
 - c. RPZ
 - d. HBVB
14. An assembly containing two check valves, two shutoff valves, and four test cocks is a _____.
- a. double check valve assembly**
 - b. dual check
 - c. un-vented double check
 - d. reduced pressure principle assembly
15. Which of these would be a proper installation of an RPZ?
- a. In a well drained pit
 - b. A minimum of 36" above grade in a water tight vault
 - c. A minimum of 12" above grade where the relief valve cannot become submerged**
 - d. None of the above
16. The DCDA and the RPDA are generally used on _____.
- a. car wash facilities
 - b. fire suppression systems**
 - c. hospitals
 - d. chemical plants

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17. Which of these would create a closed system?
- a. Backflow prevention assemblies
 - b. Pressure reducing valves
 - c. Dual checks
 - d. All of the above**

Module 4 Review Questions

Multiple Choice: Circle the letter of the best answer.

1. Pounds per square **foot** is normally the way pressure is expressed.
 - a. true
 - b. false**

2. If a gauge is installed at the bottom of the column of **air**, pressure is shown on the gauge.
 - a. true
 - b. false**

3. If a vacuum is placed on the straw and some of the atmospheric pressure is removed, the atmospheric pressure outside the straw would push the water to the area where the pressure is reduced.
 - a. true**
 - b. false

4. Because atmospheric pressure is the driving force of a siphon, there is a maximum height that water can be siphoned.
 - a. true**
 - b. false

5. The readings on a psia gauge are called **gauge** pressures.
 - a. true
 - b. false**

6. When water is forced through a smaller pipe, the velocity will **decrease** and the pressure will **increase**.
 - a. true
 - b. false**

7. One cubic foot of water weighs _____.
 - a. 8.34 lbs
 - b. 62.4 lbs**
 - c. 0.433 psi
 - d. 43.3 psi

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Module 4 Review Questions

8. A 1 foot column of water exerts _____ of pressure.
- a. 8.34 lbs
 - b. 62.4 lbs
 - c. 0.433psi**
 - d. 43.3 psi
9. Pressure due to water column can be determined by _____.
- a. multiplying 2.31'/psi by height.
 - b. dividing height by 2.31'/psi
 - c. multiplying height by 0.433 psi/ft
 - d. both b and c**
10. Height of a water column can be determined by _____.
- a. dividing the pressure by 0.433 psi/ft
 - b. dividing the pressure by 62.4 lbs
 - c. multiplying the pressure by 2.31'/psi
 - d. both a and c**
11. A water column 2.31' equals a pressure of _____.
- a. 2.31 psi
 - b. 62.4 lbs.
 - c. 1 psi**
 - d. 0.433 psi
12. Atmospheric pressure at sea level is _____.
- a. 14.7 psi**
 - b. 43.3 psi
 - c. 0.433 psi
 - d. none of the above

13. $24.7 \text{ psia} - 14.7 =$ _____.
- a. 10 psia
 - b. 10 lbs
 - c. 10 psig**
 - d. none of the above
14. A vacuum is _____.
- a. the absence of some atmospheric pressure**
 - b. the absence of all atmospheric pressure
 - c. loss of negative pressure
 - d. Venturi effect
15. In a perfect vacuum, atmospheric pressure at sea level can push water vertically _____.
- a. 24.7'
 - b. 33.9'**
 - c. 35'
 - d. 100'
16. A piping arrangement extending 33.9' above the highest downstream opening is a _____.
- a. perfect vacuum
 - b. barometric loop**
 - c. siphon
 - d. none of the above
17. As the velocity increases, the pressure decreases—this is a description of _____.
- a. a siphon
 - b. a vacuum
 - c. the aspirator effect
 - d. the Venturi effect**

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Module 4 Review Questions

18. Undersized piping can cause _____.
- a. backpressure due to the Venturi effect
 - b. backsiphonage due to the aspirator effect**
 - c. increased pressure
 - d. backsiphonage due to the Venturi effect

Module 5 Review Questions

Multiple Choice: Circle the letter of the best answer.

1. Lead pipes were commonly used for water pipes on **new** houses.
 - a. true
 - b. false**

2. Newer houses, even with *lead free* solder are not free from lead contamination.
 - a. true**
 - b. false

3. Pipe and pipe fittings are required to have no more than **0.8%** lead.
 - a. true
 - b. false**

4. Lead **can** be detected through sight, smell, or taste.
 - a. true
 - b. false**

5. The *swab* is a cigarette shaped tube with chemicals inside.
 - a. true**
 - b. false

6. The exact amount of lead present **can** be determined by the *swab* test.
 - a. true
 - b. false**

7. Lead exposure can cause _____.
 - a. delayed physical and mental development
 - b. kidney problems
 - c. high blood pressure
 - d. all of the above**

8. The most likely cause of lead in drinking water is _____.
- a. lead pipes
 - b. lead solder**
 - c. old houses
 - d. faucets
9. The Maximum Contaminant Level Goal for lead is _____.
- a. 0**
 - b. 15 parts per billion
 - c. 0.015 milligrams per liter
 - d. none of the above
10. The lead ban was signed into the Safe Drinking Water Act in _____.
- a. 1974
 - b. 1988
 - c. 1986**
 - d. both a and c
11. If lead is present, _____ to reduce lead intake.
- a. flush water lines 3–5 minutes prior to drinking
 - b. never use hot tap water for cooking or drinking
 - c. use filtering devices
 - d. all of the above**
12. When determining TCEQ compliance for lead in pipes, _____ should be the first test method used.
- a. swab test
 - b. visual inspection**
 - c. laboratory inspection
 - d. none of the above

13. When soldering water piping, _____ solder should be used.
- a. silver
 - b. 95/5
 - c. antimony
 - d. lead free**
14. The most commonly used test for lead on solder and flux is the _____.
- a. swab test**
 - b. visual inspection
 - c. chemical analysis
 - d. none of the above
15. When performing a swab test, the color _____ indicates lead is present.
- a. purple
 - b. red**
 - c. black
 - d. orange
16. Before performing a swab test, the inspector should _____.
- a. clean the area with sandpaper
 - b. clean the area with water**
 - c. clean the area with acid
 - d. clean the area with detergent and water
17. The minimum number of required tests for lead on new establishments is _____.
- a. 2
 - b. 3
 - c. 1**
 - d. depends on size of the building

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Module 5 Review Questions

18. If lead is found, it is important to carefully _____.

a. document

b. turn off the water

c. remove the water meter

d. all of the above

Module 6 Review Questions

Multiple Choice: Circle the letter of the best answer.

1. The purpose of the customer service inspection is to ensure that the public and private water systems will be protected from cross-connections and lead contamination.
a. true
b. false
2. A local jurisdiction **may not** change their plumbing code to reflect the TCEQ requirements.
a. true
b. false
3. The way a CSI is performed may differ depending on the type of property and the use of the property.
a. true
b. false
4. Medical facilities will generally have a **single piping** system.
a. true
b. false
5. Water connected to property with an OSSF system **presents no additional** concerns.
a. true
b. false
6. A customer service inspection is narrower in scope than a plumbing inspection.
a. true
b. false
7. A customer service inspection is an inspection of the _____.
a. public water system
b. private water system
c. plumbing systems
d. all of the above

8. In non-compliance situations, the water purveyor should _____.
- a. terminate water service
 - b. advise the health department
 - c. install appropriate backflow prevention device at the service connection
 - d. both a or c**
9. If lead solder is found, what option does the water purveyor have?
- a. Notify the plumbing inspector
 - b. Terminate water service**
 - c. Install appropriate backflow prevention device at the service connection
 - d. Bboth b and c
10. What are the two most common cross-connections to look for on a single family dwelling?
- a. Cooling towers and hose connections
 - b. Hose connections and filtration units
 - c. Ballcocks and water softeners
 - d. Hose connections and ballcocks**
11. What are some common things to look for on apartment/multi-family buildings?
- a. Boilers
 - b. Chillers
 - c. Cooling towers
 - d. All of the above**
12. Which would **NOT** be considered commercial property?
- a. Grocery store
 - b. High rise apartment building**
 - c. Shopping center
 - d. Car dealership

13. Industrial facilities may take _____ to perform the customer service inspection.
- a. the same amount of time
 - b. significantly longer**
 - c. less time
 - d. none of the above
14. Which issue could cause a threat to water systems in industrial and medical facilities?
- a. Improper labeling**
 - b. Debris
 - c. Stopped up sewers
 - d. None of the above
15. TCEQ RG-345 has _____ classifications for water based fire protection systems.
- a. 6**
 - b. 7
 - c. 4
 - d. 5
16. Of what concern would an On Site Sewage Facility present to a water purveyor?
- a. No concern
 - b. Contamination through osmosis
 - c. Possible connection to a landscape irrigation system**
 - d. Lines crossing
17. What item is not usually needed to perform a customer service inspection?
- a. Backflow test repair form**
 - b. CSI form
 - c. Camera
 - d. Flashlight

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Module 6 Review Questions

18. When faced with unfamiliar water systems, what should a Customer Service Inspector do?
- a. Document
 - b. Turn off the water
 - c. Enlist help from someone familiar with those systems**
 - d. All of the above