

**Registration form**

**Plumbing 101 CEU Training Course  
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*

Address: \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Email \_\_\_\_\_ Fax ( \_\_\_\_\_ ) \_\_\_\_\_

Phone:  
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 \_\_\_\_\_

**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)**

**If you've paid on the Internet, please write your Customer# \_\_\_\_\_**

**Please invoice me, my PO# \_\_\_\_\_**

**Please pay with your credit card on our website under Bookstore or Buy Now. Or call us and provide your credit card information.**

***We will stop mailing the certificate of completion so we need either your fax number or e-mail address. We will e-mail the certificate to you, if no e-mail address; we will fax it to you.***

## **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.

**State Approval Listing Link**, check to see if your State accepts or has pre-approved this course. Not all States are listed. Not all courses are listed. If the course is not accepted for CEU credit, we will give you the course free if you ask your State to accept it for credit.

**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.

## **State Approval Listing URL...**

<http://www.abctlc.com/downloads/PDF/CEU%20State%20Approvals.pdf>

*You can obtain a printed version of the course from TLC for an additional \$169.95 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.

## CERTIFICATION OF COURSE PROCTOR

Technical Learning College requires that our students who takes a correspondence or home study program course must pass a proctored course reading, quiz and final examination. The proctor must complete and provide to the school a certification form approved by the commission for each examination administered by the proctor.

**Instructions.** When a student completes the course work, fill out the blanks in this section and provide the form to the proctor with the examination.

Name of Course: \_\_\_\_\_

Name of Licensee: \_\_\_\_\_

**Instructions to Proctor.** After an examination is administered, complete and return this certification and examination to the school in a sealed exam packet or in pdf format.

I certify that:

1. I am a disinterested third party in the administration of this examination. I am not related by blood, marriage or any other relationship to the licensee which would influence me from properly administering the examination.
2. The licensee showed me positive photo identification prior to completing the examination.
3. The enclosed examination was administered under my supervision on \_\_\_\_\_. The licensee received no assistance and had no access to books, notes or reference material.
4. I have not permitted the examination to be compromised, copied, or recorded in any way or by any method.
5. Provide an estimate of the amount of time the student took to complete the assignment.

Time to complete the entire course and final exam. \_\_\_\_\_

Notation of any problem or concerns:

Name and Telephone of Proctor (please print):

\_\_\_\_\_  
\_\_\_\_\_

Signature of Proctor



# Plumbing 101 CEU Course Answer Key

Name \_\_\_\_\_ Telephone # \_\_\_\_\_

Did you check with your State agency to ensure this course is accepted for credit?

*No refunds.*

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

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

Did you receive 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 write down any questions that cannot be found or has problems*

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

*A felt tipped pen works best.*

- |             |             |             |             |
|-------------|-------------|-------------|-------------|
| 1. A B C D  | 19. A B C D | 37. A B C D | 55. A B C D |
| 2. A B C D  | 20. A B C D | 38. A B C D | 56. A B C D |
| 3. A B C D  | 21. A B C D | 39. A B C D | 57. A B C D |
| 4. A B C D  | 22. A B C D | 40. A B C D | 58. A B C D |
| 5. A B C D  | 23. A B C D | 41. A B C D | 59. A B C D |
| 6. A B C D  | 24. A B C D | 42. A B C D | 60. A B C D |
| 7. A B C D  | 25. A B C D | 43. A B C D | 61. A B C D |
| 8. A B C D  | 26. A B C D | 44. A B C D | 62. A B C D |
| 9. A B C D  | 27. A B C D | 45. A B C D | 63. A B C D |
| 10. A B C D | 28. A B C D | 46. A B C D | 64. A B C D |
| 11. A B C D | 29. A B C D | 47. A B C D | 65. A B C D |
| 12. A B C D | 30. A B C D | 48. A B C D | 66. A B C D |
| 13. A B C D | 31. A B C D | 49. A B C D | 67. A B C D |
| 14. A B C D | 32. A B C D | 50. A B C D | 68. A B C D |
| 15. A B C D | 33. A B C D | 51. A B C D | 69. A B C D |
| 16. A B C D | 34. A B C D | 52. A B C D | 70. A B C D |
| 17. A B C D | 35. A B C D | 53. A B C D | 71. A B C D |
| 18. A B C D | 36. A B C D | 54. A B C D | 72. A B C D |

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|--------------|--------------|--------------|--------------|
| 73. A B C D  | 105. A B C D | 137. A B C D | 169. A B C D |
| 74. A B C D  | 106. A B C D | 138. A B C D | 170. A B C D |
| 75. A B C D  | 107. A B C D | 139. A B C D | 171. A B C D |
| 76. A B C D  | 108. A B C D | 140. A B C D | 172. A B C D |
| 77. A B C D  | 109. A B C D | 141. A B C D | 173. A B C D |
| 78. A B C D  | 110. A B C D | 142. A B C D | 174. A B C D |
| 79. A B C D  | 111. A B C D | 143. A B C D | 175. A B     |
| 80. A B C D  | 112. A B C D | 144. A B C D | 176. A B     |
| 81. A B C D  | 113. A B C D | 145. A B C D | 177. A B     |
| 82. A B C D  | 114. A B C D | 146. A B C D | 178. A B     |
| 83. A B C D  | 115. A B C D | 147. A B C D | 179. A B     |
| 84. A B C D  | 116. A B C D | 148. A B C D | 180. A B     |
| 85. A B C D  | 117. A B C D | 149. A B C D | 181. A B C D |
| 86. A B C D  | 118. A B C D | 150. A B C D | 182. A B C D |
| 87. A B C D  | 119. A B C D | 151. A B C D | 183. A B C D |
| 88. A B C D  | 120. A B C D | 152. A B C D | 184. A B C D |
| 89. A B C D  | 121. A B C D | 153. A B C D | 185. A B C D |
| 90. A B C D  | 122. A B C D | 154. A B C D | 186. A B     |
| 91. A B C D  | 123. A B C D | 155. A B C D | 187. A B C D |
| 92. A B C D  | 124. A B C D | 156. A B C D | 188. A B C D |
| 93. A B C D  | 125. A B C D | 157. A B C D | 189. A B     |
| 94. A B C D  | 126. A B C D | 158. A B     | 190. A B     |
| 95. A B C D  | 127. A B C D | 159. A B C D | 191. A B     |
| 96. A B C D  | 128. A B C D | 160. A B C D | 192. A B     |
| 97. A B C D  | 129. A B C D | 161. A B C D | 193. A B C D |
| 98. A B C D  | 130. A B C D | 162. A B C D | 194. A B C D |
| 99. A B C D  | 131. A B C D | 163. A B C D | 195. A B C D |
| 100. A B C D | 132. A B C D | 164. A B C D | 196. A B     |
| 101. A B C D | 133. A B C D | 165. A B C D | 197. A B     |
| 102. A B C D | 134. A B C D | 166. A B C D | 198. A B C D |
| 103. A B C D | 135. A B C D | 167. A B C D | 199. A B C D |
| 104. A B C D | 136. A B C D | 168. A B C D | 200. A B C D |

## Disclaimer Notice

**Amount of Time for Course Completion – How many hours you spent on course?**

**Must match State Hour Requirement \_\_\_\_\_ (Hours)**

*I understand that I am 100 percent responsible to ensure that TLC receives the Assignment and Registration Key and that it is accepted for credit by my State or Providence. I understand that TLC has a zero tolerance towards not following their rules, cheating or hostility towards staff or instructors. I need to complete the entire assignment for credit. There is no credit for partial assignment completion. My exam was proctored. I will contact TLC if I do not hear back from them within 2 days of assignment submission. I will forfeit my purchase costs and will not receive credit or a refund if I do not abide with TLC's rules. I will not hold TLC liable for any errors, injury, death or non-compliance with rules. I will abide with all federal and state rules and rules found on page 2.*

**Please Sign that you understand and will abide with TLC's Rules.**

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**Signature**

***Please write down any questions you were not able to find the answers or that have errors.***

*Please double check with your State Agency or Plumbing Authority on current plumbing codes for 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.*

## **When Finished with Your Assignment...**

### **REQUIRED DOCUMENTS**

Please scan the **Registration Page, Answer Key, Proctoring report, Survey and Driver's License** and email these documents to [info@TLCH2O.com](mailto:info@TLCH2O.com).

### **IPhone Scanning Instructions**

If you are unable to scan, take a photo of these documents with your **iPhone** and send these photos to TLC, [info@TLCH2O.com](mailto:info@TLCH2O.com).

### **FAX**

If you are unable to scan and email, please fax these documents to TLC, if you fax, call to confirm that we received your paperwork. **(928) 468-0675**

### **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: \_\_\_\_\_

E-MAIL \_\_\_\_\_ PHONE \_\_\_\_\_

***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 \_\_

How was your customer service? Poor \_\_ Fair\_\_ Average\_\_ Good \_\_ Great \_\_

Any other concerns or comments.

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## Plumbing 101 CEU Course Assignment

*The Plumbing 101 CEU Assignment is available in Word on the Internet for your convenience, please visit [www.ABCTLTC.com](http://www.ABCTLTC.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. 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 manual and make copy for yourself.**

**Multiple Choice, please select only one answer per question. There are no intentional trick questions.**

### Water Service Pipe Installation

Underground Water Service.

1. Water service pipe shall be installed outside the?

- A. Contamination
- B. Foundation wall
- C. Maximum frost penetration of the local area
- D. None of the above

2. Water service and building drain or building sewer may be installed in separate trenches with a minimum of \_\_\_\_\_ feet horizontal separation?

- A. 10
- B. 20
- C. 5
- D. 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 that the water service is placed on a solid shelf a minimum of \_\_\_\_\_ inches above the building drain or building sewer.

- A. 18
- B. 24
- C. 36
- D. None of the above

4. The minimum depth for any water service pipe shall be at least \_\_\_\_\_ inches or the maximum frost penetration of the local area, whichever is of greater depth.

- A. 18
- B. 24
- C. 36
- D. None of the above

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

- A. An exterior wall
- B. Same trench
- C. Beneath a sanitary sewer or drain
- D. None of the above

(s) Means plural or singular use

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 a minimum vertical separation of \_\_\_\_\_ inches for a distance of \_\_\_\_\_ feet on either side from the center of the sanitary sewer.

- A. 18 - 10      C. 18 - 24
- B. 24 - 8      D. None of the above

7. Where it is necessary for the potable water piping to pass beneath a sanitary sewer or drain, 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 \_\_\_\_\_ feet as measured at right angles to the water line.

- A. 18              C. 36
- B. 10             D. None of the above

**Wet/Dry Bore:**

8. Casing pipe shall be sealed with a casing seal and extend \_\_\_\_\_ feet on either side of the center of the sanitary sewer pipe?

- A. 18              C. 10
- B. 24             D. None of the above

**Stop-And-Waste Valve**

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

- A. Stop-and-waste valves      C. Gate valves
- B. Globe valves                D. 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                C. Maximum allowable working pressure
- B. Contamination          D. 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. Supply outlet                              C. Auxiliary pressure (booster) system
- B. Potable water supply tanks          D. None of the above

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

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

- A. Domestic purposes              C. The supply outlet
- B. Potability of the water          D. None of the above

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

- A. Foreign substance              C. Auxiliary pressure systems
- B. An air gap                        D. None of the above

(s) Means plural or singular use

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

14. When the water pressure from which of the following 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. Auxiliary pressure (booster) system
- C. Supply outlet
- D. None of the above

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

- A. Vacuum relief valve
- B. An air gap
- C. Auxiliary pressure systems
- D. None of the above

### **Tank Supply Inlet and Outlet.**

16. Which of the following 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. Supply outlet
- D. None of the above

### **Overflow For Water Supply Tanks.**

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

- A. Water supply inlet
- B. Gravity tank(s)
- C. Supply outlet
- D. None of the above

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

- A. Overflow pipes
- B. An air gap
- C. The supply outlet
- D. None of the above

### **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?

- A. Vacuum relief valve
- B. Supply pipe
- C. Auxiliary pressure systems
- D. None of the above

### **Drains.**

20. Water supply tanks shall be provided with which of the following 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. The supply outlet
- D. None of the above

21. Drain line and valve shall have no restrictions and need not exceed \_\_\_\_\_ inches in diameter.

- A. 8
- B. 12
- C. 2
- D. None of the above

### **Gravity and Suction Tanks.**

22. Which of the following 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. A common shut-off valve
- D. 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. Top of the tank
  - B. Center of the tank
  - C. Bottom of the tank
  - D. 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. Water supply system
- C. Stop box or meter vault
- D. None of the above

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

- A. Water service
- B. Inlet/outlet openings
- C. The water supply system
- D. None of the above

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

- A. A shut-off valve
- B. A full-port valve
- C. Backflow preventer
- D. None of the above

### **Tank Controls.**

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

- A. Water service
- B. Pressure or gravity tanks
- C. The water supply system
- D. None of the above

### **Water Heating Equipment.**

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

- A. 5
- B. 6
- C. 3
- D. 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 \_\_\_\_\_ to be shut off without interference with the water supply to any other family unit or portion of the building?

- A. Each individual fixture
- B. Water meter
- C. The water supply system
- D. 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 \_\_\_\_\_ to any other room or portion of the building?

- A. A shut-off valve
- B. Water supply
- C. Stop box or meter vault
- D. 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 \_\_\_\_\_ to the back-to-back fixtures in no more than 2 adjacent rooms?
- A. Water supply                      C. A common shut-off valve  
B. Water distribution pipe      D. None of the above

**Health Care Facilities.**

32. In the residence rooms of health care facilities \_\_\_\_\_ 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                      C. A common shut-off valve  
B. Water distribution pipe      D. 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, \_\_\_\_\_ 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          C. Community system  
B. Water main                      D. None of the above

**Non-Chlorinated Water Supply.**

34. The pipe system shall be flushed with clean, potable water until \_\_\_\_\_ appears at the point of outlet?
- A. No dirty water                      C. Water sample comes back positive  
B. Chlorine solution                D. None of the above

35. The system shall be filled with a chlorine solution containing at least \_\_\_\_\_ parts per million of chlorine, shall be valved off and allowed to stand for \_\_\_\_\_ hours.
- A. 24 - 48                              C. 10 -24  
B. 50 - 24                              D. 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. Chlorine solution                      C. Potable water  
B. No detectable chlorine odor      D. None of the above

37. To ensure that the water supplied by the water system is safe for drinking, a \_\_\_\_\_ taken from the water supply system shall be secured?
- A. Water supply sample                C. Bacteriological examination of a water sample  
B. Potable water sample                D. None of the above

**Water Service Sizing**

38. If flushometers or other devices requiring a high rate of water flow are used, \_\_\_\_\_ shall be designed and installed to provide this additional flow?
- A. Water service pipe                C. Water system  
B. An air chamber                      D. None of the above

**Demand Load.**

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

- A. Water service demand load
- B. Any plumbing fixture
- C. Peak use
- D. None of the above

40. Unused sections of water service or water distribution piping ("dead ends"), where the water in the piping may become stagnant, are prohibited. A developed length of more than \_\_\_\_\_ feet shall be considered a dead end.

- A. 2
- B. 20
- C. 200
- D. 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. Any load
- C. Peak use
- D. None of the above

42. No distribution pipe or pipes shall be installed or \_\_\_\_\_ or in an exterior wall unless provisions are made to protect such pipe from freezing?

- A. In the same trench
- B. In the soil or waste lines
- C. Permitted outside of a building
- D. None of the above

**Minimum Water Pressure.**

43. The minimum constant water service pressure on the discharge side of the water meter shall be (at least) \_\_\_\_\_ p.s.i.

- A. 35
- B. 20
- C. 15
- D. None of the above

**Auxiliary Pressure. Supplementary Tank.**

44. If the pressure in the system is below the minimum \_\_\_\_\_ 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 the public water main.

- A. 25
- B. 20
- C. 8
- D. 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 a low-pressure cut-off switch on the booster pump to prevent the creation of pressures less than \_\_\_\_\_ p.s.i. on the suction side of the pump.

- A. 5
- B. 20
- C. 8
- D. None of the above

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

- A. 35
- B. 20
- C. 5
- D. None of the above

#### **Water Hammer.**

47. All building water supply systems shall be provided with \_\_\_\_\_ or approved mechanical devices or water hammer arrestors to absorb high pressures?

- A. Air chamber(s)
- B. Any plumbing fixture
- C. An auxiliary pressure system
- D. None of the above

#### **Air Chambers.**

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

- A. Pressure relief valve(s)
- B. An air chamber
- C. Combination pressure-temperature relief valve
- D. None of the above

#### **Excessive Static Water Pressure.**

49. When water main pressure exceeds \_\_\_\_\_ 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 \_\_\_\_\_ p.s.i. or lower, except where the water service pipe supplies water directly to a Water pressure booster system.

- A. 30 - 80
- B. 80 - 45
- C. 80 -80
- D. None of the above

50. When the water pressure exceeds \_\_\_\_\_ p.s.i. at any plumbing fixture, a pressure reducing valve, pressure gauge and a strainer with a By-pass relief valve.

- A. 30
- B. 45
- C. 80
- D. 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. Full water main pressure
- D. None of the above

#### **Hot Water Supply and Distribution**

52. All equipment used for heating and storage of \_\_\_\_\_ water shall bear the marking of an approved testing agency.

- A. Hot
- B. Potable
- C. Cold
- D. 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. A pressure relief valve
- C. Full water main pressure
- D. 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. A pressure gradient monitor system
- B. Water heater's cold water supply
- C. Hydropneumatic water supply tank system
- D. None of the above

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

- A. Full water main pressure
- B. Potable water side
- C. A pressure relief valve
- D. None of the above

56. Heat exchangers using a \_\_\_\_\_ or having conditioning chemicals in the system shall be separated from the potable water by double wall construction?

- A. Toxic transfer fluid
- B. Heat exchanger
- C. Hydropneumatic or elevated water supply tank system
- D. 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. Pressure relief valve
- C. Full water main pressure
- D. 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. Proper terminal heating device
- D. None of the above

59. The mixing valve shall be set to prevent temperatures exceeding \_\_\_\_\_ F from reaching the plumbing fixtures.

- A. 110°
- B. 240°
- C. 120°
- D. None of the above

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

- A. Cold water line
- B. Water heater
- C. Water heater's cold water supply
- D. 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 \_\_\_\_\_ between the heater and expansion tank?

- A. Cold water line
- B. No shut-off valve
- C. Proper terminal heating device
- D. None of the above

62. Valves supplying hot water to the heat transfer unit for space heating shall have a minimum of a 1-inch orifice?

- A. 1-inch
- B. 2-inches
- C. 12-inches
- D. 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 Water heater shall not exceed a developed length of more than \_\_\_\_\_ feet from the heating coil.

- A. 100
- B. 25
- C. 50
- D. 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 \_\_\_\_\_ or by installing a combination pressure-temperature relief valve.

- A. Energy cut-off devices
- B. Temperature relief valve
- C. Temperature sensing element
- D. 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. Combination pressure-temperature relief valve
- D. None of the above

Temperature Relief Valves.

66. Temperature relief valves shall be installed so that the temperature sensing element is immersed in the hottest water within the \_\_\_\_\_ inches of the tank.

- A. Top 6
- B. Bottom 6
- C. Top 12
- D. 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 \_\_\_\_\_ 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. A check valve or shut-off valve
- C. Individual temperature relief valves
- D. 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 \_\_\_\_\_ in the discharge pipe from the relief valve?

- A. Energy cut-off devices
- B. Shut-off valve
- C. Temperature sensing element
- D. None of the above

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

- A. Instantaneous cut-off devices
- B. A check valve or shut-off valve
- C. Temperature sensing element
- D. None of the above

Relief Discharge Outlet.

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

- A. Relief valve
- B. A relief discharge outlet
- C. Maximum allowable working pressure
- D. None of the above

71. Which of the following 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. Maximum allowable working pressure
- D. None of the above

72. Which of the following 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. Discharge line
- C. Maximum allowable working pressure
- D. 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. Deep seal
- C. Vented P-trap
- D. None of the above

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

- A. Vented P-trap
- B. Deep seal
- C. Outside atmosphere
- D. None of the above

Pressure Marking – Hot Water Storage Tank.

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

- A. Relief valve
- B. Hot water storage tanks
- C. Combination pressure-temperature relief valve
- D. 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 \_\_\_\_\_ or if the storage tank or water heater is bottom fed?

- A. Thermostatic mixing valves
- B. Hot water system
- C. Combination pressure-temperature relief valve
- D. None of the above

Multiple Temperature Hot Water Systems.

77. Such systems shall be provided with which of the following to properly control the desired temperatures?

- A. Thermostatic mixing valves
- B. Hot water system
- C. Combination pressure-temperature relief valve
- D. None of the above

### Types of Joints

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

- A. Brass or copper
- B. Lead ring
- C. Cast iron hub-and-spigot pipe
- D. 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. Wiped joints
- C. Properly soldered together
- D. None of the above

Threaded/Screwed Joints.

80. All burrs shall be removed; pipe ends shall be reamed or filed to size of the \_\_\_\_\_ shall be removed.

- A. Bore and all chips
- C. Oakum or hemp and filled with molten lead
- B. Lead ring
- D. None of the above

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

- A. A proper flaring tool
- C. Pipe joints compound
- B. Caulking compound
- D. None of the above

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

- A. Full-wiped joints
- C. Oakum or hemp and filled with molten lead
- B. Brass or copper
- D. None of the above

83. Wiped joints shall have exposed surface on each side of the joint at least \_\_\_\_\_ and at least as thick as the material being joined.

- A. 1/2"
- C. 1"
- B. 3/4"
- D. 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. Brass or copper
- C. Flange
- B. Lead ring
- D. None of the above

85. Which of the following 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
- C. Properly soldered together
- B. Caulking ferrule
- D. None of the above

Soldered Joints.

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

- A. Properly fluxed
- C. Brass or copper
- B. Lead ring
- D. 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
- C. Properly soldered together
- B. Caulking ferrule
- D. 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. Caulking ferrule
- C. Molten lead
- B. Flux
- D. None of the above

Flared Joints.

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

- A. Approved fitting(s)
- C. Are prohibited
- B. Flared joints
- D. None of the above

Hot-Poured Joints.

90. Hot-poured compound for clay or concrete sewer pipe shall not be \_\_\_\_\_ and when poured against a dry surface?

- A. Approved fitting(s)
- B. Water absorbent
- C. Prohibited
- D. None of the above

Precast Joints.

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

- A. Approved fitting(s)
- B. Spigot end
- C. Female end
- D. 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 \_\_\_\_\_ for such joints and for the filler metal.

- A. Approved fitting(s)
- B. Approved brazing filler metal
- C. Flux approved
- D. None of the above

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

- A. Approved fitting(s)
- B. Brazing
- C. Flux approved
- D. None of the above

Cement Mortar Joints.

94. Except for repairs, cement mortar joints are?

- A. Approved fitting(s)
- B. Accepted
- C. Prohibited
- D. None of the above

Burned Lead (Welded).

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

- A. Weld
- B. Bituminized fiber pipe
- C. Flux approved
- D. None of the above

96. Bituminized Fiber Pipe Joints.

Joints in bituminized fiber pipe shall be made with which of the following of the same composition as the pipe?

- A. Weld
- B. Approved brazing filler metal
- C. Tapered type couplings
- D. 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. Threaded joints
- D. None of the above

Joints and Fittings in Plastic Pipe.

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

- A. Potable water piping fittings
- B. Slip joints
- C. Threaded or flanged joints
- D. None of the above

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

- A. Compression fittings
- B. Solvent welded
- C. Thermal welded joints and fittings
- D. None of the above

100. Which of the following 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. Slip joints
- C. Ground joint connections
- D. None of the above

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

- A. Adaptor fittings
- B. Thermal welded joints and fittings
- C. Solvent welded or flanged
- D. 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. Ground joint connections
- D. None of the above

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

- A. Compression fittings
- B. Solvent welded
- C. Thermal welded joints and fittings
- D. None of the above

Joints in Plastic Drainage.

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

- A. Joints
- B. Fittings and joints
- C. Ground joint connections
- D. 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. Compression fittings
- B. Solvent welded
- C. O-ring expansion joints
- D. None of the above

Ground Joint Connections.

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

- A. Clamps
- B. Slip joints
- C. Ground joint connections
- D. 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 \_\_\_\_\_ secured with stainless steel nuts and bolts.

- A. Compression fittings
- B. Solvent welded
- C. Cast iron couplings
- D. 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. Ground joint connections
- D. None of the above

109. Which of the following 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. Ground joint connections
- D. None of the above

**Special Joints**

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

- A. Joints
- B. Slip joints
- C. Ground joint connections
- D. None of the above

Slip Joints.

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

- A. Clamps
- B. Slip joints
- C. Ground joint connections
- D. None of the above

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

- A. Fittings and joints
- B. Slip joints
- C. Threaded or flanged joints
- D. None of the above

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

- A. Push-on angle stop valves
- B. Stainless steel bands
- C. Compression type couplings
- D. None of the above

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

- A. The expansion joint
- B. Stainless steel bands
- C. Grooved type mechanical couplings
- D. None of the above

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

- A. The expansion joint
- B. Compression type couplings
- C. Grooved type mechanical couplings
- D. None of the above

Grooved Type Mechanical Couplings.

116. Which of the following 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. Compression type couplings
- C. Grooved type mechanical couplings
- D. 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. Flared joints
- B. Stainless steel bands
- C. Plastic pipe
- D. 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 and stainless steel bands?

- A. Wiped joints
- B. Unions
- C. Neoprene gasket
- D. None of the above

Screw Pipe to Cast Iron.

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

- A. Proper adaptor fittings
- B. Appropriate type adaptor
- C. Joints
- D. None of the above

Lead to Cast Iron, Wrought Iron or Steel.

120. Which of the following 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. Unions
- C. Joints
- D. None of the above

Copper Water Tube.

121. Which of the following 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. Appropriate type adaptor
- C. Joints
- D. None of the above

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

- A. Flared joints
- B. Unions
- C. Stainless steel bands
- D. None of the above

Plastic Pipe.

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

- A. Flared joints
- B. Appropriate type adaptor
- C. Non-plastic material
- D. None of the above

Plastic-Commingling.

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

- A. Proper adaptors
- B. Stainless steel bands
- C. Plastic materials
- D. None of the above

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

- A. Proper adaptor fittings
- B. Appropriate type adaptor
- C. Any tunnel
- D. None of the above

### Unions

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

- A. Proper adaptors
- B. Unions
- C. Stop box connections
- D. None of the above

127. Which of the following 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. Unions
- C. Stop box connections
- D. 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. Stainless steel bands
- C. Plastic unions
- D. 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. Gaskets
- C. Wiped joints
- D. 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. A dielectric type union
- C. Metal to metal with ground seats
- D. 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. Floor flange
- C. Drainage pipes
- D. None of the above

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

- A. Proper adaptor fittings
- B. Appropriate type adaptor
- C. Earthenware
- D. None of the above

133. The use of putty or \_\_\_\_\_ manufactured specifically for plumbing installation is acceptable?

- A. Proper adaptor fittings
- B. Non-drying plumber's putty
- C. Drying plumber's putty
- D. None of the above

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

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

- A. Fitting or connection
- B. No fitting
- C. Any plumbing equipment condemned
- D. None of the above

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

- A. Waste piping
- B. Impervious surfaces
- C. Flow control valve
- D. 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 shall be used between the two sizes?

- A. Floor outlet
- B. Reducers or reducing fittings
- C. Any plumbing equipment condemned
- D. 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. Approved designs
- C. An obstruction
- D. None of the above

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

- A. Fitting or connection
- B. Sanitary hazards
- C. Any plumbing equipment condemned
- D. None of the above

#### **Overflows**

139. When any fixture is provided with which of the following 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. An overflow
- C. An obstruction
- D. None of the above

#### **Connection.**

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

- A. Fitting or connection
- B. No overflow
- C. Any plumbing equipment condemned
- D. None of the above

## Installation

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

- A. Plumbing fixtures
- B. Durable corrosion resistant materials
- C. Plumbing fixtures
- D. 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. Durable corrosion resistant materials
- C. Plumbing fixtures
- D. None of the above

### Wall-Hung Fixtures.

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

- A. Water closet or urinal
- B. Public toilet rooms
- C. Wall-hung fixtures
- D. None of the above

### Setting.

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

- A. Slip resistant surface
- B. Plumbing fixtures
- C. Commercial food establishment
- D. None of the above

### Water Supply Connection.

145. Hot and cold, tempered and cold, or tempered water only shall be supplied to \_\_\_\_\_ that are designed for hot and cold, tempered and cold, or tempered water?

- A. All mixing faucets
- B. Water closet or urinal
- C. All plumbing fixtures
- D. None of the above

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

- A. Slip resistant surface
- B. Plumbing fixtures
- C. Both hot or tempered and cold water
- D. None of the above

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

- A. All mixing faucets
- B. Public toilet rooms
- C. Cross piping of hot or tempered
- D. None of the above

148. Which of the following 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. Plumbing fixtures
- C. Commercial food establishment
- D. 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 \_\_\_\_\_ inches from the front and both sides of the water closet or urinal, and extending from the back of the water closet.

- A. 18
- B. 6
- C. 12
- D. None of the above

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

- A. Commercial food establishment
- B. Plumbing fixtures
- C. A hot water heater thermostat
- D. None of the above

### Prohibited Fixtures

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

- A. All mixing faucets
- B. Drinking fountains
- C. A vacuum breaker
- D. 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. Plumbing fixtures
- C. Commercial food establishment
- D. None of the above

153. Which of the following 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. The bathtub liner/insert
- C. An existing bathtub
- D. None of the above

154. The floor of the liner/insert must have a?

- A. Slip resistant surface
- B. Plumbing attachment
- C. Special fitting
- D. None of the above

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

- A. Water closet or urinal
- B. Public toilet rooms
- C. The bathtub liner/insert
- D. None of the above

### Water Closets

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

- A. Anti-siphon type
- B. Single flushometer valve
- C. An antimicrobial plastic open-front seat
- D. None of the above

157. The activating handle, button or mechanism of the flush valve shall be at least \_\_\_\_\_ inches above the overflow rim of the bowl.

- A. 12
- B. 10
- C. 24
- D. None of the above

158. A water closet flushometer shall be used to flush the fixture.

- A. True
- B. False

Water Closet Tanks.

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

- A. Vacuum breaker
- B. Overflow rim of the bowl
- C. Water closet bowls
- D. None of the above

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

- A. Trap refill
- B. Anti-siphon type
- C. Single flushometer valve
- D. 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. Water closet bowl
- B. Overflow rim of the bowl
- C. One-piece water closets
- D. 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. Double flushometer valve
- C. Closing completely under the service pressure
- D. 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, means shall be provided for?

- A. Vacuum breaker
- B. Volume sufficient
- C. Regulating flush valve flow
- D. 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 \_\_\_\_\_ inches above the overflow rim of the bowl. Not more than one water closet shall be served by a single flushometer valve.

- A. 2
- B. 4
- C. 12
- D. 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. Open front seat
- B. Self closing seat
- C. Closed-front seats
- D. None of the above

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

- A. Water closet bowl
- B. Overflow rim of the bowl
- C. Flushing valve
- D. None of the above

167. The bottom of the vacuum breaker, or the critical level line shown on the vacuum breaker, shall be at least \_\_\_\_\_ inches above the overflow rim of the bidet.

- A. 2
- B. 4
- C. 12
- D. None of the above

Prohibited Water Closets.

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

- A. Vacuum breaker
- B. Regulating flush
- C. Hopper-style water closets
- D. 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 Urinal(s) simultaneously, and shall flush at least \_\_\_\_\_ times per hour?

- A. 2
- B. 4
- C. 12
- D. None of the above

170. One automatic flushing tank may serve no more than \_\_\_\_\_ washout urinals.

- A. 2
- B. 3
- C. 4
- D. 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. Trap
- V. Tank
- D. 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 automatic flush valve may serve more than one (1), but not more than a battery of \_\_\_\_\_ washout urinals.

- A. 2
- B. 3
- C. 4
- D. None of the above

173. Which of the following are prohibited?

- A. Trough urinals
- B. Strainer urinals
- C. Tanks flushing urinals
- D. None of the above

## Protection of Potable Water

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

- A. Potable water supply
- B. No dead ends
- C. Potable water supply piping
- D. None of the above

Approval of Devices and Maintenance.

175. Reduced pressure principle (RP), reduced pressure detector (RPDA), double check (DCA) and double check detector (DCDA) backflow prevention assemblies shall be tested and approved by a plumber before initial operation.

- A. True
- B. False

176. Records verify testing and maintenance shall be available at the site of the backflow installation.

- A. True
- B. False

177. The water distribution system shall be protected against backflow.

- A. True
- B. False

178. Where it is not possible to provide maximum fixed air gap, the water outlet shall be equipped with an accessible backflow prevention device or assembly?

- A. True
- B. False

Fire Safety Systems.

179. The installation of any fire safety system involving the potable water supply system shall be protected against backflow as follows: backflow protection 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. True      B. False

180. A double detector check valve or double check valve backflow preventer assembly 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. True      B. False

181. Which of the following 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. PVB                      C. Double check  
B. RPZ                      D. None of the above

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

- A. Gravity                      C. Emergency connection  
B. Fire safety system      D. None of the above

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

- A. Gravity                      C. Any other non-potable source  
B. Fire safety system      D. 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 capable of serving the fire safety system?

- A. Non-potable source      C. Emergency connection  
B. Gravity                      D. 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. Minimum fixed air gap      C. Backflow preventer  
B. Maximum fixed air gap      D. None of the above

Chemical or Petroleum Pressure Vessels.

186. There may be a direct connection 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. True      B. False

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. Minimum fixed air gap      C. Backflow preventer  
B. Non-potable source      D. None of the above

Refrigerant Condensers.

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

- A. Backflow preventer
- B. Minimum fixed air gap
- C. Potable water supply system
- D. None of the above

189. Only approved pipe or fittings of the water supply system can be drilled or tapped nor shall any band or saddle be used except at the water main in the street.

- A. True
- B. False

Devices for the Protection of the Potable Water Supply.

190. Approved air gaps shall be installed with all plumbing fixtures and equipment that may have a submerged potable water supply outlet and that are not protected by a backflow prevention assembly.

- A. True
- B. False

191. Backflow preventer devices or assemblies shall not be installed where they would be subject to freezing conditions.

- A. True
- B. False

192. All in-line backflow/back siphonage preventer assemblies shall have a full port type valve with a resilient seated shut-off valve on each side of the preventer.

- A. True
- B. False

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

- A. First check valve
- B. Second check valve
- C. Vacuum
- D. None of the above

Atmospheric Vacuum Breakers.

194. Which of the following 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. A protective strainer
- B. Air gap
- C. Vacuum breakers
- D. None of the above

195. Double Check Valve 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 \_\_\_\_\_ feet above a floor, or be installed where it is subject to freezing or flooding conditions.

- A. 2
- B. 5
- C. 1
- D. None of the above

196. After installation, each DCV and RPZ shall be field tested in-line in accordance with the manufacturer's instructions by a cross-connection control device inspector before initial operation.

- A. True
- B. False

197. A dual check backflow preventer atmospheric vent assembly shall not be installed where it is subject to freezing or flooding conditions.

- A. True
- B. False

198. \_\_\_\_\_ 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 expansion tank.

- A. Closed water systems
- B. Thermal expansion tank
- C. Opened water systems
- D. 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. Closed water systems
- B. Thermal expansion tank
- C. Opened water systems
- D. None of the above

### **Special Applications and Installations**

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

- A. RPZ
- B. DCV
- C. An atmospheric vacuum breaker
- D. None of the above

### **When Finished with Your Assignment...**

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