

**Registration form**

**Plumbing 101 CEU Training Course \$100.00  
48 HOUR RUSH ORDER PROCESSING FEE ADDITIONAL \$50.00**

Start and Finish Dates: \_\_\_\_\_ *You will have 90 days from this date in order to complete this course*

List number of hours worked on assignment must match State Requirement. \_\_\_\_\_  
California DPH is 5 hours and all other States is 8 hours.

Name \_\_\_\_\_ Signature \_\_\_\_\_  
*I have read and understood the disclaimer notice on page 2. Digitally sign XXX*

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Home (\_\_\_\_\_) \_\_\_\_\_ Work (\_\_\_\_\_) \_\_\_\_\_

Operator ID# \_\_\_\_\_ Exp Date \_\_\_\_\_

**Please circle/check which certification you are applying the course CEU's.**

Water Treatment \_\_\_\_\_ Distribution \_\_\_\_\_ Collection \_\_\_\_\_

Wastewater Treatment \_\_\_\_\_ Other \_\_\_\_\_

*Your certificate will be mailed to you in about two weeks.*

**Technical Learning College TLC PO Box 3060, Chino Valley, AZ 86323  
Toll Free (866) 557-1746 Fax (928) 272-0747 [info@tlch2o.com](mailto:info@tlch2o.com)**

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## **DISCLAIMER NOTICE**

I understand that it is my responsibility to ensure that this CEU course is either approved or accepted in my State for CEU credit. I understand State laws and rules change on a frequent basis and I believe this course is currently accepted in my State for CEU or contact hour credit, if it is not, I will not hold Technical Learning College responsible. I fully understand that this type of study program deals with dangerous, changing conditions and various laws and that I will not hold Technical Learning College, Technical Learning Consultants, Inc. (TLC) liable in any fashion for any errors, omissions, advice, suggestions or neglect contained in this CEU education training course or for any violation or injury, death, neglect, damage or loss of your license or certification caused in any fashion by this CEU education training or course material suggestion or error or my lack of submitting paperwork. It is my responsibility to call or contact TLC if I need help or assistance and double-check to ensure my registration page and assignment has been received and graded. It is my responsibility to ensure all information is correct and to abide with all rules and regulations.

**Professional Engineers;** Most states will accept our courses for credit but we do not officially list the States or Agencies. Please check your State for approval.

*You can obtain a printed version of the course from TLC for an additional \$69.95 plus shipping charges.*

## **AFFIDAVIT OF EXAM COMPLETION**

I affirm that I personally completed the entire text of the course. I also affirm that I completed the exam without assistance from any outside source. I understand that it is my responsibility to file or maintain my certificate of completion as required by the state or by the designation organization.

## **Grading Information**

In order to maintain the integrity of our courses we do not distribute test scores, percentages or questions missed. Our exams are based upon pass/fail criteria with the benchmark for successful completion set at 70%. Once you pass the exam, your record will reflect a successful completion and a certificate will be issued to you.

**Do not solely depend on TLC's Approval list for it may be outdated.**

**A second certificate of completion for a second State Agency \$50 processing fee.**

**All downloads are electronically tracked and monitored for security purposes.**

**Some States and many employers require the final exam to be proctored.**

<http://www.abctlc.com/downloads/PDF/PROCTORFORM.pdf>

# Plumbing 101 CEU Course Answer Key

Name \_\_\_\_\_

Phone \_\_\_\_\_

*You are solely responsible in ensuring that this course is accepted for credit by your State. **No refunds.** Did you check with your State agency to ensure this course is accepted for credit?*

*Method of Course acceptance confirmation. Please fill this section*

Website \_\_ Telephone Call \_\_ Email \_\_\_\_ Spoke to \_\_\_\_\_

Do not solely depend on TLC's Approval list for it may be outdated.

What is the approval number if Applicable? \_\_\_\_\_

*You are responsible to ensure that TLC receives the Assignment and Registration Key. Please call us to ensure that we received it.*

*You can use Adobe Acrobat DC Program to complete the assignment.*

*Please circle, underline, bold or X only one correct answer*

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*Please double check with your State Agency or Plumbing Authority on current plumbing codes for these codes change and there are several different versions of these codes. This course is a general overview of various accepted plumbing code information but always check with your Approval Agency before doing any plumbing work.*

**Please fax the answer key to TLC  
(928) 272-0747**

**Always confirm that we've received your paperwork.**

**Rush Grading Service**

If you need this assignment graded and the results mailed to you within a 48-hour period, prepare to pay an additional rush service handling fee of \$50.00. This fee may not cover postage costs. If you need this service, simply write RUSH on the top of your Registration Form. We will place you in the front of the grading and processing line. Thank you...

*Please e-mail or fax this survey along with your final exam*

**PLUMBING 101 CEU TRAINING COURSE  
CUSTOMER SERVICE RESPONSE CARD**

NAME: \_\_\_\_\_

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**PLEASE COMPLETE THIS FORM BY CIRCLING THE NUMBER OF THE APPROPRIATE ANSWER IN THE AREA BELOW.**

Please rate the difficulty of your course.

Very Easy 0 1 2 3 4 5 Very Difficult

Please rate the difficulty of the testing process.

Very Easy 0 1 2 3 4 5 Very Difficult

Please rate the subject matter on the exam to your actual field or work.

Very Similar 0 1 2 3 4 5 Very Different

How did you hear about this Course? \_\_\_\_\_

What would you do to improve the Course?

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How about the price of the course? Poor \_\_ Fair\_\_ Average\_\_ Good \_\_ Great \_\_

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Any other concerns or comments.

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## Plumbing 101 CEU Course Assignment

*The Assignment (Exam) is also available in Word on the Internet for your Convenience, please visit [www.ABCTLC.com](http://www.ABCTLC.com) and download the assignment and e-mail it back to TLC.*

You will have 90 days from the start of this course to complete in order to receive your Professional Development Hours (**PDHs**) or Continuing Education Unit (**CEU**). A score of 70 % is necessary to pass this course. We prefer if this exam is proctored. No intentional trick questions. If you should need any assistance, please email all concerns and the completed manual to [info@tlch2o.com](mailto:info@tlch2o.com).

We would prefer that you utilize the enclosed answer sheet in the front, but if you are unable to do so, type out your own answer key. Please include your name and address on your Answer Key and make copy for yourself. You can e-mail or fax your Answer Key along with the Registration Form to TLC. **(S) Means answer may be plural or singular. Multiple Choice Section, One answer per question and please use the answer key.**

### Water Service Pipe Installation

1. Underground Water Service.

Water service pipe shall be installed outside the?

- A. Contamination
- B. Water service pipe
- C. Foundation wall
- D. Maximum frost penetration of the local area
- E. Center of the sanitary sewer
- F. None of the Above

2. Water service and building drain or building sewer may be installed in which of the following terms with a minimum of 10 feet horizontal separation?

- A. An exterior wall
- B. Same trench
- C. Separate trenches
- D. Beneath a sanitary sewer or drain
- E. An underground potable water pipe
- F. None of the Above

3. According to the text, the water service and the building drain or building sewer may be installed in the same trench provided the water service is placed on which of the following terms a minimum of 18 inches above the building drain or building sewer?

- A. A solid shelf
- B. Same trench
- C. Separate trenches
- D. Beneath a sanitary sewer or drain
- E. An underground potable water pipe
- F. None of the Above

4. The minimum depth for any water service pipe shall be at least 36 inches or the maximum frost penetration of which of the following terms, whichever is of greater depth?

- A. Local area
- B. Water service pipe
- C. Foundation wall
- D. Maximum frost penetration of the local area
- E. Center of the sanitary sewer
- F. None of the Above

5. No water service pipe shall be installed or permitted outside of a building or in which of the following terms unless provisions are made to protect such pipe from freezing?

- A. An exterior wall
- B. Same trench
- C. Soil or waste lines
- D. Beneath a sanitary sewer or drain
- E. An underground potable water pipe
- F. None of the Above

6. Potable Water Piping and Sanitary Sewer Crossing Installation Requirements.

Where it is necessary for the potable water piping to pass above or below a sanitary sewer, such piping shall be installed with which of the following terms for a distance of 10 feet on either side from the center of the sanitary sewer?

- A. Contamination
- B. Water service pipe
- C. Foundation wall
- D. Maximum frost penetration of the local area
- E. Minimum vertical separation of 18 inches
- F. None of the Above

7. Where it is necessary for the potable water piping to pass beneath \_\_\_\_\_, the sanitary sewer or drain shall be constructed of materials as specified in Approved Building Drainage/Vent Pipe for building drains, and shall extend on each side of the crossing to a distance of at least 10 feet as measured at right angles to the water line?

- A. An exterior wall
- B. Same trench
- C. Soil or waste lines
- D. Sanitary sewer or drain
- E. An underground potable water pipe
- F. None of the Above

**Wet/Dry Bore:**

8. When it is not possible to comply with subsection (b)(1) or (2), a pressure rated pipe approved for building drain material shall encase the water service pipe. Which of the following terms shall be sealed with a casing seal and extend 10 feet on either side of the center of the sanitary sewer pipe?

- A. Stop-and-waste valves
- B. Potability of the water
- C. Air gap
- D. Supply outlet
- E. Auxiliary pressure (booster) system
- F. None of the Above

**Stop-And-Waste Valve**

9. Frost free hydrants and fire hydrants shall not be considered?

- A. Stop-and-waste valves
- B. Potability of the water
- C. Air gap
- D. Supply outlet
- E. Auxiliary pressure (booster) system
- F. None of the Above

**Potable Water Pumping and Storage Equipment**

10. Potable water pumps, tanks, filters, and all other appliances and devices shall be protected against?

- A. Relief valve
- B. Contamination
- C. Deep seal
- D. Maximum allowable working pressure
- E. Outside atmosphere
- F. None of the Above

**Water Supply Tanks.**

11. Which of the following terms shall be properly covered to prevent contamination of the water supply?

- A. Stop-and-waste valves
- B. Potability of the water
- C. Potable water supply tanks
- D. Supply outlet
- E. Auxiliary pressure (booster) system
- F. None of the Above

**Cleaning, Painting, Repairing Water Tanks.**

12. A potable water supply tank used for which of the following terms shall not be lined, painted or repaired with any material which affects either the taste or the potability of the water?

- A. Domestic purposes
- B. Potability of the water
- C. An air gap
- D. The supply outlet
- E. Auxiliary pressure (booster) system
- F. None of the Above

13. Tanks shall be disconnected from the system during such operations to prevent any which of the following terms from entering the system?

- A. Foreign substance
- B. No restrictions
- C. An air gap
- D. Auxiliary pressure systems
- E. An area of at least twice the size of the supply pipe
- F. None of the Above

**Potable Water Supply Tanks and Auxiliary Pressure Tanks**

14. When the water pressure from the \_\_\_\_\_ is insufficient during periods of peak flow or due to the building height to supply all fixtures, the rate of supply shall be supplemented by a gravity tank or auxiliary pressure system.

- A. Public water supply main
- B. Potability of the water
- C. An air gap
- D. Supply outlet
- E. Auxiliary pressure (booster) system
- F. None of the Above

15. Which of the following terms shall not substitute for adequate sizing of water distribution piping within the building?

- A. Vacuum relief valve
- B. No restrictions
- C. An air gap
- D. Auxiliary pressure systems
- E. An area of at least twice the size of the supply pipe
- F. None of the Above

**Tank Supply Inlet and Outlet.**

16. Which of the following terms to the tank shall have a minimum air gap of at least six (6) inches?

- A. Water supply inlet
- B. Potability of the water
- C. Gravity tank(s)
- D. Supply outlet
- E. Auxiliary pressure (booster) system
- F. None of the Above

**Overflow For Water Supply Tanks.**

17. Overflow pipes for which of the following terms shall be indirectly connected to the drainage system with an air gap of at least six (6) inches?

- A. Water supply inlet
- B. Potability of the water
- C. Gravity tank(s)
- D. Supply outlet
- E. Auxiliary pressure (booster) system
- F. None of the Above

18. Which of the following terms shall be full sized, unrestricted and screened with 24-mesh per inch stainless steel or bronze screen?

- A. Overflow pipes
- B. Potability of the water
- C. An air gap
- D. The supply outlet
- E. Auxiliary pressure (booster) system
- F. None of the Above

(s) Means plural or singular use

**Size of Overflow.**

19. Overflow drains for gravity water supply tanks shall have an area of at least twice the size of which of the following terms?

- A. Vacuum relief valve
- B. Restrictions
- C. Air gap
- D. Auxiliary pressure systems
- E. Supply pipe
- F. None of the Above

**Drains.**

20. Water supply tanks shall be provided with which of the following terms located at their lowest point and discharge through an indirect waste with an air gap of twice the diameter of the drain line?

- A. Full sized
- B. Valved drain lines
- C. An air gap
- D. The supply outlet
- E. Auxiliary pressure (booster) system
- F. None of the Above

21. Which of the following terms shall have no restrictions and need not exceed two (2) inches in diameter?

- A. Vacuum relief valve
- B. No restrictions
- C. An air gap
- D. Auxiliary pressure systems
- E. Drain line and valve
- F. None of the Above

**Gravity and Suction Tanks.**

22. Which of the following terms used for potable water supply or to supply fire-fighting equipment only shall be equipped with tight, overlapping covers?

- A. Tanks
- B. Water service
- C. Water meter
- D. A common shut-off valve
- E. The water supply system
- F. None of the Above

**Pressure Tanks.**

23. Pressure tanks used for supplying water to the water distribution system, or to supply standpipes for fire equipment only, shall be equipped with a vacuum relief valve located on?

- A. Vacuum relief valve
- B. Top of the tank
- C. An air gap
- D. Auxiliary pressure systems
- E. An area of at least twice the size of the supply pipe
- F. None of the Above

**Water Supply Control Valves and Meter**

24. A full-port shut-off valve shall be located near the curb or property line and immediately inside the building, either on the inlet or outlet side of the water meter, when underground, this valve shall be located in a?

- A. Shut-off valve
- B. Each individual fixture
- C. Water supply system
- D. Stop box or meter vault
- E. A full-port valve
- F. None of the Above

25. The meter shall have unions on which of the following terms, but is not required to have a shut-off valve on the inlet side of the meter if it is inside a building?

- A. Gravity tank(s) Means plural or singular
- B. Water service
- C. Inlet/outlet openings
- D. A common shut-off valve
- E. The water supply system
- F. None of the Above

26. Which of the following terms with an open area at least that of the water service shall be provided for all meters?

- A. A shut-off valve
- B. Each individual fixture
- C. Water supply system
- D. Stop box or meter vault
- E. A full-port valve
- F. None of the Above

**Tank Controls.**

27. Supply lines taken from which of the following terms shall be valved at or near their source?

- A. Gravity tank(s) Means plural or singular
- B. Water service
- C. Pressure or gravity tanks
- D. A common shut-off valve
- E. The water supply system
- F. None of the Above

**Water Heating Equipment.**

28. A shut-off valve shall be provided in the cold-water branch line within 5 feet of each water storage tank or each?

- A. Water heater
- B. Each individual fixture
- C. Water supply system
- D. Stop box or meter vault
- E. A full-port valve
- F. None of the Above

**Separate Controls for Each Family Unit.**

29. In multiple family dwellings, the water service or water distribution pipe to each family unit shall be controlled by an arrangement of shut-off valves which permits each group of fixtures and which of the following terms to be shut off without interference with the water supply to any other family unit or portion of the building?

- A. Gravity tank(s) Means plural or singular
- B. Each individual fixture
- C. Water meter
- D. A common shut-off valve
- E. The water supply system
- F. None of the Above

**Buildings Other Than Dwellings.**

30. Shut-off valves shall be installed to permit the water supply to all equipment and/or fixtures in each separate room to be shut off without interfering with which of the following terms to any other room or portion of the building?

- A. A shut-off valve
- B. Each individual fixture
- C. Water supply system
- D. Stop box or meter vault
- E. Water supply
- F. None of the Above

31. For plumbing equipment or fixtures that are installed back-to-back in adjacent rooms, e.g., in adjacent restrooms, a common shut-off valve may be used to shut off which of the following terms to the back-to-back fixtures in no more than 2 adjacent rooms?

- A. Water supply
- B. Water service
- C. Water meter
- D. A common shut-off valve
- E. Supply system
- F. None of the Above

**Health Care Facilities.**

32. In the residence rooms of health care facilities which of the following terms to each resident unit or back-to-back rooms shall be controlled by an arrangement of line valves that permits each group of fixtures?

- A. Water supply
- B. Water service
- C. Water meter
- D. Water distribution pipe
- E. Supply system
- F. None of the Above

### **Flushing/Disinfection of Potable Water System**

33. If the potable water supply serving the water supply system is chlorinated, e.g., a community water system, which of the following terms or appropriate repaired portion, shall be flushed with clean, potable water until no dirty water appears at the point of outlet.

- A. Water supply system
- B. Chlorine solution
- C. Water
- D. Water sample
- E. Potable water
- F. None of the Above

### **Non-Chlorinated Water Supply.**

34. The pipe system shall be flushed with clean, potable water until which of the following terms appears at the point of outlet?

- A. No dirty water
- B. Chlorine solution
- C. The water
- D. Water sample
- E. Potable water
- F. None of the Above

35. The system shall be filled with which of the following terms containing at least 50 parts per million of chlorine, shall be valved off and allowed to stand for 24 hours?

- A. Water supply system
- B. A chlorine solution
- C. The water
- D. Water sample
- E. Potable water
- F. None of the Above

36. Following the required contact time, the system shall be flushed with clean, potable water until the chlorine level in the water discharging from the system is within acceptable limits for potable water, i.e., generally until the water has?

- A. Water supply system
- B. Chlorine solution
- C. No detectable chlorine odor
- D. Water sample
- E. Potable water
- F. None of the Above

37. To ensure that the water supplied by the water system is safe for drinking, which of the following terms taken from the water supply system shall be secured?

- A. Water supply sample
- B. Chlorine solution sample
- C. Test
- D. Water sample
- E. Potable water sample
- F. None of the Above

### **Water Service Sizing**

38. If flushometers or other devices requiring a high rate of water flow are used, which of the following terms shall be designed and installed to provide this additional flow?

- A. Peak demand
- B. Water service pipe
- C. An air chamber
- D. Dead ends
- E. Water system
- F. None of the Above

### **Demand Load.**

39. The calculation of \_\_\_\_\_ for a building shall be based on the total number and types of fixtures installed in the building.

- A. Water service demand load
- B. Peak use
- C. Any plumbing fixture
- D. Discharge side of the water meter
- E. Satisfactory operation
- F. None of the Above

40. \_\_\_\_\_ or water distribution piping ("dead ends"), where the water in the piping may become stagnant, are prohibited. A developed length of more than 2 feet shall be considered a dead end.
- A. Peak demand
  - B. Freezing
  - C. An air chamber
  - D. Unused sections of water service
  - E. Water system
  - F. None of the Above

### **Design of a Building Water Distribution System**

41. Design and Installation. The design and installation of the hot and cold water building distribution systems shall provide a volume of water at the required rates and pressures to ensure the safe, efficient and satisfactory operation of fixtures, fittings, appliances and other connected devices during periods of?
- A. Water service demand load
  - B. Peak use
  - C. Any plumbing fixture
  - D. Discharge side of the water meter
  - E. Satisfactory operation
  - F. None of the Above
42. No distribution pipe or pipes shall be installed or which of the following terms or in an exterior wall unless provisions are made to protect such pipe from freezing?
- A. An exterior wall
  - B. Same trench
  - C. Soil or waste lines
  - D. Sanitary sewer or drain
  - E. Permitted outside of a building
  - F. None of the Above

### **Minimum Water Pressure.**

43. The minimum constant water service pressure on which of the following terms shall be (at least) 20 p.s.i.?
- A. Air chamber(s)
  - B. An auxiliary pressure system
  - C. Any plumbing fixture
  - D. The discharge side of the water meter
  - E. Satisfactory operation
  - F. None of the Above

### **Auxiliary Pressure. Supplementary Tank.**

44. If the pressure in the system is below the minimum 8 p.s.i. at the highest water outlet when the flow in the system is at peak demand, an automatically controlled pressure tank or gravity tank of a capacity to supply sections of the building installation which are too high to be supplied directly from?
- A. Peak demand
  - B. Freezing
  - C. An air chamber
  - D. The public water main
  - E. Water system
  - F. None of the Above

### **Low Pressure Cut-Off.**

45. When a booster pump except those used for fire protection is used on an auxiliary pressure system, there shall be installed which of the following terms on the booster pump to prevent the creation of pressures less than 5 p.s.i. on the suction side of the pump.
- A. Air chamber(s)
  - B. An auxiliary pressure system
  - C. Any plumbing fixture
  - D. Discharge side of the water meter
  - E. Low-pressure cut-off switch
  - F. None of the Above

46. A shut-off valve shall be installed on the suction side of the water system and within 5 feet from the pump suction inlet, and \_\_\_\_\_ shall be installed between the shut-off valve and pump.

- A. Pressure relief valve(s)
- B. Energy cut-off devices
- C. A check valve or shut-off valve
- D. Pressure gauge
- E. Temperature sensing element
- F. None of the Above

**Water Hammer.**

47. All building water supply systems shall be provided with which of the following terms or approved mechanical devices or water hammer arrestors to absorb high pressures?

- A. Air chamber(s)
- B. An auxiliary pressure system
- C. Any plumbing fixture
- D. Discharge side of the water meter
- E. Satisfactory operation
- F. None of the Above

**Air Chambers.**

48. Which of the following terms with a volume equivalent to one with the dimension listed above may also be used?

- A. Pressure relief valve(s)
- B. Energy cut-off devices
- C. An air chamber
- D. Combination pressure-temperature relief valve
- E. Temperature sensing element
- F. None of the Above

**Excessive Static Water Pressure.**

49. When water main pressure exceeds 80 p.s.i., a pressure reducing valve and a strainer with a by-pass relief valve shall be installed in the water service pipe near the entrance to the building to reduce the water pressure to 80 p.s.i. or lower, except where the water service pipe supplies water directly to a?

- A. Atmosphere
- B. Water main
- C. Potable water
- D. Full water main pressure
- E. Water pressure booster system
- F. None of the Above

50. When the water pressure exceeds 80 p.s.i. at any plumbing fixture, a pressure reducing valve, pressure gauge and a strainer with a?

- A. By-pass relief valve
- B. Potable water side
- C. Heat exchanger
- D. A hydropneumatic or elevated water supply tank system
- E. The applicable standard
- F. None of the Above

**Variable Street Pressures.**

51. Which of the following terms has a wide fluctuation in pressure, the water distribution system shall be designed for minimum pressure available at the main?

- A. Atmosphere
- B. Water main
- C. Potable water
- D. Full water main pressure
- E. A pressure relief valve
- F. None of the Above

**Hot Water Supply and Distribution**

52. Which of the following terms used for heating and storage of hot water shall bear the marking of an approved testing agency?

- A. All equipment
- B. Water main
- C. Potable water
- D. Full water main pressure
- E. A pressure relief valve
- F. None of the Above



53. Which of the following terms shall use a double-walled heat exchanger that is exposed or vented to the atmosphere between the walls?

- A. A solar-heated system
- B. Water main
- C. Potable water
- D. Full water main pressure
- E. A pressure relief valve
- F. None of the Above

54. Heat exchangers may be of single wall construction if a non-toxic transfer fluid with no conditioning chemicals in the system is used, or if \_\_\_\_\_ is installed to isolate the heat exchanger from the potable water system?

- A. Cold water line
- B. Hot water
- C. Water heater
- D. A pressure gradient monitor system
- E. Water heater's cold water supply
- F. None of the Above

55. If pressure on the which of the following terms reaches a pressure less than 10 p.s.i. above the toxic transfer fluid pressure, an audible alarm shall be activated?

- A. Atmosphere
- B. Water main
- C. Potable water side
- D. Full water main pressure
- E. A pressure relief valve
- F. None of the Above

56. Heat exchangers using which of the following terms or having conditioning chemicals in the system shall be separated from the potable water by double wall construction?

- A. Toxic transfer fluid
- B. Potable water side
- C. Heat exchanger
- D. Hydropneumatic or elevated water supply tank system
- E. Standard
- F. None of the Above

#### **Direct Fired Instantaneous Heaters.**

57. A properly sized temperature and pressure relief valve, based upon the energy input rating of the heater, shall be installed on the tempered line with the temperature sensing element immersed in the tempered water line as close as possible to the?

- A. Mixing valve
- B. Water main
- C. Potable water
- D. Full water main pressure
- E. Pressure relief valve
- F. None of the Above

#### **Water Heaters Used for Space Heating.**

58. Any water heater to be used for space heating, in addition to which of the following terms, must conform to ANSI Z21.10.1a-1991?

- A. Cold water line
- B. Hot water supply
- C. Water heater
- D. Proper terminal heating device
- E. Water heater's cold water supply
- F. None of the Above

59. The mixing valve shall be set to prevent temperatures exceeding 120°F from reaching the?

- A. Cold water line
- B. Hot water
- C. Water heater
- D. Proper terminal heating device
- E. Plumbing fixtures
- F. None of the Above

60. A single check valve shall be installed in the cold water line supplying the?

- A. Cold water line
- B. Hot water
- C. Water heater
- D. Proper terminal heating device
- E. Water heater's cold water supply
- F. None of the Above

61. A properly sized and approved expansion tank shall be located on the outlet side of the check valve in the water heater's cold water supply with which of the following terms between the heater and expansion tank?

- A. Cold water line
- B. No shut-off valve
- C. Water heater
- D. Proper terminal heating device
- E. Water heater's cold water supply
- F. None of the Above

62. Valves supplying hot water to the \_\_\_\_\_ for space heating shall have a minimum of a 1 inch orifice?

- A. Cold water line
- B. Hot water
- C. Heat transfer unit
- D. Proper terminal heating device
- E. Water heater's cold water supply
- F. None of the Above

63. The water heater instructions shall have a statement specifying that piping and components connected to the water heater for the space heating application shall be suitable for use with potable water, and which of the following terms shall not exceed a developed length of more than 25 feet from the heating coil.

- A. Cold water line
- B. Hot water
- C. Water heater
- D. Proper terminal heating device
- E. Water heater's cold water supply
- F. None of the Above

#### **Safety Devices**

64. All equipment used for heating water or storing hot water shall be achieved by installing either a pressure relief valve and which of the following terms or by installing a combination pressure-temperature relief valve?

- A. Pressure relief valve(s)
- B. Energy cut-off devices
- C. Temperature relief valve
- D. Combination pressure-temperature relief valve
- E. Temperature sensing element
- F. None of the Above

#### **Pressure and Temperature Relief Valves.**

65. Which of the following terms shall have an ASME relief rating to meet the pressure conditions specified on the equipment served?

- A. Pressure relief valve(s)
- B. Energy cut-off devices
- C. A check valve or shut-off valve
- D. Combination pressure-temperature relief valve
- E. Temperature sensing element
- F. None of the Above

#### **Temperature Relief Valves.**

66. Temperature relief valves shall be installed so that the \_\_\_\_\_ is immersed in the hottest water within the top 6 inches of the tank?

- A. Pressure relief valve(s)
- B. Energy cut-off devices
- C. A check valve or shut-off valve
- D. Combination pressure-temperature relief valve
- E. Temperature sensing element
- F. None of the Above

**Combination Pressure-Temperature Relief Valves.**

67. Combination pressure-temperature relief valves shall comply with the applicable requirements as listed in Appendix A, Table A for individual pressure and which of the following terms and shall be installed so that the temperature sensing element is immersed in the hottest water within the top 6 inches of the tank and have a test lever?

- A. Pressure relief valve(s)
- B. Energy cut-off devices
- C. A check valve or shut-off valve
- D. Combination pressure-temperature relief valve
- E. Individual temperature relief valves
- F. None of the Above

68. A check valve or shut-off valve shall not be installed between any safety device and the hot water equipment, nor shall there be any which of the following terms in the discharge pipe from the relief valve?

- A. Pressure relief valve(s)
- B. Energy cut-off devices
- C. Shut-off valve
- D. Combination pressure-temperature relief valve
- E. Temperature sensing element
- F. None of the Above

69. Energy cut-off devices. Exception: Which of the following terms are exempt or may be used?

- A. Pressure relief valve(s)
- B. Instantaneous cut-off devices
- C. A check valve or shut-off valve
- D. Combination pressure-temperature relief valve
- E. Temperature sensing element
- F. None of the Above

**Relief Discharge Outlet.**

70. Which of the following terms shall be indirectly connected to waste?

- A. Relief valve
- B. Vented P-trap
- C. Deep seal
- D. Maximum allowable working pressure
- E. A relief discharge outlet
- F. None of the Above

71. Which of the following terms shall not discharge through a wall into the outside atmosphere or where there is a possibility of freezing?

- A. Relief valve
- B. Vented P-trap
- C. Deep seal
- D. Maximum allowable working pressure
- E. Outside atmosphere
- F. None of the Above

72. Which of the following terms shall be installed from the relief valve to within 6 inches of the floor or receptor and the end of such line shall not be threaded?

- A. Relief valve
- B. Vented P-trap
- C. Deep seal
- D. Maximum allowable working pressure
- E. Discharge line
- F. None of the Above

73. The discharge piping shall discharge indirectly into a floor drain, hub drain, service sink, sump or a trapped and \_\_\_\_\_ which is located in the same room as the water heater?

- A. Relief valve
- B. Vented P-trap
- C. Deep seal
- D. Maximum allowable working pressure
- E. Outside atmosphere
- F. None of the Above

74. The trap must have which of the following terms to protect against evaporation or shall be fed by means of a priming device designed and installed for that purpose?

- A. Relief valve
- B. Vented P-trap
- C. Deep seal
- D. Maximum allowable working pressure
- E. Outside atmosphere
- F. None of the Above

**Pressure Marking – Hot Water Storage Tank.**

75. Which of the following terms shall be permanently marked in an accessible place with the maximum allowable working pressure?

- A. Relief valve
- B. Vented P-trap
- C. Hot water system
- D. Combination pressure-temperature relief valve
- E. Hot water storage tanks
- F. None of the Above

**Vacuum Relief Valve.**

76. Where a hot water storage tank or water heater is located at an elevation above the fixture outlets in which of the following terms or if the storage tank or water heater is bottom fed?

- A. Thermostatic mixing valves
- B. Vented P-trap
- C. Hot water system
- D. Combination pressure-temperature relief valve
- E. Hot water storage tanks
- F. None of the Above

**Multiple Temperature Hot Water Systems.**

77. Such systems shall be provided with \_\_\_\_\_ to properly control the desired temperatures.

- A. Thermostatic mixing valves
- B. Vented P-trap
- C. Hot water system
- D. Combination pressure-temperature relief valve
- E. Hot water storage tanks
- F. None of the Above

**Types of Joints**

78. Caulked joints. Caulked joints for which of the following terms shall be firmly packed with oakum or hemp and filled with molten lead?

- A. Bore and all chips
- B. Brass or copper
- C. Lead ring
- D. Oakum or hemp and filled with molten lead
- E. Cast iron hub-and-spigot pipe
- F. None of the Above

79. Paint, varnish, or other coatings shall not be permitted on the jointing material until after a plumbing inspector has been given the opportunity to test and approve or disapprove the?

- A. Joint
- B. Caulking ferrule
- C. Wiped joints
- D. Properly soldered together
- E. Jointing material
- F. None of the Above

**Threaded/Screwed Joints.**

80. All burrs shall be removed; pipe ends shall be reamed or filed to size of which of the following terms shall be removed?

- A. Bore and all chips
- B. Brass or copper
- C. Lead ring
- D. Oakum or hemp and filled with molten lead
- E. Cleaned bright
- F. None of the Above

81. Which of the following terms shall be insoluble in water and non-toxic?

- A. A proper flaring tool
- B. Caulking compound
- C. Wiped joints
- D. Pipe joints compound
- E. Jointing material compound
- F. None of the Above

82. Wiped Joints. Joints in lead pipe or fittings, or between lead pipefittings and brass or copper pipe ferrules, solder nipples, or traps shall be?

- A. Full-wiped joints
- B. Brass or copper
- C. Lead ring
- D. Oakum or hemp and filled with molten lead
- E. Caulking compound
- F. None of the Above

83. Which of the following terms shall have exposed surface on each side of the joint at least  $\frac{3}{4}$ " and at least as thick as the material being joined?

- A. A proper flaring tool
- B. Caulking ferrule
- C. Wiped joints
- D. Properly soldered together
- E. Jointing material
- F. None of the Above

84. Wall or floor flange lead-wiped joints shall be made by using a lead ring or which of the following terms placed behind the joints at the wall or floor?

- A. Bore and all chips
- B. Brass or copper
- C. Lead ring
- D. Oakum or hemp and filled with molten lead
- E. Flange
- F. None of the Above

85. Which of the following terms between lead pipe and cast iron, steel or wrought iron shall be made by means of a caulking ferrule, soldering nipple, or bushing?

- A. Joints
- B. Caulking ferrule
- C. Wiped joints
- D. Properly soldered together
- E. Jointing material
- F. None of the Above

#### **Soldered Joints.**

86. The joints shall be which of the following terms and made with approved lead free solder?

- A. Bore and all chips
- B. Brass or copper
- C. Lead ring
- D. Properly fluxed
- E. Cleaned bright
- F. None of the Above

87. Joints in copper water tubing shall be made with approved cast bronze or wrought copper pressure fittings?

- A. A proper flaring tool
- B. Caulking ferrule
- C. Wiped joints
- D. Properly soldered together
- E. Jointing material
- F. None of the Above

88. All solders or flux containing more than 0.2% lead shall bear a warning label which states that the solder or?

- A. Bore and all chips
- B. Brass or copper
- C. Lead ring
- D. Molten lead
- E. Flux
- F. None of the Above

**Flared Joints.**

89. Which of the following terms for plastic pipe and tubing and soft copper water tubing shall be made with approved fittings?

- A. Approved fitting(s)
- B. Flared joints
- C. Collar
- D. Are prohibited
- E. Are approved
- F. None of the Above

**Hot-Poured Joints.**

90. Hot-poured compound for clay or concrete sewer pipe shall not be which of the following terms and when poured against a dry surface?

- A. Approved fitting(s)
- B. Dry surface
- C. Water absorbent
- D. Prohibited
- E. Approved brazing filler metal
- F. None of the Above

**Precast Joints.**

91. Which of the following terms is inserted in the collar, it shall bind before contacting the base of the socket?

- A. Approved fitting(s)
- B. Dry surface
- C. Spigot end
- D. Bituminized fiber pipe
- E. Approved brazing filler metal
- F. None of the Above

**Brazed Joints.**

92. Brazed joints shall be made by first cleaning the surface to be joined down to the base metal, applying which of the following terms for such joints and for the filler metal?

- A. Approved fitting(s)
- B. Bituminized fiber pipe
- C. Brazing
- D. Flux approved
- E. Approved brazing filler metal
- F. None of the Above

93. The joint shall be made with a mechanical extraction tool and joined by?

- A. Approved fitting(s)
- B. Bituminized fiber pipe
- C. Brazing
- D. Flux approved
- E. Approved brazing filler metal
- F. None of the Above

**Cement Mortar Joints.**

94. Except for repairs, cement mortar joints are?

- A. Approved fitting(s)
- B. Dry surface
- C. Accepted
- D. Prohibited
- E. Approved
- F. None of the Above

**Burned Lead (Welded).**

95. (For drain, waste and vent system only) The thickness of which of the following terms shall be at least as thick as the lead being joined?

- A. Weld
- B. Bituminized fiber pipe
- C. Brazing
- D. Flux approved
- E. Approved brazing filler metal
- F. None of the Above

**96. Bituminized Fiber Pipe Joints.**

Joints in bituminized fiber pipe shall be made with \_\_\_\_\_ of the same composition as the pipe.

- A. Weld
- B. Bituminized fiber pipe
- C. Brazing
- D. Tapered type couplings
- E. Approved brazing filler metal
- F. None of the Above

**Plastic Pipe Joints**

97. Every joint in plastic piping shall be made with approved fittings by either solvent welded or fusion welded connections, compression fittings, approved insert fittings, metal clamps and screws of corrosion resistant material, or?

- A. Adaptor fittings
- B. Compression fittings
- C. Solvent welded
- D. Threaded joints
- E. Thermal welded joints and fittings
- F. None of the Above

**Joints and Fittings in Plastic Pipe.**

98. Which of the following terms and joints shall be in accordance with the manufacturer's recommendations.

- A. Clamps
- B. Potable water piping fittings
- C. Slip joints
- D. Ground joint connections
- E. Threaded or flanged joints
- F. None of the Above

99. Polyethylene (PE) pipe shall be installed only with compression fittings, insert and clamp type fittings or?

- A. Adaptor fittings
- B. Compression fittings
- C. Solvent welded
- D. Threaded joints
- E. Thermal welded joints and fittings
- F. None of the Above

100. Which of the following terms shall be of corrosion resistant material, the inside diameter of any insert fitting shall not be less than the minimum allowable size for water service/distribution piping?

- A. Clamps
- B. Fittings and joints
- C. Slip joints
- D. Ground joint connections
- E. Threaded or flanged joints
- F. None of the Above

101. Polyvinyl chloride (PVC) pipe shall be installed with which of the following terms joints only?

- A. Adaptor fittings
- B. Compression fittings
- C. Solvent welded
- D. Solvent welded or flanged
- E. Thermal welded joints and fittings
- F. None of the Above

102. The primer and solvent cement used shall be in accordance with the manufacturer's recommendation for?

- A. Polyvinyl chloride piping
- B. Fittings and joints
- C. Slip joints
- D. Ground joint connections
- E. Threaded or flanged joints
- F. None of the Above

103. Polybutylene (PB) pipe shall be installed only with insert and clamp type fittings, compression type, flanged type, or?

- A. Adaptor fittings
- B. Compression fittings
- C. Solvent welded
- D. Threaded joints
- E. Thermal welded joints and fittings
- F. None of the Above

**Joints in Plastic Drainage.**

104. Which of the following terms in plastic drainage piping or vent piping within a building shall be solvent welded?

- A. Joints
- B. Fittings and joints
- C. Slip joints
- D. Ground joint connections
- E. Threaded or flanged joints
- F. None of the Above

105. The solvent cement shall be specific for the type of piping material, which of the following terms are acceptable if accessible?

- A. Adaptor fittings
- B. Compression fittings
- C. Solvent welded
- D. Threaded joints
- E. O-ring expansion joints
- F. None of the Above

**Ground Joint Connections.**

106. Which of the following terms shall not be used in any inaccessible drainage piping?

- A. Clamps
- B. Fittings and joints
- C. Slip joints
- D. Ground joint connections
- E. Threaded or flanged joints
- F. None of the Above

**No-Hub Soil Pipe Joints.**

107. Shielded joints for no-hub cast iron soil pipe shall be made with an elastomeric gasket covered by either a stainless steel shield secured by 2 or more stainless steel bands or clamps, or covered by which of the following terms secured with stainless steel nuts and bolts?

- A. Adaptor fittings
- B. Compression fittings
- C. Solvent welded
- D. Threaded joints
- E. Cast iron couplings
- F. None of the Above

**Compression Type Joints.**

108. The pipe shall comply with the specifications contained in ASTM A-74 with regard to which of the following terms dimensions and tolerances?

- A. Hub and spigot
- B. Fittings and joints
- C. Slip joints
- D. Ground joint connections
- E. Threaded or flanged joints
- F. None of the Above

109. Which of the following terms for copper water tube or brass tube shall be made with brass ferrules and ground joint connections?

- A. Compression type joints
- B. Fittings and joints
- C. Slip joints
- D. Ground joint connections
- E. Threaded or flanged joints
- F. None of the Above



### Special Joints

110. Copper Tubing to Screwed Pipe Joints. Which of the following terms from copper tubing to threaded pipe shall be made by the use of a cast bronze or wrought copper adaptor fitting?

- A. Joints
- B. Fittings and joints
- C. Slip joints
- D. Ground joint connections
- E. Threaded or flanged joints
- F. None of the Above

### Slip Joints.

111. In drainage and water piping, which of the following terms may be used on the inlet side of the trap or in the trap seal, and on the exposed fixture supply?

- A. Clamps
- B. Fittings and joints
- C. Slip joints
- D. Ground joint connections
- E. Threaded or flanged joints
- F. None of the Above

112. Which of the following terms shall not be used in any inaccessible piping?

- A. Clamps
- B. Fittings and joints
- C. Slip joints
- D. Ground joint connections
- E. Threaded or flanged joints
- F. None of the Above

113. Which of the following terms are permitted, provided they meet the following specifications: they are installed by being pushed onto copper or CPVC?

- A. The expansion joint
- B. Push-on angle stop valves
- C. Stainless steel bands
- D. Grooved type mechanical couplings
- E. Compression type couplings
- F. None of the Above

114. Which of the following terms material shall conform to the type piping on which it is installed?

- A. The expansion joint
- B. Metal tabs
- C. Stainless steel bands
- D. Grooved type mechanical couplings
- E. Compression type couplings
- F. None of the Above

115. Which of the following terms shall not be used in unexposed water piping except for water services, water meter yokes and stop box connections?

- A. The expansion joint
- B. Metal tabs
- C. Stainless steel bands
- D. Grooved type mechanical couplings
- E. Compression type couplings
- F. None of the Above

### Grooved Type Mechanical Couplings.

116. Which of the following terms, may be used in potable water and roof drain piping, such couplings shall not be used in waste, soil or vent piping?

- A. The expansion joint
- B. Metal tabs
- C. Stainless steel bands
- D. Grooved type mechanical couplings
- E. Compression type couplings
- F. None of the Above

### Use of Joints

117. Clay Sewer Pipe. Joints in vitrified clay pipe or between such pipe and metal pipe shall be made with a neoprene gasket and?

- A. Proper adaptor fittings
- B. Flared joints
- C. Stainless steel bands
- D. Neoprene gasket and stainless steel bands
- E. Plastic pipe
- F. None of the Above

118. Concrete Sewer Pipe. Joints in concrete sewer pipe or between such pipe and metal pipe shall be made with which of the following terms and stainless steel bands?

- A. Proper adaptors
- B. Wiped joints
- C. Unions
- D. Stop box connections
- E. Neoprene gasket
- F. None of the Above

**Screw Pipe to Cast Iron.**

119. Which of the following terms between wrought iron, steel, brass, or copper pipe, and cast iron pipe shall be either caulked or threaded joints?

- A. Proper adaptor fittings
- B. Flared joints
- C. Appropriate type adaptor
- D. Joints
- E. Plastic pipe
- F. None of the Above

**Lead to Cast Iron, Wrought Iron or Steel.**

120. Which of the following terms between lead and cast iron, wrought iron, or steel pipe shall be made by means of wiped joints to a caulking ferrule, soldering nipple, or brushing.

- A. Proper adaptors
- B. Wiped joints
- C. Unions
- D. Stop box connections
- E. Joints
- F. None of the Above

**Copper Water Tube.**

121. Which of the following terms in copper tubing shall be made with cast bronze or wrought copper pressure fittings, properly soldered or brazed, or by means of compression or flared joints?

- A. Proper adaptor fittings
- B. Flared joints
- C. Appropriate type adaptor
- D. Neoprene gasket and stainless steel bands
- E. Joints
- F. None of the Above

122. Which of the following terms and compression fittings shall not be installed underground except for water services, water meter yokes and stop box connections?

- A. Proper adaptors
- B. Flared joints
- C. Unions
- D. Stop box connections
- E. Stainless steel bands
- F. None of the Above

**Plastic Pipe.**

123. Joints between plastic pipe and which of the following terms shall be made only with an appropriate type adaptor?

- A. Proper adaptor fittings
- B. Flared joints
- C. Appropriate type adaptor
- D. Neoprene gasket and stainless steel bands
- E. Non-plastic material
- F. None of the Above

**Plastic-Commingling.**

124. There shall be no commingling of which of the following terms within the same plumbing system except through the use of proper adaptors?

- A. Proper adaptors
- B. Wiped joints
- C. Unions
- D. Plastic materials
- E. Stainless steel bands
- F. None of the Above

125. Plastic pipe shall not be installed in which of the following terms or chase that contains uninsulated hot water?

- A. Proper adaptor fittings
- B. Flared joints
- C. Appropriate type adaptor
- D. Any tunnel
- E. Plastic pipe
- F. None of the Above

### Unions

126. Which of the following terms may be used in the drainage and venting system when accessibly located above ground?

- A. Proper adaptors
- B. Wiped joints
- C. Unions
- D. Stop box connections
- E. Stainless steel bands
- F. None of the Above

127. Which of the following terms shall be installed in a water supply system within 5 feet of regulating equipment, water heaters, water conditioning tanks, water conditioning equipment, pumps?

- A. Proper adaptors
- B. Wiped joints
- C. Unions
- D. Stop box connections
- E. Stainless steel bands
- F. None of the Above

### Drainage System.

128. Unions may be used in the trap seal and on the inlet and outlet side of the trap. Unions shall have metal to metal seats except that which of the following terms may have plastic to plastic seats?

- A. Proper adaptors
- B. Wiped joints
- C. Unions
- D. Plastic unions
- E. Stainless steel bands
- F. None of the Above

### Water Supply System.

129. Unions in the water supply system shall be metal to metal with ground seats, except that plastic to metal unions may utilize durable, non-toxic, impervious?

- A. Proper adaptors
- B. Wiped joints
- C. Gaskets
- D. Metal to metal with ground seats
- E. Stainless steel bands
- F. None of the Above

130. Unions between copper pipe/tubing and dissimilar metals shall either be made with a brass converter fitting or be?

- A. Proper adaptors
- B. Wiped joints
- C. A dielectric type union
- D. Metal to metal with ground seats
- E. Stainless steel bands
- F. None of the Above

### Water Closet and Pedestal Urinal

131. Fixture connections between \_\_\_\_\_ and water closets, floor outlet service sinks and pedestal urinals, and earthenware trap standards shall be made by means of brass, copper, hard lead, plastic, or iron flanges; caulked, soldered, screwed or solvent welded to the drainage pipe.

- A. Proper adaptor fittings
- B. Non-drying plumber's putty
- C. Appropriate type adaptor
- D. Drainage pipes
- E. Floor flange
- F. None of the Above

132. The connection shall be bolted, with a gasket, washer or setting compound, \_\_\_\_\_ and the flange.

- A. Proper adaptor fittings
- B. Non-drying plumber's putty
- C. Appropriate type adaptor
- D. Earthenware
- E. Floor flange
- F. None of the Above

133. The use of putty or which of the following terms manufactured specifically for plumbing installation is acceptable?

- A. Proper adaptor fittings
- B. Non-drying plumber's putty
- C. Appropriate type adaptor
- D. Drying plumber's putty
- E. Floor flange
- F. None of the Above

### **Prohibited Joints and Connections in Drainage Systems**

134. Drainage System. Which of the following terms or connection that obstructs flow shall be used?

- A. Fitting or connection
- B. No overflow
- C. Floor outlet
- D. Any plumbing equipment condemned
- E. No fitting
- F. None of the Above

135. In existing buildings only which of the following terms or device may be connected to the fixture drain and shall not be considered as an obstruction?

- A. Plumbing fixtures
- B. Waste piping
- C. Impervious surfaces
- D. True alignment
- E. Flow control valve
- F. None of the Above

### **Increasesers and Reducers**

136. Different Sizes. Where different sizes of pipes or pipes and fittings are to be connected, the approved proper size increasers, which of the following terms shall be used between the two sizes?

- A. Fitting or connection
- B. Reducers or reducing fittings
- C. Floor outlet
- D. Any plumbing equipment condemned
- E. True alignment
- F. None of the Above

### **General Requirements - Material and Design**

137. Quality of Fixtures: Plumbing fixtures shall comply with which of the following terms, be constructed from approved materials, have smooth, impervious surfaces and be free of defects and concealed fouling surfaces?

- A. Plumbing fixtures
- B. Waste piping
- C. Approved designs
- D. An obstruction
- E. An overflow
- F. None of the Above

138. Any plumbing equipment condemned by the Department because of wear, damage, defects or which of the following terms shall not be used in a plumbing system?

- A. Fitting or connection
- B. No overflow
- C. Sanitary hazards
- D. Any plumbing equipment condemned
- E. True alignment
- F. None of the Above

**Overflows**

139. When any fixture is provided with which of the following terms the waste piping shall be so designed that the standing water in the fixtures cannot rise in the overflow when the stopper is closed or remain in the overflow when the fixture is emptied?

- A. Plumbing fixtures
- B. Waste piping
- C. Impervious surfaces
- D. An obstruction
- E. An overflow
- F. None of the Above

**Connection.**

140. Which of the following terms shall be connected to any other part of the drainage system?

- A. Fitting or connection
- B. No overflow
- C. Floor outlet
- D. Any plumbing equipment condemned
- E. True alignment
- F. None of the Above

**Installation**

141. Cleaning. Which of the following terms shall be installed in a manner to afford easy access for cleaning?

- A. Plumbing fixtures
- B. Waste piping
- C. Impervious surfaces
- D. Plumbing fixtures
- E. Durable corrosion resistant materials
- F. None of the Above

**Securing Fixtures.**

142. Floor outlet or wall hung fixtures shall be secured by screws or bolts of copper, brass, or other equally?

- A. Plumbing fixtures
- B. Waste piping
- C. Impervious surfaces
- D. Plumbing fixtures
- E. Durable corrosion resistant materials
- F. None of the Above

**Wall-Hung Fixtures.**

143. Which of the following terms shall be rigidly supported by a concealed metal supporting member so that no strain is transmitted to the fixture connection?

- A. All mixing faucets
- B. Water closet or urinal
- C. Public toilet rooms
- D. An existing bathtub
- E. Wall-hung fixtures
- F. None of the Above

**Setting.**

144. Which of the following terms and traps shall be set level and in a true alignment?

- A. Slip resistant surface
- B. True alignment
- C. Plumbing fixtures
- D. Commercial food establishment
- E. A hot water heater thermostat
- F. None of the Above

**Water Supply Connection.**

145. Hot and cold, tempered and cold, or tempered water only shall be supplied to which of the following terms that are designed for hot and cold, tempered and cold, or tempered water?

- A. All mixing faucets
- B. Water closet or urinal
- C. Public toilet rooms
- D. All plumbing fixtures
- E. The bathtub liner/insert
- F. None of the Above

146. All mixing faucets and single lever faucets shall have which of the following terms connected to them with the hot or tempered water supply on the left side of the faucet?

- A. Slip resistant surface
- B. True alignment
- C. Plumbing fixtures
- D. Both hot or tempered and cold water
- E. A hot water heater thermostat
- F. None of the Above

147. Which of the following terms and cold water to a mixing faucet by internal modification of the faucet shall not be allowed?

- A. All mixing faucets
- B. Water closet or urinal
- C. Public toilet rooms
- D. Cross piping of hot or tempered
- E. The bathtub liner/insert
- F. None of the Above

148. Which of the following terms shall be installed in an area where there is sufficient room for the fixture to be used for its intended purpose?

- A. Slip resistant surface
- B. True alignment
- C. Plumbing fixtures
- D. Commercial food establishment
- E. A hot water heater thermostat
- F. None of the Above

### **Surrounding Materials.**

149. Where water closets or urinals are installed for public use, the flooring under the fixture base extending to at least 18 inches from the front and both sides of the water closet or urinal, and extending from the?

- A. All mixing faucets
- B. Water closet or urinal
- C. Public toilet rooms
- D. An existing bathtub
- E. Back of the water closet
- F. None of the Above

150. Which of the following terms shall not be an acceptable alternative water temperature control device?

- A. Slip resistant surface
- B. True alignment
- C. Plumbing fixtures
- D. Commercial food establishment
- E. A hot water heater thermostat
- F. None of the Above

### **Prohibited Fixtures**

151. Which of the following terms shall not be installed in public toilet rooms?

- A. All mixing faucets
- B. Water closet or urinals
- C. Drinking fountains
- D. An existing bathtub
- E. The bathtub liner/insert
- F. None of the Above

152. Fixed wooden, concrete, cement or tile wash trays or sinks used for food preparation, utensil washing or hand washing shall not be installed in any food service establishment or?

- A. Slip resistant surface
- B. True alignment
- C. Plumbing fixtures
- D. Commercial food establishment
- E. A hot water heater thermostat
- F. None of the Above

153. Which of the following terms are prohibited unless all of the following conditions are met: Bathtub liners/inserts must be manufactured to an exact fit over existing bathtubs or be custom fabricated according to the dimensions of an existing bathtub?

- A. All mixing faucets
- B. Water closet or urinal
- C. Public toilet rooms
- D. An existing bathtub
- E. The bathtub liner/insert
- F. None of the Above

154. The floor of the liner/insert must have a?
- A. Slip resistant surface
  - B. True alignment
  - C. Plumbing fixtures
  - D. Commercial food establishment
  - E. Hot water heater thermostat
  - F. None of the Above

155. Which of the following terms must be manufactured/fabricated from high-impact plexiglass / ABS or acrylic/plastic material?

- A. All mixing faucets
- B. Water closet or urinal
- C. Public toilet rooms
- D. An existing bathtub
- E. The bathtub liner/insert
- F. None of the Above

### **Water Closets**

156. Water closet bowls for public use shall be the elongated type and the seat shall be?

- A. Elongated type
- B. Anti-siphon type
- C. Single flushometer valve
- D. Water closet swings only horizontally
- E. An antimicrobial plastic open-front seat
- F. None of the Above

157. The activating handle, button or mechanism of the flush valve shall be at least 10 inches above the?

- A. Vacuum breaker
- B. Water closet bowl
- C. Overflow rim of the bowl
- D. Regulating flush valve flow
- E. Volume sufficient
- F. None of the Above

158. Which of the following terms shall be used to flush the fixture?

- A. Elongated type
- B. Anti-siphon type
- C. Single flushometer valve
- D. Water closet swings only horizontally
- E. A water closet flushometer
- F. None of the Above

### **Water Closet Tanks.**

159. Which of the following terms shall have a volume sufficient to properly flush the water closet bowls with which they are connected?

- A. Vacuum breaker
- B. Water closet bowls
- C. Overflow rim of the bowl
- D. Regulating flush valve flow
- E. Volume sufficient
- F. None of the Above

160. Ball cocks for flush tanks shall be of the anti-siphon type, properly installed, and?

- A. Elongated type
- B. Anti-siphon type
- C. Single flushometer valve
- D. Have a provision for trap refill
- E. They are readily accessible for repair
- F. None of the Above

### **Flushing Device.**

161. The flush valve seat in all water closet tanks shall be 1- inch or more above the flood level rim of the water closet bowl, with the exception of?

- A. Vacuum breaker
- B. Water closet bowl
- C. Overflow rim of the bowl
- D. Regulating flush valve flow
- E. One-piece water closets
- F. None of the Above

162. Flushometer valves shall be installed so that they are readily accessible for repair. When the valve is operated, it shall complete the cycle of operation automatically, opening fully and?

- A. Elongated type
- B. Anti-siphon type
- C. Single flushometer valve
- D. Closing completely under the service pressure
- E. They are readily accessible for repair
- F. None of the Above

163. At each operation the valve shall deliver water in sufficient volume and at a rate that will thoroughly flush the fixture and refill the fixture trap, mMeans shall be provided for?

- A. Vacuum breaker
- B. Water closet bowl
- C. Overflow rim of the bowl
- D. Regulating flush valve flow
- E. Volume sufficient
- F. None of the Above

164. Protection against backflow shall be provided by an approved vacuum breaker installed on the discharge side of the flushing valve, the bottom of the vacuum breaker, or the critical level line shown on the vacuum breaker, shall be at least 4 inches above the overflow rim of the bowl. Not more than one water closet shall be served by a?

- A. Vacuum breaker
- B. Water closet bowl
- C. Overflow rim of the bowl
- D. Regulating flush valve flow
- E. Single flushometer valve
- F. None of the Above

165. **Seats.** Water closets shall be equipped with seats of smooth non-absorbent material. All seats of water closets provided for public use shall be an antimicrobial plastic material and an open-front style, except?

- A. Elongated type
- B. Anti-siphon type
- C. Single flushometer valve
- D. Closed-front seats
- E. They are readily accessible for repair
- F. None of the Above

166. **Bidet.** An atmospheric vacuum breaker shall be installed on the discharge side of the?

- A. Vacuum breaker
- B. Water closet bowl
- C. Overflow rim of the bowl
- D. Regulating flush valve flow
- E. Flushing valve
- F. None of the Above

167. The bottom of the vacuum breaker, or the critical level line shown on the which of the following terms, shall be at least 4 inches above the overflow rim of the bidet?

- A. Elongated type
- B. Anti-siphon type
- C. Single flushometer valve
- D. Water closet
- E. Vacuum breaker
- F. None of the Above

**Prohibited Water Closets.**

168. Which of the following terms and water closets with concealed couplings or submerged side inlets are prohibited.

- A. Vacuum breaker
- B. Water closet bowl
- C. Overflow rim of the bowl
- D. Regulating flush
- E. Hopper-style water closets
- F. None of the Above



## Urinals

### 169. Automatic Flushing Tank.

Flushing tanks shall be used for washout urinals only. Tanks flushing more than one (1) urinal shall be automatic, shall provide a sufficient volume of water to flush all which of the following terms simultaneously, and shall flush at least four (4) times per hour?

- A. Urinal(s)
- B. Trough urinals
- C. Strainer
- D. Float valves or ball cocks
- E. Tanks flushing
- F. None of the Above

170. One automatic flushing tank may serve no more than three?

- A. Urinal(s)
- B. Trough urinals
- C. Strainer
- D. Washout urinals
- E. Tanks flushing
- F. None of the Above

171. **Float Valves.** Float valves or ball cocks, if provided for flushing tanks, shall be of the anti-siphon type and of sufficient capacity to refill the?

- A. Urinal(s)
- B. Trough urinals
- C. Trap
- D. Float valves or ball cocks
- E. Tanks flushing
- F. None of the Above

172. **Urinal Flush Valves.** No valve shall be used to flush more than one (1) blow-out, siphon-jet or pedestal urinal. One (1) properly sized which of the following terms may serve more than one (1), but not more than a battery of three (3) washout urinals?

- A. Urinal(s)
- B. Trough urinals
- C. Strainer
- D. Float valves or ball cocks
- E. Automatic flush valve
- F. None of the Above

173. Which of the following terms are prohibited?

- A. Urinal(s)
- B. Trough urinals
- C. Strainer urinals
- D. Float valves or ball cock urinals
- E. Tanks flushing urinals
- F. None of the Above

## Protection of Potable Water

174. **Cross Connection (Submergence).** Which of the following terms and water discharge outlets shall not be submerged in any sewage or toxic substance?

- A. Potable water supply
- B. Site of the installation
- C. No dead ends
- D. Minimum fixed air gap
- E. Potable water supply piping
- F. None of the Above

## Approval of Devices and Maintenance.

175. Which of the following terms, reduced pressure detector (RPDA), double check (DCA) and double check detector (DCDA) backflow prevention assemblies shall be tested and approved by a Cross-Connection Control Device Inspector (CCCDI) before initial operation?

- A. Flood-level rim
- B. Gravity
- C. Fire safety system
- D. Reduced pressure principle (RP)
- E. Emergency connection
- F. None of the Above

176. Which of the following terms to verify testing and maintenance shall be available at the site of the installation?

- A. Potable water supply
- B. Site of the installation
- C. No dead ends
- D. Minimum fixed air gap
- E. A fixed air gap
- F. None of the Above

177. **Backflow.** The water distribution system shall be protected against?

- A. Flood-level rim
- B. Backflow
- C. Fire safety system
- D. Reduced pressure principle (RP)
- E. Emergency connection
- F. None of the Above

178. Where it is not possible to provide which of the following terms, the water outlet shall be equipped with an accessible backflow prevention device or assembly?

- A. Potable water supply
- B. Site of the installation
- C. No dead ends
- D. Minimum fixed air gap
- E. A fixed air gap
- F. None of the Above

### **Fire Safety Systems.**

179. The installation of any fire safety system involving the potable water supply system shall be protected against backflow as follows: \_\_\_\_\_ is not required for fire safety systems constructed as follows: The system shall be looped, with no dead ends, to allow circulation, to prevent the stagnation of water in the line.

- A. Potable water supply
- B. Site of the installation
- C. Backflow protection
- D. Minimum fixed air gap
- E. A fixed air gap
- F. None of the Above

180. A double detector check valve or double which of the following terms shall be installed at the fire safety system's point of connection to the potable water supply when a fire safety system has no chemical additives or non-potable connection?

- A. Flood-level rim
- B. Gravity
- C. Fire safety system
- D. Reduced pressure principle (RP)
- E. Check valve backflow preventer assembly
- F. None of the Above

181. Which of the following terms may be located at the point of connection to that section of the system containing such additives when the system's connection to the water supply is protected by a double detector check valve backflow preventer assembly?

- A. Potable water supply
- B. Site of the installation
- C. RPZ
- D. Minimum fixed air gap
- E. A fixed air gap
- F. None of the Above

182. Non-potable water flows into the fire safety system by?

- A. Flood-level rim
- B. Gravity
- C. Fire safety system
- D. Reduced pressure principle (RP)
- E. Emergency connection
- F. None of the Above

183. There is a permanent or emergency connection whereby water can be pumped into the fire safety system from?

- A. Flood-level rim
- B. Gravity
- C. Fire safety system
- D. Reduced pressure principle (RP)
- E. Any other non-potable source
- F. None of the Above

184. Fire department connections are available that could permit water to be pumped into the fire safety system from which of the following terms capable of serving the fire safety system?

- A. Flood-level rim
- B. Gravity
- C. Fire safety system
- D. Non-potable source
- E. Emergency connection
- F. None of the Above

**Prohibited Connections**

185. **Sewage Lines.** There shall be no direct connection between potable water lines and lines, equipment and vessels containing sewage. Such connections shall be made only through a?

- A. Full port type valve
- B. Backflow preventer
- C. Non-potable source
- D. Minimum fixed air gap
- E. Maximum fixed air gap
- F. None of the Above

**Chemical or Petroleum Pressure Vessels.**

186. Which of the following terms between any potable water supply and any pressure vessel, i.e., storage tank, tank car, tank truck or trailer or other miscellaneous pressurized tank or cylinder containing or having contained liquefied gaseous petroleum products or other liquefied gaseous chemicals?

- A. Full port type valve
- B. Backflow preventer
- C. Water main
- D. Minimum fixed air gap
- E. There shall be no direct connection
- F. None of the Above

187. If water under pressure is required, it shall be supplied by means of an auxiliary pump taking suction from a tank provided for this purpose only with an over rim supply having the required?

- A. Full port type valve
- B. Backflow preventer
- C. Non-potable source
- D. Minimum fixed air gap
- E. Maximum fixed air gap
- F. None of the Above

**Refrigerant Condensers.**

188. A potable water line to a single wall refrigerant condenser shall be provided with a?

- A. Full port type valve
- B. Backflow preventer
- C. Water main
- D. Minimum fixed air gap
- E. Potable water supply system
- F. None of the Above

189. No pipe or fitting of the \_\_\_\_\_ shall be drilled or tapped nor shall any band or saddle be used except at the water main in the street?

- A. Full port type valve
- B. Backflow preventer
- C. Water main
- D. Water supply system
- E. Potable water supply system
- F. None of the Above

**Devices for the Protection of the Potable Water Supply.**

190. Approved backflow preventers or vacuum breakers shall be installed with which of the following terms and equipment that may have a submerged potable water supply outlet and that are not protected by a minimum fixed air gap?

- A. Full port type valve
- B. Backflow preventer
- C. Water main
- D. All plumbing fixtures
- E. Potable water supply system
- F. None of the Above

191. Which of the following terms or assemblies shall not be installed where they would be subject to freezing conditions?

- A. Backflow preventer devices
- B. A protective strainer
- C. DCV and RPZ
- D. Backflow/back siphonage preventer assemblies
- E. Vacuum breaker
- F. None of the Above

192. Which of the following terms shall have a full port type valve with a resilient seated shut-off valve on each side of the preventer?

- A. Backflow devices
- B. A protective strainer
- C. DCV and RPZ
- D. Backflow/back siphonage preventer assemblies
- E. All in-line backflow/back siphonage preventer assemblies
- F. None of the Above

193. A protective strainer shall be located upstream of which of the following terms on all backflow/back siphonage preventers unless the device contains a built-in strainer?

- A. Backflow preventer devices
- B. First check valve
- C. DCV and RPZ
- D. Backflow/back siphonage preventer assemblies
- E. Vacuum breaker
- F. None of the Above

#### **Atmospheric Vacuum Breakers.**

194. Which of the following terms shall be installed with the critical level above the flood level rim of the fixture they serve, and on the discharge side of the last control valve of the fixture?

- A. Backflow preventer devices
- B. A protective strainer
- C. DCV and RPZ
- D. Backflow/back siphonage preventer assemblies
- E. Vacuum breakers
- F. None of the Above

195. \_\_\_\_\_, and Reduced Pressure Principle Backflow Preventer Assemblies, no in-line double check valve backflow preventer assembly or reduced pressure principle backflow preventer assembly shall be located more than 5 feet above a floor, or be installed where it is subject to freezing or flooding conditions.

- A. Backflow preventer devices
- B. A protective strainer
- C. Double Check Valve
- D. Backflow/back siphonage preventer assemblies
- E. Vacuum breaker
- F. None of the Above

196. After installation, each which of the following terms shall be field tested in-line in accordance with the manufacturer's instructions by a cross-connection control device inspector before initial operation?

- A. Backflow preventer devices
- B. A protective strainer
- C. DCV and RPZ
- D. Backflow/back siphonage preventer assemblies
- E. Vacuum breaker
- F. None of the Above

197. Which of the following terms with atmospheric vent assembly shall not be installed where it is subject to freezing or flooding conditions?

- A. Backflow preventer devices
- B. A protective strainer
- C. Thermal expansion tank
- D. A dual check backflow preventer
- E. Vacuum breaker
- F. None of the Above

198. Closed water systems shall have a properly sized thermal expansion tank located in the cold water supply as near to the water heater as possible and with no shut-off valve or other device between the heater and the?

- A. Backflow preventer devices
- B. Expansion tank
- C. Thermal expansion tank
- D. Atmospheric vent assembly
- E. Vacuum breaker
- F. None of the Above

199. **Exception:** In existing buildings with a closed water system, a properly sized pressure relief valve may be substituted in place of a?

- A. Backflow preventer devices
- B. A protective strainer
- C. Thermal expansion tank
- D. Atmospheric vent assembly
- E. Vacuum breaker
- F. None of the Above

### **Special Applications and Installations**

200. Which of the following terms shall be installed on the outlet side of the control valve?

- A. Backflow preventer devices
- B. A protective strainer
- C. DCV and RPZ
- D. Backflow/back siphonage preventer assemblies
- E. An atmospheric vacuum breaker
- F. None of the Above

You are finished with the assignment. Please fax or email the answer key and registration