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How to take this course.
1. Download and Print the test questions.
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4. Begin viewing the web pages. Refer to your printed test to find the correct answers. The questions track the web pages.
5. As you find the answers, circle them on your printed copy.
6. At the end of each section, you’ll enter the quiz which is the same as your printed test. Refer to your circled answers when actually answering the quiz on the web.
7. Upon passing, you will proceed to the next section. If failed to pass, you will be moved to the beginning of that section for more review.

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Quiz 1

1. Galvanized steel pipe can be used for drainage piping if ______.
   - it is installed at least 6 inches’ underground
   - it is installed at least 6 inches aboveground
   - it is installed under water
   - it is installed with a water proof covering
   - it is installed in a sand bed

2. ABS and PVC piping can be installed in duct work if ______.
   - A. it has a flame-spread index of a maximum of 25 and a smoke-developed index of a maximum 50
   - B. it is installed in a single-family dwelling
   - C. it is installed perpendicular through the duct work
   - D. installed in a commercial building
   - E. Answers A and B

3. Vitrified clay pipe can be ______.
   - installed aboveground
   - installed at any distance below ground
   - installed belowground if at least 6 inches’ deep
   - installed belowground if at least 1-foot deep
   - installed belowground if at least 12 feet deep

4. A 2-inch copper tube for drainage shall have an O.D. of ______ inches.
   - 1.950
   - 2.000
   - 2.125
   - 2.137
   - 2.139
5. Stainless steel 304 pipe can be used for drainage piping if ______.
   • it is installed at least 6 inches underground
   • it is installed at least 6 inches aboveground
   • it is installed under water
   • it is installed with a water proof covering
   • it is installed in a sand bed

6. Cast-iron soil pipe must be marked with ______.
   • country of origin
   • identification of original manufacturer
   • marking required by referenced standards
   • none of the answers provided

7. Table 7-1 indicates that Schedule 40 ABS pipe can be installed ______.
   • only aboveground
   • only belowground
   • can never be installed
   • either above or belowground

8. Drainage fittings shall ______.
   • have a smooth interior water-way
   • have no recess to catch debris
   • be constructed to allow a 1/4-inch slope per foot
   • all of the answers provided
   • none of the answers provided

9. A safe pan made of lead should be at least ______ of an inch thick.
   • 1/32
   • 1/16
   • 1/8
   • 1/4
   • 1/2

10. A lead bend should be at least ______ of an inch thick.
    • 1/32
    • 1/16
    • 1/8
    • 1/4
    • 1/2

Quiz 2
1. A single lavatory shall have a minimum trap arm of ______.
   • 1-1/4 inch
   • 1-1/2 inch
   • 2 inches
   • 2-1/2 inches
   • 3 inches

2. A clothes washer shall have a minimum trap arm of ______.
   • 1-1/4 inch
   • 1-1/2 inch
   • 2 inches
   • 2-1/2 inches
   • 3 inches

3. A service mop basin shall have a minimum trap arm of ______.
   • 1-1/4 inch
   • 1-1/2 inch
   • 2 inches
   • 2-1/2 inches
   • 3 inches

4. A water closet in a public place shall have a minimum trap arm of ______.
   • 1-1/2 inch
   • 2 inches
   • 2-1/2 inches
   • 3 inches
   • 4 inches

5. Excessive length of the trap can result in ______.
   • the water seal being siphoned out of the trap
   • reverse flow of the waste water
   • excessive pressure in the drain line
   • sagging of the drain pipe
   • too much air entering the vent

6. A drainage fixture unit is equal to 1 gpm.
   • True
   • False

7. A water closet in a public structure is rated to have ______ DFU.
   • 1.0
   • 2.0
   • 3.0
   • 4.0
   • 5.0
8. A single lavatory in a private structure is rated to have ______ DFU.
   • 1.0
   • 2.0
   • 3.0
   • 4.0
   • 5.0
9. A clothes washer in a public structure is rated to have ______ DFU.
   • 1.0
   • 2.0
   • 3.0
   • 4.0
   • 5.0
10. Table 7-5 – The maximum DFU capacity of a 2-inch pipe in the horizontal position is ______.
    • 1
    • 8
    • 14
    • 32
    • 35
11. Table 7-5 – The maximum DFU capacity of a 1-1/2-inch pipe in the vertical position is ______.
    • 1
    • 2
    • 6
    • 16
    • 32
12. Table 7-5 – The maximum DFU capacity of a 4-inch pipe in the horizontal position is ______.
    • 32
    • 35
    • 48
    • 216
    • 256
13. Table 7-5 – The maximum DFU capacity of a 5-inch pipe in the vertical position is ______.
    • 48
    • 216
    • 256
    • 428
    • 600
14. Table 7-5 – The maximum length for a 2-inch pipe in the horizontal position is ______.
    • 45
    • 65
    • 85
    • 148
    • unlimited
15. Horizontal drainage pipe should be run with a uniform slope of not less than ______ per foot toward the point of disposal.
    • 1/8 inch
    • 1/4 inch
    • 3/8 inch
    • 1/2 inch
    • Does not matter as long as it is sloping downhill
16. Waste water should fill the pipe ______ full.
    • 1/6 to 1/3
    • 1/3 to 1/2
    • 1/2 to 3/4
    • Does not matter as long as it is sloping downhill
17. A vent in a drainage system is used to ______.
    • equalize the air pressure on both sides of the waste water flow
    • keep the water seal from being blow out of the trap
    • keep the water seal from being siphoned into the drainage pipe
    • all of the answers provided
    • none of the answers provided
18. Table 7-5 – A 2-inch vent pipe has the capacity to handle ______ DFU.
    • 1
    • 8
    • 24
    • 48
    • 84
19. Table 7-5 – The maximum length for a 2-inch vent pipe is ______ vertical feet.
    • 45
    • 60
    • 120
    • 180
    • 212
20. All drainage pipe must be supported at intervals of ______ feet or less.

- 2
- 3
- 4
- 6
- 10
Quiz 3

1. At Section A, the number of DFUs is calculated to be ______.
   - 3
   - 5
   - 6
   - 11
   - 22

2. The minimum size drainage pipe at Section A must be ______ diameter.
   - 1-1/2 inch
   - 2 inches
   - 3 inches
   - 4 inches

3. At Section B, the number of DFUs is calculated to be ______.
   - 3
   - 5
   - 6
   - 11
   - 22

4. The minimum size drainage pipe at Section B must be ______ diameter.
   - 1-1/2 inch
   - 2 inches
   - 3 inches
   - 4 inches

### TABLE 7-3: DRAINAGE FIXTURE UNIT VALUES (DFU)

<table>
<thead>
<tr>
<th>PLUMBING FIXTURES</th>
<th>MIN. SIZE TRAP ARM (inches)</th>
<th>PRIVATE (DFUs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bathtub/Shower – BT</td>
<td>1 ½</td>
<td>2.0</td>
</tr>
<tr>
<td>Clothes Washer – ACW</td>
<td>2</td>
<td>3.0</td>
</tr>
<tr>
<td>Water Closet – WC</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>Lavatory Single – LAV</td>
<td>1 ¼</td>
<td>1.0</td>
</tr>
<tr>
<td>Kitchen Sink – KS</td>
<td>1 ½</td>
<td>2.0</td>
</tr>
</tbody>
</table>

### TABLE 7-5: MAX. UNIT LOADING AND MAX. LENGTH OF DRAINAGE AND VENT PIPING

<table>
<thead>
<tr>
<th>SIZE OF PIPE (inches)</th>
<th>1 ¼</th>
<th>1 ½</th>
<th>2</th>
<th>2 ½</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. DFUs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical</td>
<td>1</td>
<td>2</td>
<td>16</td>
<td>32</td>
<td>48</td>
<td>256</td>
</tr>
<tr>
<td>Horizontal</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>14</td>
<td>35</td>
<td>216</td>
</tr>
</tbody>
</table>
5. At Section C, the number of DFUs is calculated to be ______.
   • 3
   • 5
   • 6
   • 11
   • 22

6. The minimum size drainage pipe at Section C must be ______ diameter.
   • 1-1/2 inch
   • 2 inches
   • 3 inches
   • 4 inches

7. At Section D, the number of DFUs is calculated to be ______.
   • 3
   • 5
   • 6
   • 11
   • 22

8. The minimum size drainage pipe at Section D must be ______ diameter.
   • 1-1/2 inch
   • 2 inches
   • 3 inches
   • 4 inches

9. At Section E, the number of DFUs is calculated to be ______.
   • 3
   • 5
   • 6
   • 11
   • 22

10. The minimum size drainage pipe at Section E must be ______ diameter.
    • 1-1/2 inch
    • 2 inches
    • 3 inches
    • 4 inches

11. At Section F, the number of DFUs is calculated to be ______.
    • 3
    • 5
    • 6
    • 11
    • 22

12. The minimum size drainage pipe at Section F must be ______ diameter.
    • 1-1/2 inch
    • 2 inches
    • 3 inches
    • 4 inches

13. At Section G, the number of DFUs is calculated to be ______.
    • 3
    • 5
    • 6
    • 11
    • 22

14. The minimum size drainage pipe at Section G must be ______ diameter.
    • 1-1/2 inch
    • 2 inches
    • 3 inches
    • 4 inches
Quiz 4

1. At Section A, the number of DFUs is calculated to be ______.
   - 10
   - 20
   - 30
   - 40
   - 60

2. The minimum size drainage pipe at Section A must be ______ diameter.
   - 1-1/2 inch
   - 2 inches
   - 3 inches
   - 4 inches

3. At Section B, the number of DFUs is calculated to be ______.
   - 10
   - 20
   - 30
   - 40
   - 60

4. The minimum size drainage pipe at Section B must be ______ diameter.
   - 1-1/2 inch
   - 2 inches
   - 3 inches
   - 4 inches

**TABLE 7-3**

<table>
<thead>
<tr>
<th>PLUMBING FIXTURES</th>
<th>MIN. SIZE TRAP ARM (inches)</th>
<th>PRIVATE (DFUs)</th>
</tr>
</thead>
<tbody>
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<td>1 1/2</td>
<td>2.0</td>
</tr>
<tr>
<td>Clothes Washer – ACW</td>
<td>2</td>
<td>3.0</td>
</tr>
<tr>
<td>Water Closet – WC</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>Lavatory Single – LAV</td>
<td>1 1/4</td>
<td>1.0</td>
</tr>
<tr>
<td>Kitchen Sink – KS</td>
<td>1 1/2</td>
<td>2.0</td>
</tr>
<tr>
<td>Floor Drain – FD</td>
<td>2</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**TABLE 7-5: MAX. UNIT LOADING AND MAX. LENGTH OF DRAINAGE AND VENT PIPING**

<table>
<thead>
<tr>
<th>SIZE OF PIPE (inches)</th>
<th>1 1/4</th>
<th>1 1/2</th>
<th>2</th>
<th>2 1/2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. DFUs Vertical</td>
<td>1</td>
<td>2</td>
<td>16</td>
<td>32</td>
<td>48</td>
<td>256</td>
</tr>
<tr>
<td>Max. DFUs Horizontal</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>14</td>
<td>35</td>
<td>216</td>
</tr>
</tbody>
</table>
5. At Section C, the number of DFUs is calculated to be ______.
   • 20
   • 40
   • 60
   • 80
   • 100

6. The minimum size drainage pipe at Section C must be ______ diameter.
   • 1-1/2 inch
   • 2 inches
   • 3 inches
   • 4 inches

7. At Section D, the number of DFUs is calculated to be ______.
   • 3
   • 5
   • 6
   • 11
   • 22

8. The minimum size drainage pipe at Section D must be ______ diameter.
   • 1-1/2 inch
   • 2 inches
   • 3 inches
   • 4 inches

9. At Section E, the number of DFUs is calculated to be ______.
   • 3
   • 5
   • 100
   • 103
   • 163

10. The minimum size drainage pipe at Section E must be ______ diameter.
    • 1-1/2 inch
    • 2 inches
    • 3 inches
    • 4 inches

11. At Section F, the number of DFUs is calculated to be ______.
    • 10
    • 20
    • 30
    • 40
    • 60

12. The minimum size drainage pipe at Section F must be ______ diameter.
    • 1-1/2 inch
    • 2 inches
    • 3 inches
    • 4 inches

13. At Section G, the number of DFUs is calculated to be ______.
    • 3
    • 5
    • 100
    • 103
    • 163

14. The minimum size drainage pipe at Section G must be ______ diameter.
    • 1-1/2 inch
    • 2 inches
    • 3 inches
    • 4 inches

**Quiz 5 – Joints and Connections**

1. The depth of the lead in a cast iron fitting must be at least ______.
   • 1/2 inch
   • 3/4 inch
   • 1 inch
   • 1-1/2 inches
   • none of the answers provided

2. The lead level on a cast iron pipe fitting cannot be lower than ______ below the rim of the hub.
   • 1/16 of an inch
   • 1/8 of an inch
   • 1/4 of an inch
   • 1/2 of an inch
   • none of the answers provided

3. Cement mortar joints shall only be repaired on existing drainage lines but never installed in any new construction.
   • True
   • False

4. Burned lead joints shall be lapped and the lead shall be fused together to form a uniform weld not less than as thick as the lead being joined.
   • True
   • False
5. Joints for asbestos cement pipe shall be ______.
   • a sleeve coupling of the same composition as the pipe
   • sealed with rubber rings
   • joined by an approved-type compression coupling
   • all of the answers provided
   • none of the answers provided

6. A rubber bushing is required when:
   • used to allow for any difference in piping material diameters
   • used to allow for any difference in piping material lengths
   • used to allow for any difference in piping material height
   • used to allow for any difference in piping slope

7. ______ shall comply with the applicable standards referenced in Table 14-1.
   • Elastomeric gasketed joints
   • Rubber-ring joints
   • both of the answers provided
   • neither of the answers provided

8. Shielded coupling joints shall not be considered as slip joints.
   • True
   • False

9. Joints for hubless cast-iron soil pipe and fittings ______.
   • shall conform to applicable standards referenced in Table 14-1
   • shall not be considered as slip joints
   • both of the answers provided
   • neither of the answers provided

10. Joints in vitrified clay pipe shall follow as provided in ______.
    • Section 316.1.5
    • Section 705.1.6
    • Section 705.1.7
    • Section 705.1.8
    • any of the answers provided

11. Joints between wrought iron, steel, brass, or copper pipe and cast-iron pipe shall be either ______.
    • caulked
    • threaded
    • either of the answers provided
    • neither of the answers provided

12. Joints between lead and cast-iron, wrought-iron, or steel pipe shall be made by means of wiped joints to a ______.
    • caulking ferrule
    • soldering nipple
    • bushing
    • any of the answers provided
    • none of the answers provided

13. A slip joint can be used in fixture drains and traps.
    • True
    • False

14. Expansion joints shall be used for ______ of any pipes.
    • expansion
    • contraction
    • both of the answers provided
    • neither of the answers provided

15. Brass or copper ground joints, flared, or ferrule-type connections ______.
    • shall allow adjustment for tubing
    • shall provide a rigid joint where made up
    • shall not be considered as slip joints
    • all of the answers provided
    • none of the answers provided

Quiz 6 – Cleanouts
1. Which is not an approved fitting?
   • 1/32 bend
   • 1/16 bend
   • 1/8 bend
   • 1/6 bend
   • 1/4 bend

2. A horizontal drain line connecting with a vertical stack can enter through a ______.
   • 45-degree wye branch
   • 60-degree wye branch
   • combination wye and 1/8 bend branch
   • sanitary tee branch
   • all of the answers provided
3. Which fitting is allowed to be used that connects a horizontal to vertical pipe which has more than one inlet at the same level is a ______.
   • double fixture fitting
   • double sanitary tee (same size barrels on all connections)
   • double wye tee
   • wye tee installed horizontally
   • all of the answers provided

4. A double sanitary tee may be use to connect a horizontal to a vertical pipe which has more than one inlet at the same level is the barrel of the fitting is at least 2 pipe sizes larger than the largest inlet.
   • True
   • False

5. A horizontal drain line connecting to another horizontal drain line can enter through ______.
   • a 45-degree wye branch
   • a combination wye and 1/8 bend branch
   • an approved fitting of equivalent sweep
   • all of the answers provided
   • none of the answers provided

6. A vertical drain line connecting to a horizontal drain line can enter through ______.
   • a 45-degree wye branch
   • a combination wye and 1/8 bend branch
   • an approved fitting of equivalent sweep
   • all of the answers provided
   • none of the answers provided

7. A 3-inch drainage pipe shall have a cleanout with a minimum size of ______.
   • 1-1/2 inch
   • 2 inches
   • 2-1/2 inches
   • 3 inches
   • 3-1/2 inches

8. A cleanout plug must be made from ______.
   • Brass
   • Stainless steel
   • ABS
   • PVC
   • all of the answers provided

9. A cleanout must be gas and watertight.
   • True
   • False

10. Each ______ drainage pipe shall be provided with a cleanout at its upper terminal.
    • horizontal
    • vertical
    • either of the answers provided
    • neither of the answers provided

11. A cleanout shall be provided for each ______ or equivalent feet of piping.
    • 10 feet
    • 50 feet
    • 100 feet
    • 200 feet

12. A cleanout shall be provided when there is a horizontal change of direction exceeding ______ degrees.
    • 45
    • 90
    • 135
    • 180
    • 270

13. A cleanout is not required on short horizontal drain lines less than ______ if it does not service a sink or urinal.
    • 1 foot
    • 3 feet
    • 5 feet
    • 10 feet
    • 20 feet

14. A cleanout is not required on a horizontal drainage pipe if the pipe has a slope of ______ degrees or greater.
    • 10
    • 18
    • 20
    • 30
    • 45

15. In a building, a cleanout is not required to be on a pipe that is above the floor level of the lowest floor of the building.
    • True
    • False
16. An approved type of two-way cleanout fitting, installed inside the building wall near the connection between the building drain and the building sewer or installed outside of a building at the lower end of a building drain and extended to grade, shall be substituted for an upper terminal cleanout.
   • True
   • False

17. A cleanout will need to be located ______.
   • so that it allows cleaning in the direction of flow
   • with the right angles to allow cleaning in the direction of flow
   • above the flow line of the pipe
   • all of the answers provided
   • none of the answers provided

18. The length of a cleanout extension is to be considered part of the length of the drainage system in computing the 100 feet rule and 135-degree rule.
   • True
   • False

19. A cleanout needs to be placed on the ______ of an interceptor.
   • inside
   • outside
   • downstream side
   • all of the answers provided
   • none of the answers provided

20. A cleanout, unless installed under an approved cover plate, will need to be ______.
   • above grade
   • readily accessible
   • located to serve the purpose for which it is intended
   • all of the answers provided
   • none of the answers provided

21. The minimum clearance for a cleanout serving 1-1/4-inch pipe is ______ in front of the cleanout.
   • 1-1/2 inch
   • 1 foot
   • 18 inches
   • 24 inches
   • all of the answers provided

22. The minimum clearance for a cleanout serving pipes larger than 2 inches is ______ in front of the cleanout.
   • 1-1/2 inch
   • 1 foot
   • 18 inches
   • 24 inches
   • none of the answers provided

23. The maximum distance from an access door to an under-floor cleanout is ______.
   • 10 feet
   • 15 feet
   • 20 feet
   • 25 feet
   • 50 feet

24. The minimum vertical clearance distance from an under-floor cleanout is ______.
   • 1-1/2 inch
   • 1 foot
   • 18 inches
   • 24 inches
   • none of the answers provided

25. Countersunk cleanout plugs shall be installed where raised heads cause a hazard.
   • True
   • False

Quiz 7
1. Horizontal drainage pipes should have a uniform slope of ______ per foot.
   • 1/16 inch
   • 1/8 inch
   • 1/4 inch
   • 1/2 inch
   • 1 inch

2. Upon approval of the building official, a drainage pipe may be placed at ______ per foot.
   • 1/16 inch
   • 1/8 inch
   • 1/4 inch
   • 1/2 inch
   • 1 inch
3. If a drainage pipe is placed at 1/8 inch per foot, the DFU that this drainage pipe is rated is at ______ of Table 7-5.
   - 50%
   - 60%
   - 70%
   - 80%
   - 90%

4. Fixtures that are ______ than the next upstream manhole need to be protected from backflow of sewage with an approved type of backwater valve.
   - lower
   - higher
   - parallel
   - neither higher or lower

5. Cleanouts for drains that pass through a backwater valve shall be clearly identified with a permanent label stating "backwater valve downstream."
   - True
   - False

6. A sewage ejector pump that receives discharge of W.C.S and urinals needs to have a capacity of at least ______.
   - 5 gpm
   - 10 gpm
   - 15 gpm
   - 20 gpm
   - 30 gpm

7. In a single dwelling unit, the ejector or pump will need to pump a ______ diameter solid ball.
   - 1 inch
   - 1-1/2 inch
   - 2 inches
   - 2-1/2 inches
   - 3 inches

8. In an apartment building, the ejector or pump will need to pump a ______ diameter solid ball.
   - 1 inch
   - 1-1/2 inch
   - 2 inches
   - 2-1/2 inches
   - 3 inches

9. When sizing drain lines from a sewer ejector or pump, one should use ______ for each gpm.
   - 1 DFU
   - 2 DFU
   - 3 DFU
   - 5 DFU
   - 10 DFU

10. The minimum sized vent from a sump pump receiving tank is ______.
    - 3/4 inch
    - 1-1/4 inch
    - 1-1/2 inch
    - 2 inches
    - 2-1/2 inches

11. The minimum sized discharge pipe from a macerating toilet is ______.
    - 3/4 inch
    - 1-1/4 inch
    - 1-1/2 inch
    - 2 inches
    - 2-1/2 inches

12. To prevent sudsing, drainage connections shall not be made into a drainage piping system within ______ of a vertical to horizontal change of direction of a stack containing suds-producing fixtures.
    - 5 feet
    - 8 feet
    - 12 feet
    - 16 feet
    - 22 feet

13. Which of the following fixtures is not considered to be suds producing?
    - A water closet
    - A bathtub
    - A kitchen sink
    - A dishwasher
    - A laundry

14. Plastic drainage pipe is allowed to be tested with ______ pressure.
    - air
    - water
    - either air or water
15. A water test will need to use at least a
   ______ head of water.
   • 2 foot
   • 5 foot
   • 10 foot
   • 15 foot
   • 20 foot