Registration form

BACKFLOW AWARENESS CEU TRAINING COURSE $200.00

48 HOUR RUSH ORDER PROCESSING FEE ADDITIONAL $50.00

Start Date: _____ Finish Date: _____
You will have 90 days from this date in order to complete this course

List hours worked on assignment must match State Requirement. _____

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# _____Class/Grade_____

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

Water Treatment _____ Distribution _____ Collection_____ Wastewater Treatment _____
Pump Installer_____ CSI_____ AWWA Backflow_____ Other _____

Technical Learning College PO Box 3060, Chino Valley, AZ 86323
Toll Free (866) 557-1746 Fax (928) 272-0747 e-mail 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 also understand that this type of study program deals with dangerous conditions and that I will not hold Technical Learning College, Technical Learning Consultants, Inc. (TLC) liable for any errors or omissions or advice contained in this CEU education training course or for any violation or injury, death, neglect, damage caused by this CEU education training or course material suggestion or error.

I will 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. 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.

Check here to see if the course is was approved in your State, TLC does not guarantee if the course is accepted for credit because States change their rules.

State Approval Listing URL…
http://www.abctlc.com/downloads/PDF/CEU%20State%20Approvals.pdf

You can obtain a printed version 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.

Texas TCEQ STUDENTS ONLY

All TCEQ Students will need to sign this and date this form as well. TCEQ students will also be given special assistance if you fail the examination. You will also have access to failed or wrong questions and/or the area or topic of the assignment to complete your learning experience.

Attention Texas TCEQ Operators, Irrigators, CSI and Backflow Testers…
NOTE: Any course cannot be taken for same credit in the same renewal period. Please call TCEQ and make sure that these courses are still accepted for credit before starting. Do not retake this course for credit in the same renewal period. TCEQ rules and decisions change frequently.

Signature _____

There are no intention trick questions in the assignment.

For Texas TCEQ Wastewater / Collections Operators

Rule Changes and Updates for Domestic Wastewater Systems
On Nov. 4, 2014, TCEQ commissioners adopted revisions to 30 Texas Administrative Code (TAC), Chapter 217, Design Criteria for Domestic Wastewater Systems, and "re-adopted" previously repealed rules in 30 TAC, Chapter 317, Design Criteria Prior to 2008.

Some of the changes to Chapter 217 include:

- Adding new definitions and clarifying existing definitions;
- Adding design criteria and approval requirements for rehabilitation of existing infrastructure;
- Adding design criteria for new technologies, including cloth filters and air lift pumps;
- Making changes to reflect modern practices, standards and trends;
- Modifying rule language to improve readability and enforceability; and
- Modifying the design organic loadings and flows for a new wastewater treatment facility.

SUBCHAPTER A: ADMINISTRATIVE REQUIREMENTS §§217.1 - 217.18
Effective December 4, 2015 §217.1. Applicability. (a) Applicability. (1) This chapter applies to the design, operation, and maintenance of: (A) domestic wastewater treatment facilities that are constructed with plans and specifications received and approved by the executive director after the effective date of the amendments to this chapter; (B) treatment units that are altered, constructed, or re-rated with plans and specifications received and approved by the executive director after the effective date of the amendments to this chapter; (C) collection systems that are constructed with plans and specifications received and approved by the executive director after the effective date of the amendments to this chapter; (D) collection system units that are altered, constructed, or re-rated with plans and specifications received and approved by the executive director after the effective date of the amendments to this chapter; (E) existing domestic wastewater treatment facilities that do not have a current Texas Pollutant Discharge Elimination System permit or a Texas Land Application Permit and are required to have an active wastewater permit; (F) existing wastewater treatment facilities and collection systems that never received approval for plans and specifications from the executive director; and (G) collection system rehabilitation projects covered in §217.56(c) and §217.69 of this title (relating to Trenchless Pipe Installation; and Maintenance, Inspection, and Rehabilitation of the Collection System). (2) Domestic wastewater treatment facilities, treatment units, collection systems, and collection system units with plans and specifications approved by the executive director that were received on or after August 28, 2008 and before the effective date of this chapter must comply with the rules in this chapter, as they existed immediately before the effective date of the amendments to this chapter.

The rules in Texas Commission on Environmental Quality Page 2 Chapter 217 - Design Criteria for Domestic Wastewater Systems effect immediately before the effective date of the amendments to this chapter are continued in effect for that purpose. (3) This chapter does not apply to: (A) the design, installation, operation, or maintenance of domestic wastewater treatment facilities, treatment units, collection systems, or collection system units with plans and specifications that were approved by the executive director on or before August 27, 2008, which are governed by Chapter 317 of this title (relating to Design Criteria Prior to 2008) or

design criteria that preceded Chapter 317 of this title; and (B) systems regulated by Chapter 285 of this title (relating to On-Site Sewage Facilities); or collection systems or wastewater treatment facilities that collect, transport, treat, or dispose of wastewater that does not have the characteristics of domestic wastewater, although the wastewater may contain domestic wastewater.

(b) The executive director may grant variances from new requirements added by the amendments of this chapter to a person who proposes to construct, alter, or re-rate a collection system or wastewater treatment facility if the plans and specifications for the project are submitted within 180 days after the date the amendments to this chapter are effective, provided the plans and specifications comply with the rules in effect immediately prior to the amendment. Adopted November 4, 2015 Effective December 4, 2015

The link to the rules is available on the TCEQ website at
https://www.tceq.texas.gov/rules/indxpdf.html

Please sign and date this notice

Printed Name

_____

Signature Date

_____

Texas Students Only

Acknowledgement of Notice of Potential Ineligibility for License

You are required to sign and return to TLC or your credit will not be reported.

Name:_____

Date of Birth:_____

Email Address: _____

By signing this form, I acknowledge that Technical Learning College notified me of the following:

- the potential ineligibility of an individual who has been convicted of an offense to be issued an occupational license by the Texas Commission on Environmental Quality (TCEQ) upon completion of the educational program;
- the current TCEQ Criminal Conviction Guidelines for Occupational Licensing, which describes the process by which the TCEQ's Executive Director determines whether a criminal conviction:
- renders a prospective applicant an unsuitable candidate for an occupational license;
- warrants the denial of a renewal application for an existing license; or
- warrants revocation or suspension of a license previously granted.
- the right to request a criminal history evaluation from the TCEQ under Texas Occupations Code Section 53.102; and
- that the TCEQ may consider an individual to have been convicted of an offense for the purpose of denying, suspending or revoking a license under circumstances described in Title 30 Texas Administrative Code Section 30.33.

Enrollee Signature: _____ Date: _____

Name of Training Provider/Organization: Technical Learning College

Contact Person: Melissa Durbin Role/Title: Dean

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

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

Backflow Awareness CEU Training Course
CUSTOMER SERVICE RESPONSE CARD

NAME: _____

Telephone #_____

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

1. Please rate the difficulty of your course.
   Very Easy 0 1 2 3 4 5 Very Difficult

2. Please rate the difficulty of the testing process.
   Very Easy 0 1 2 3 4 5 Very Difficult

3. Please rate the subject matter on the exam to your actual field or work.
   Very Similar 0 1 2 3 4 5 Very Different

4. How did you hear about this Course?_____

What would you do to improve the course?

_____

_____

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.

_____

_____

_____

Special Notice to all Texas (TCEQ) Students

§ 344.51. SPECIFIC CONDITIONS AND CROSS-CONNECTION CONTROL.

(d) If an irrigation system is designed or installed on a property that is served by an on-site sewage facility, as defined in Chapter 285 of this title (relating to On-Site Sewage Facilities), then:

(1) all irrigation piping and valves must meet the separation distances from the On-Site Sewage Facilities system as required for a private water line in §285.91(10) of this title (relating to Minimum Required Separation Distances for On-Site Sewage Facilities);

(2) any connections using a private or public potable water source must be connected to the water source through a reduced pressure principle backflow prevention assembly as defined in §344.50 of this title (relating to Backflow Prevention Methods); and

(3) any water from the irrigation system that is applied to the surface of the area utilized by the On-Site Sewage Facility system must be controlled on a separate irrigation zone or zones so as to allow complete control of any irrigation to that area so that there will not be excess water that would prevent the On-Site Sewage Facilities system from operating effectively.

Backflow Awareness CEU Course Answer Key

***Name*_____**

***Telephone #* _____**

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

Method of Course acceptance confirmation. Please fill this section
No refunds.
Website __ Telephone Call___ Email____ Spoke to_____

Did you receive the approval number, if applicable? _____

What is the course 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.

Please select one answer. You can Bold, Circle, Underline or X your answer. You can use Adobe Acrobat DC to electronically fill out this sheet.

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

69. A B
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196. A B C D
197. A B C D
198. A B C D
199. A B C D
200. A B C D

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. 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.

_____

Signature

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

When finished with your assignment.

Please scan the Registration Page, Answer Key and Driver's License and email it to info@TLCH2O.com.

If you are unable to scan, take a photo of these documents with your iPhone and send these to TLC, info@TLCH2O.com.

If you are unable to scan and email, please fax these to TLC,

(928) 468-0675
If you fax, call to confirm that we received your paperwork.

BACKFLOW AWARENESS CEU COURSE ASSIGNMENT

You may re-type or use this Word document to assist your assignment

The focus of this course is a basic understanding of Backflow Prevention/Cross-Connection. This course is **NOT** designed to certify you as a General Tester or a Cross-Connection Specialist.

You will have 90 days from receipt of this course to complete in order to receive your Continuing Education Units (**CEUs**) or Professional Development Hours (**PDHs**).

A score of 70 % or better is necessary to pass this course. If you should need any assistance, please email all concerns and the final test to info@tlch2o.com. You can find online assistance for this course on the in the Search function on Adobe Acrobat PDF to help find the answers.

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

You are finished, please e-mail your assignment and registration page.

1. Which of the following definitions is height of a column or body of fluid above a given point expressed in linear units?
A. Head, Friction C. Hydraulics
B. Head D. None of the above

2. Which of the following definitions is required to overcome the friction at the interior surface of a conductor and between fluid particles in motion?
A. Head, Friction C. Hydraulics
B. Head, static D. None of the above

3. Which of the following definitions is the pressure applied to a confined fluid at rest is transmitted with equal intensity throughout the fluid?
A. Pressure C. Pascal's Law
B. Hydraulics D. None of the above

4. Which of the following definitions is the application of continuous force by one body upon another that it is touching; compression?
A. Pressure C. Pascal's Law
B. Hydraulics D. None of the above

5. Which of the following definitions is the pressure is equal to the height times the density of the liquid?
A. Head, static C. Hydrokinetics
B. Head D. None of the above

6. Which of the following definitions varies with flow, size, type, and conditions of conductors and fittings, and the fluid characteristics?
A. Head, Friction C. Hydraulics
B. Head, static D. None of the above

7. Which of the following definitions is the pressure in a fluid at rest?
A. Pressure, Atmospheric C. Pressure, Gauge
B. Pressure, Static D. None of the above

8. Which of the following definitions is the height of a column or body of fluid above a given point?
A. Head, Friction C. Hydraulics
B. Head, static D. None of the above

9. Which of the following definitions is often used to indicate gauge pressure?
A. Head, Friction C. Hydraulics
B. Head D. None of the above

Hydraulics
10. Which of the following includes the behavior of all liquids, although it is primarily concerned with the motion of liquids?
A. Fluids C. Hydraulics
B. Hydrostatics D. None of the above

11. Hydrostatics is based on the Greek word for water, and originally covered the study of the physical behavior of water at rest and in motion.
A. True B. False

12. Hydraulics is a branch of engineering concerned mainly with moving liquids.
A. True B. False

What is Fluid Mechanics?
13. Fluid mechanics is a science concerned with the response of fluids to_____.
A. Forces C. Forces exerted upon them
B. Its velocity D. None of the above

Fluid Statics
14. Fluid statics or hydrostatics is the branch of fluid mechanics that studies_____. It embraces the study of the conditions under which fluids are at rest in stable equilibrium; and is contrasted with fluid dynamics, the study of fluids in motion.
A. Forces C. Fluids at rest
B. Its velocity D. None of the above

Fluid Dynamics
15. Fluid dynamics has several sub-disciplines itself, including aerodynamics (the study of air and other gases in motion) and hydrodynamics (the study of liquids in motion).
A. True B. False

16. Fluid dynamics offers a systematic structure—which underlies these practical disciplines—that embraces empirical and semi-empirical laws derived from flow measurement and used to solve practical problems.
A. True B. False

17. Fluid dynamics has a wide range of applications, including calculating forces and moments on aircraft, determining the mass flow rate of petroleum through pipelines, predicting evolving weather patterns, even understanding nebulae in interstellar space and modeling explosions.
A. True B. False

18. Fluid dynamics is a sub-discipline of fluid mechanics that deals with fluid flow—the science of liquids and gases in motion.
A. True B. False

Surface Tension
19. Work also must be done if a free liquid drop of spherical shape is to be drawn out into a long thin cylinder or deformed in any other way that increases its surface area. Here again work is needed to break_____.
A. Intermolecular links C. Dissolved gases
B. Liquid surface D. None of the above

Water and Electrical Principles are Very Similar
20. The electronic–hydraulic analogy is the most widely used analogy for "Hydraulic fluid" in a metal conductor.
A. True B. False

21. Electricity was understood to be a kind of energy, and the names of certain electric quantities are derived from heating equivalents.
A. True B. False

22. Since electric current is invisible and the processes at play in electronics are often difficult to demonstrate, the various electronic components are represented by?
A. Volts C. Hydraulic equivalents
B. Hydraulic ohm analogy D. None of the above

Basic Ideas
23. Flow and pressure variables can be calculated in fluid flow network with the use of the?
A. Electron fluids C. Hydraulic ohm analogy
B. Pressures D. None of the above

24. Large tanks of water are held up high, or are filled to differing water levels, and the potential energy of the water head is the pressure source.
A. True B. False

Component Equivalents
25. Electric potential: In general, it is equivalent to kinetic energy.
A. True B. False

26. Connecting one end of a wire to a circuit is equivalent to forcibly un-capping one end of the pipe and attaching it to another pipe.
A. True B. False

27. When comparing to a piece of wire, a water pipe should be thought of as having semi-permanent caps on the ends.
A. True B. False

28. A capacitor cannot "filter out" constant pressure differences frequency pressure differences.
A. True B. False

29. A resistor is considered a constriction in the bore of the pipe that requires less pressure to pass the same amount of water.
A. True B. False

30. Voltage is the difference in pressure between two points, usually measured in volts.
A. True B. False

31. A diode is equivalent to a two-way check valve with a tight valve seal.
A. True B. False

32. A wire with only one end attached to a circuit will do nothing; the pipe remains capped on the free end, and?
A. Voltage in a capacitor C. Thus adds nothing to the circuit
B. Force of gravity D. None of the above

33. If water is flowing horizontally, so that the force of gravity can be overlooked, and then electric potential is equivalent to?
A. Nothing to the circuit C. Pressure
B. Force of gravity D. None of the above

34. Normally measured in amperes, current is equivalent to a_____; that is, the volumetric quantity of flowing water over time.
A. Stretched rubber C. Hydraulic volume flow rate
B. Flow meter D. None of the above

35. A transistor is a valve in which a diaphragm, controlled by a low-current signal moves _____which affects the current through another section of pipe.
A. A plunger C. A needle valve
B. Voltage in a capacitor D. None of the above

36. Another analogy is_____, if one terminal is kept fixed at ground, sufficiently large that the drawn water does not affect the water level.
A. Quantity of water C. A large body of water at a high elevation
B. Water level D. None of the above

37. All pipes have_____, just as all wires have some resistance to current.
A. Quantity of water C. Some resistance to flow
B. Water level D. None of the above

38. Voltage is also called voltage drop or?
A. Valve assembly C. A positive displacement pump
B. Potential difference D. None of the above

39. According to the text, electric charge is equivalent to?
A. Resistance to current C. The mass and surface area of the wheel
B. Quantity of water D. None of the above

40. As with a diode, a small pressure difference is needed before the valve opens. In addition, like a diode, too much reverse bias can damage or destroy the?
A. Valve assembly C. A positive displacement pump
B. Feedback control D. None of the above

Pascal's Law

41. Pascal discovered that pressure in a fluid acts equally in some directions.
A. True B. False

42. If a pressure gauge, with an exposed face, is placed beneath the surface of a liquid at a specific depth and pointed in different directions, the pressure will read the same.
A. True B. False

43. Pressure in a _____of direction.
A. Liquid at a specific depth C. Height of a liquid
B. Liquid is independent D. None of the above

44. Pressure due to the _____, at any level, depends on the depth of the fluid from the surface.
A. Weight of a liquid C. Height of a liquid
B. Liquid at a specific depth D. None of the above

45. If the exposed face of the pressure gauges are moved closer to the surface of the liquid, the indicated?
A. Pressure will be less C. Is equal
B. Pressure of a liquid D. None of the above

46. The indicated pressure is doubled, when the?
A. Depth is doubled C. Column is tripled
B. Pressure of a liquid D. None of the above

47. The pressure at any depth in this term of the column of liquid at that depth divided by the cross-sectional area of the column at that depth.
A. Depth is doubled C. Liquid is equal to the weight
B. Pressure of a liquid D. None of the above

48. Which of the following produces the pressure is referred to as the fluid head of the liquid?
A. Depth is doubled C. Volume of a liquid
B. Pressure of a liquid D. None of the above

49. Which of the following is due to its fluid head is also dependent on the density of the liquid?
A. Pressure will be less C. Is equal
B. Pressure of a liquid D. None of the above

Static Pressure

50. Which of the following flow terms is an important consideration in sizing the hydraulic lines?
A. Velocity of flow C. Volume of flow
B. Volume of a liquid D. None of the above

51. Pascal's law covers the situation only for fluids at rest or practically at rest. It is true only for the factors making up _____.
A. Velocity of flow C. Static head
B. Volume of a liquid D. None of the above

Volume and Velocity of Flow

52. Which of the following is passing a point in a given time is known as its volume of flow or flow rate?

A. Friction head C. Volume of flow
B. Volume of a liquid D. None of the above

53. Which of the following is usually expressed in gallons per minute (gpm) and is associated with relative pressures of the liquid, such as 5 gpm at 40 psi?

A. Velocity of flow C. Volume of flow
B. Volume of a liquid D. None of the above

Bernoulli's Principle

54. Bernoulli's principle thus says that a rise (or fall) in pressure in a flowing fluid must always be accompanied by a decrease (or increase) in the speed, and conversely, if an increase (decrease) in, the speed of the fluid results in a decrease (or increase) in the pressure.

A. True B. False

55. Bernoulli's principle is responsible for the fact that a shower curtain gets "sucked inwards" when the water is first turned on. What happens is that the increased water/air velocity inside the curtain causes a pressure drop.

A. True B. False

56. Which of the following s explains the difference between the outside and inside causes a net force on the shower curtain which sucks it inward?

A. Pressure C. Velocity of flow
B. Volume of flow D. None of the above

57. Squeezing the bulb over the fluid creates a low _____ area due to the higher speed of the air, which subsequently draws the fluid up.

A. Pressure C. Velocity of flow
B. Volume of flow D. None of the above

58. Which of the following explains why windows tend to explode, rather than implode in hurricanes: the very high speed of the air just outside the window causes the pressure just outside to be much less than the pressure inside, where the air is still.

A. Venturi effect C. Conservation of energy
B. Bernoulli's principle D. None of the above

59. Another example of _____at work is in the lift of aircraft wings and the motion of "curve balls" in baseball. In both cases the design is such as to create a speed differential of the flowing air past the object on the top and the bottom.

A. Venturi C. Conservation of energy
B. Bernoulli's principle D. None of the Above

Hydraulic Forces Section

Atmospheric Pressure

60. Which of the following at sea level is approximately 14.7 psi?

A. Pressure C. Atmospheric pressure
B. Gauge pressure D. None of the above

61. Which of the following if you could be below, in excavations and depressions, atmospheric pressure increases?
A. Static pressure C. Sea level
B. Pressure D. None of the above

62. Which of the following is the layer called that extends upward for about 500 miles, the section of primary interest is the portion that rests on the earth's surface and extends upward for about 7 1/2 miles?
A. Troposphere C. Atmospheric pressure
B. Sea level D. None of the above

63. Pressures under water differ from those under air only because the weight of the water must be added to the?
A. Pressure(s) of the air C. Seal Level
B. Height D. None of the above

64. Which of the following can be measured by any of several methods, one method is the mercury column barometer?
A. Pressure C. Atmospheric pressure
B. Gauge pressure D. None of the above

65. Which of the following could be measured with the aneroid Barometer?
A. Pressure C. Atmospheric pressure
B. Gauge pressure D. None of the above

66. The atmospheric pressure does not vary uniformly with?
A. Barometric pressure C. Altitude
B. Weight D. None of the above

67. If you were to ascend, the atmospheric pressure increases by approximately 1.0 psi for every 2,343 feet.
A. True B. False

68. At sea level and at a temperature of 0° Celsius (C), the height of the mercury column is approximately 30 inches, or 76 centimeters. This represents a pressure of approximately 14.7 psi.
A. True B. False

69. If a column of air 1-inch square extending all the way to the "atmosphere", this column of air would weigh approximately 2.31 pounds at sea level.
A. True B. False

Barometric Loop

70. The barometric loop, will provide protection against backsiphonage, is based upon the principle that a water column, at sea level pressure, will not rise above 33.9 feet. In general, barometric loops are locally fabricated, and are 35 feet high.
A. True B. False

71. Gauge pressure is simply the pressure read on the gauge. If there is no pressure on the gauge other than atmospheric, the gauge will read zero.
A. True B. False

72. Absolute pressure is equal to gauge pressure plus the atmospheric pressure.
A. True B. False

73. The barometric loop consists of a continuous section of supply piping that abruptly rises to a height of approximately 233 feet and then returns back down to the originating level.
A. True B. False

74. The barometric loop is a loop in the piping system that effectively protects against backpressure.
A. True B. False

75. The barometric loop may not be used to protect against backsiphonage.
A. True B. False

76. Absolute pressure and gauge pressure?
A. Are the same C. That effectively protects
B. Are related D. None of the above

77. Which of the following terms could be measured an absolute scale, pounds per square inch absolute (psia), or gauge scale, (psiag).
A. Static pressure C. Sea level
B. Pressure D. None of the above

78. Which of the following at sea level is 14.7 psai?
A. Pressure C. Atmospheric pressure
B. Gauge pressure D. None of the above

79. Which of the following is the total pressure?
A. Absolute pressure C. Atmospheric pressure
B. Gauge pressure D. None of the above

80. Which of the following would be equal to 14.7 psi, which is also the atmospheric pressure?
A. Absolute pressure C. Atmospheric pressure
B. Gauge pressure D. None of the above

Pressure

81. Both air and water are considered to be?
A. Gases C. Volume
B. Fluid(s) D. None of the above

82. Which of the following terms does water possess and air does not?
A. Gases C. Volume
B. Fluid(s) D. None of the above

83. A force is proportional to the_____, and is called a pressure.
A. Pascal's Principle C. Permanent forces tangential
B. Area on which it is exerted D. None of the above

84. Which of the following deals with permanent, time-independent states of fluids, so viscosity does not appear?
A. Pascal's Principle C. Permanent forces tangential
B. Hydrostatics D. None of the above

85. In permanent, time-independent states of fluids, the pressure will be the same throughout the fluid, and the same in any direction at a point?
A. Pascal's Principle C. Permanent forces tangential
B. Acting on the body of the fluid D. None of the above

Standard Atmospheric Pressure
86. Which of the following is a practice that is convenient to measure pressure differences by measuring the height of liquid columns?
A. Barometer measurement C. Partial vacuum measurement
B. Manometer D. None of the above

87. Which of the following uses a partially evacuated chamber of thin metal that expands and contracts according to the external pressure?
A. Aneroid barometer C. Partial vacuum
B. Capillarity tube D. None of the above

Vacuum
88. The term vacuum indicates that the absolute pressure is less than the atmospheric pressure and that the _____ is negative.
A. Pressure C. Atmospheric pressure
B. Gauge pressure D. None of the above

89. Which of the following would mean a pressure of 0 psia or –14.7 psig?
A. Static pressure C. Total vacuum
B. Gauge pressure D. None of the above

90. Which of the following the pressure would range from slightly less than 14.7 psia to slightly greater than 0 psia?
A. Pressure C. Partial vacuum
B. Gauge pressure D. None of the above

91. Backsiphonage results from _____ exerted on a liquid, forcing it toward a supply system that is under a vacuum.
A. Static pressure C. Atmospheric pressure
B. Gauge pressure D. None of the above

Water Pressure
92. Which of the following are very frequently stated in terms of the height of a fluid.
A. Weight C. Depth
B. Pressure(s) D. None of the above

93. Water with a pressure head of 10 ft can provide the same _____as an equal amount of water raised by 10 ft.
A. Weight C. Energy
B. Pressure(s) D. None of the above

94. Water flowing in a pipe is subject to head loss because of?
A. Friction C. Siphon
B. Pressure(s) D. None of the above

95. When a siphon goes below the free water levels, it is called an?
A. Water bearer C. Inverted siphon
B. Siphon D. None of the above

96. Which of the following can be made by filling the tube, closing the ends, and then putting the ends under the surface on both sides?
A. Water bearer C. Inverted siphon
B. Siphon D. None of the above

Pressure and Force
97. Which of the following is the force that pushes water through pipes?
A. Pressure C. Shearing force
B. Fluid(s) D. None of the above

98. Which of the following and force are used extensively in the study of fluid power?
A. Pressure C. Shearing force
B. Fluid(s) D. None of the above

99. Which of the following terms means a total push or pull. It is the push or pull exerted against the total area of a particular surface?
A. Absolute pressure C. Volume
B. Force D. None of the above

100. Which of the following means the amount of push or pull applied to each unit area of the surface?
A. Absolute pressure C. Volume
B. Pressure D. None of the above

Cross-Connection Section

What is Backflow?
101. Backflow is the undesirable reversal of flow of nonpotable water or other substances through a _____and into the piping of a public water system or consumer's potable water system.
A. Backflow C. Cross-connection
B. Indirect connection D. None of the above

102. Which of the following can occur when there is a stoppage of water supply due to nearby firefighting, a break in a water main?
A. Backsiphonage C. Cross-connection
B. Backpressure D. None of the above

103. Which of the following is a type of backflow caused by a downstream pressure that is greater than the upstream or supply pressure in a public water system or consumer's potable water system?
A. Backflow C. Indirect connection
B. Backpressure D. None of the above

104. Which of the following can result from an increase in downstream pressure, a reduction in the potable water supply pressure, or a combination of both?
A. Backflow C. Backsiphonage
B. Backpressure D. None of the above

105. Which of the following can have two forms-backpressure and backsiphonage?
A. Backflow C. Cross-connection
B. Backpressure D. None of the above

106. The basic mechanism for preventing backflow is a mechanical _____, which provides a physical barrier to backflow.
A. Air gap C. Backflow
B. Backflow preventer D. None of the above

107. The principal types of mechanical backflow preventer are the reduced-pressure principle assembly, the _____, and the double check valve assembly.
A. Vacuum breaker C. Backflow check
B. Air gaper D. None of the above

108. Which of the following is a means or mechanism to prevent backflow?
A. Check device or method C. Backflow check valve
B. Backflow preventer D. None of the above

109. According to the text, basic means of preventing backflow is a(n) _____, which either eliminates a cross-connection or provides a barrier to backflow.
A. Vacuum breaker C. Backflow check
B. Air gap D. None of the above

110. Which of the following is any temporary or permanent connection between a public water system or consumer's potable water system and any source or system containing nonpotable water or other substances?
A. Indirect connection C. Cross-connection
B. Jumper D. None of the above

111. Which of the following is a type of backflow caused by a negative pressure (i.e., a vacuum or partial vacuum) in a public water system or consumer's potable water system?
A. Backsiphonage C. Cross-connection
B. Backpressure D. None of the above

112. Which of the following can occur whenever the amount of water being used exceeds the amount of water being supplied, such as during water line flushing, firefighting, or breaks in water mains?
A. Backsiphonage C. Cross-connection
B. Backpressure D. None of the above

Types of Backflow Prevention Methods and Assemblies

113. Which of the following must either be physically disconnected or have an approved backflow prevention device installed to protect the public water system?
A. Indirect connection C. Cross-connection
B. Jumper D. None of the above

114. When the _____is restricted, such as the case of an air gap located near a wall, the air gap separation must be increased.
A. Air break C. Airflow
B. Barrier to backflow D. None of the above

115. An air gap is a physical disconnection between the free flowing discharge end of a potable water pipeline and the top of a(n)?
A. Open receiving vessel C. Barrier to backflow
B. Air break D. None of the above

116. Which of the following must be at least two times the diameter of the supply pipe and not less than one inch?
A. Open receiving vessel C. Air gap
B. Air break D. None of the above

117. Air gap separations must be vertically orientated a distance of at least twice the inside diameter of the supply, but never less than?
A. 1 inch C. 12 inches
B. 2 inches D. None of the above

118. An obstruction around or near an _____ may restrict the flow of air into the outlet pipe and nullify the effectiveness of the air gap to prevent backsiphonage.
A. Open receiving vessel C. Air gap
B. Air break D. None of the above

119. An air gap is acceptable for _____ and is theoretically the most effective protection.
A. High hazard installations C. Low pollutional hazards
B. High pollutional concerns D. None of the above

120. The type of device selected for a particular backflow installation depends on several factors.
A. True B. False

121. An air break is a physical separation between the free flowing discharge end of a potable water supply pipeline, and the overflow rim of an open or non-pressure receiving vessel.
A. True B. False

Vacuum Breakers
122. The Atmospheric vacuum breaker allows air to enter the water line when the line pressure is reduced to a gauge pressure of zero or below.
A. True B. False

123. Both vacuum breakers devices primary purpose is to protect the water system from cross connections due to submerged inlets, such as irrigation systems and tank applications.
A. True B. False

124. Both vacuum breakers devices open the pipeline to atmosphere in the event of backsiphonage only.
A. True B. False

125. Both vacuum breakers devices are approved for backpressure conditions.
A. True B. False

126. To prevent the air inlet from sticking open, the device must not be installed on the pressure side of a shutoff valve, or wherever it may be under constant pressure more than 2 hours during a 12-hour period.
A. True B. False

127. Atmospheric vacuum breakers Uses: Irrigation systems, commercial dishwasher and laundry equipment, chemical tanks and laboratory sinks.
A. True B. False

128. Pressure Vacuum Breaker Assembly (PVB) consists of a weighted check valve, an independently operating relief valve, two resilient seated shutoff valves, and two properly located resilient seated test cocks.
A. True B. False

129. The PVB needs to be installed 12 inches above the service or supply line to work correctly.
A. True B. False

130. Which of the following devices can have two primary types: atmospheric and pressure.
A. Vacuum breaker(s) C. Hazard application(s)
B. Atmospheric vacuum breakers D. None of the above

131. Both vacuum breakers devices are only suitable for?
A. High hazard installations C. Low hazard conditions
B. High pollutional concerns D. None of the above

132. Which of the following may not be installed downstream of atmospheric vacuum breakers but are allowed on pressure vacuum breakers?
A. Valve assembly C. Air inlet valve
B. Shut offs D. None of the above

133. The devices must be installed above the highest?
A. Downstream piping C. Hazard applications
B. Vacuum breakers D. None of the above

134. Which of the following contains a float check, a check seat, and an air inlet port?
A. Double check C. RP
B. Atmospheric vacuum breaker D. None of the above

135. The double check valve should be installed in an _____and protected from freezing.
A. Confined space C. Above the ground
B. Accessible location D. None of the above

136. Double Check Valve Assembly (DC) consists of two internally loaded check valves, either spring loaded or internally weighted, two resilient seated full ported shutoff valves, and four properly located resilient seated test cocks
A. True B. False

137. The double check valve assembly is designed to prevent backflow caused by backpressure and backsiphonage from high health hazards.
A. True B. False

138. Reduced Pressure Backflow Assembly (RP) consists of two independently acting spring loaded check valves separated by a Spring loaded differential pressure relief valve, two resilient seated full ported shutoff valves, and four properly located resilient seated test cocks.
A. True B. False

139. During normal operation of the RP, the pressure between the two check valves, referred to as the air inlet zone, is maintained at a higher pressure than the supply pressure.
A. True B. False

140. If either reduced pressure backflow assembly check valve leaks, the differential pressure relief valve maintains a differential pressure of at least one psi between the supply pressure and the zone between the four check valves by discharging water to atmosphere.
A. True B. False

141. The reduced pressure backflow assembly or RP is designed to prevent backflow caused by backpressure and backsiphonage from low to high health hazards.
A. True B. False

142. The RP needs to installed 24 inches above the ground for testing purposes but could function inside a vault.
A. True B. False

143. The reduced pressure backflow assembly can be used for high hazard situations under backpressure only. Under normal conditions, the second check valve should never close.
A. True B. False

144. If the second check valve fails or becomes fouled and backflow into the reduced pressure zone occurs, the relief port vents the backflow to atmosphere.
A. True B. False

145. The reduced pressure zone port opens anytime pressure in the zone comes within 10 psi of the supply pressure.
A. True B. False

Fire System Classifications
146. Industrial fire protection systems will usually consist of sprinklers, hose connections, and hydrants.
A. True B. False

147. Sprinkler system may be dry or wet, open or closed.
A. True B. False

148. Systems of fixed-spray nozzles may be used indoors or outdoors for protection of flammable-liquid and other hazardous processes. It is standard practice, especially in cities, to equip automatic sprinkler systems with fire department pumper connections.
A. True B. False

149. Class 1--direct connections from public water mains only; no pumps, tanks, or reservoirs; no physical connection from _____; no antifreeze or other additives of any kind; all sprinkler drains discharging to atmosphere, dry wells, or other safe outlets.
A. Public water only C. Other water supplies
B. Non-potable D. None of the above

150. Class 5--directly supplied from public mains, and interconnected with auxiliary supplies, such as: pumps taking suction from reservoirs exposed to contamination, or rivers and ponds; driven wells; mills or_____; or where antifreeze or other additives are used.
A. Public water only C. Other industrial water systems
B. An auxiliary water supply D. None of the above

151. Class 6--combined industrial and fire protection systems supplied from the_____, with or without gravity storage or pump suction tanks.
A. Public water mains only C. Antifreeze or other additives
B. With or without gravity storage D. None of the above

152. Class 3--direct connection from _____plus one or more of the following: elevated storage tanks; fire pumps taking suction from above-ground covered reservoirs or tanks; and pressure tanks.
A. An auxiliary water supply C. Antifreeze or other additives
B. Public water supply main D. None of the above

153. All storage facilities are filled or connected to public water only, the water in the tanks to be maintained in potable conditions. Otherwise, _____ systems are the same as Class 1.
A. Class 3 C. Class 2
B. Class 4 D. None of the above

154. Class 4--directly supplied from public mains similar to Classes 1 and 2, and with an auxiliary water supply on or available to the premises; or _____may be located within l,700 ft. of the pumper connection.
A. An auxiliary water supply C. Antifreeze or other additives
B. Gravity storage D. None of the above

155. Class 2--same as class 1, except that booster pumps may be installed in the connections from_____.
A. Public water only C. Other water supplies
B. The street mains D. None of the above

156. Booster pumps do not affect the potability of the system; it is necessary, however, to avoid drafting so much water that pressure in the water main is reduced below _____ psi.
A. 10 C. 100
B. 20 D. None of the above

Thermal Expansion Tank (Closed Loop System)
157. Prior to the installation of the backflow device, the volume of water in customer's pipes, which can expand when heated, could easily flow back into the public water system. With the installation of the backflow preventer, the water pressure in the customer's pipes may build up, particularly when the hot water system is activated.
A. True B. False

158. To prevent thermal expansion, the Administrative Authority or Water Provider will suggest having a thermal expansion tank installed.
A. True B. False

159. A setting between _____ degrees is considered appropriate for most household users.
A. 115-125 C. 212-220
B. 150-212 D. None of the above

160. A thermal expansion tank is a small tank with an air/ water bladder. The air in the bladder can be compressed, enabling the water to expand into this tank, relieving pressure on other fixtures. This tank is to be located on the cold water side of the hot water tank.
A. True B. False

New EPA Rules for Distribution
Reduction of Lead in Drinking Water Act
161. The Reduction of Lead in Drinking Water Act means municipalities, water districts and developers who work with and pay for water infrastructure need to be completed.
A. True B. False

162. Lead in drinking water can also cause a variety of adverse health effects. In babies and children, exposure in drinking water above the action level can result in delays in physical and mental development, along with slight deficits in attention span and learning abilities. In adults, it can cause increases in blood pressure.
A. True B. False

163. Homes built after 2019 are more likely to have lead pipes, fixtures and solder.
A. True B. False

164. New homes are also at risk: even legally “lead-free” plumbing may contain up to 8 percent lead.
A. True B. False

165. Reduction of Lead in Drinking Water Act is to amend the Safe Drinking Water Act regarding the use and introduction into commerce of lead pipes, plumbing fittings or fixtures, solder and flux.
A. True B. False

166. This lead reduction law was established a prospective effective date of January 4, 2014, which provided a three-year timeframe for affected parties to transition to the new requirements.
A. True B. False

Pervasive Environmental Contaminant
167. Lead can be consumed from various sources, including lead paint and house dust contaminated by lead paint, as well as soil, drinking water, and food.
A. True B. False

168. Because lead accrues in the body, all sources of lead should be controlled or eliminated to prevent childhood lead poisoning.
A. True B. False

169. Beginning in the 1970s, lead concentrations in air, tap water, food, dust, and soil began to be substantially reduced, resulting in significantly reduced blood lead levels in children throughout the United States.
A. True B. False

Summary

170. Cross-connections and backflow represent a _____ by allowing chemical and biological contaminants into the potable water supply (a conclusion of the Microbial/Disinfection Byproducts Federal Advisory Committee (M/DBP FACA)).

A. Insignificant public health risk C. Significant public health risk
B. Detected backflow incidents D. None of the above

171. A wide number and range of chemical and biological contaminants have been reported to enter the distribution system through_____.

A. Cross-connections and backflow C. Lead to backflow incidents
B. Backflow long-term D. None of the above

172. Pesticides, sewage, antifreeze, coolants, and detergents were the most frequent types of _____ reported.

A. Contaminants C. Significant public health risks
B. Detected backflow incidents D. None of the above

173. These problems include: an inability to detect incidents without health effects; incidents with health effects that are unreported because affected individuals do not realize a connection between_____; no requirement on either health officials or water system officials to report detected backflow incidents; and no central repository for reported illness.

A. Contamination incidents C. Their illness and the drinking water
B. Detected backflow incidents D. None of the above

174. Where undetected, cross-connections may also expose consumers to _____from backflow long-term.

A. Contaminants C. Their illness and the drinking water
B. Detected incidents D. None of the above

175. Although a wide range of contaminants have been reported, the number on contamination incidents is considered a likely underestimate due to problems in detecting, reporting, and documenting incidents.

A. True B. False

176. Cross-connections can be prevented through mechanical means and through programs administered by local or state officials to specifically locate and_____.

A. Prevent backflow C. Eliminate cross-connections and prevent backflow
B. Backflow long-term D. None of the above

177. Officials can also take measures to correct deficiencies that either have the potential to lead to backflow incidents or have already caused a_____, and they can increase monitoring for indicators of potential problems to improve reaction time to future incidents.

A. Problem C. Backflow incident
B. Backflow long-term D. None of the above

Safety Section

Scope

178. According to the text, you are required to recognize _____ associated with confined spaces.

A. Internal configurations
B. Permit-Required Confined Spaces
C. The dangers and hazards
D. None of the above

Confined Space Entry Program -Purpose

179. The Confined Space Entry Program is provided to protect authorized employees that will enter confined spaces from safety or health hazards associated with confined spaces.

A. True B. False

Confined space:

180. A confined space is large enough or so configured that an employee can _____.

A. Have sufficient oxygen
B. Bodily enter and perform work
C. Recognize serious safety or health hazards
D. None of the above

181. A confined space is not designed for _____.

A. An internal configuration
B. Hazardous atmospheres
C. Continuous employee occupancy
D. None of the above

182. A permit required confined space (permit space) contains or has a potential to contain a _____.

A. Recognized external configuration
B. Hazardous atmosphere
C. Entry or exit
D. None of the above

183. A permit required confined space (permit space) has an internal configuration such that _____ could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section.

A. An entrant
B. Non-hazardous atmosphere
C. An external configuration
D. None of the above

Confined Space Hazards

184. Fatalities and injuries constantly occur among construction workers who are required to enter _____.

A. An external configuration
B. Non-hazardous atmosphere
C. Confined spaces
D. None of the above

Inherent Hazards

185. _____ are associated with specific types of equipment and the interactions among them. These hazards can be electrical, thermal, chemical, mechanical, etc.

A. Inherent hazards
B. Non-hazardous atmospheres
C. Unrecognized serious safety or health hazards
D. None of the above

Induced Hazards

186. _____ result from a multitude of incorrect decisions and actions that occur during the actual construction process.

A. Induced hazards
B. Below-grade locations
C. Build-up of explosive gases
D. None of the above

Typical Examples of Confined Workspaces

187. Confined workspaces in construction contain _____.

A. Purging agents
B. Below-grade location
C. Both inherent and induced hazards
D. None of the above

Vaults

188. Workers must enter _____ found on the construction jobsite to perform a number of functions.

A. Common confined spaces
B. Hazards
C. A variety of vaults
D. None of the above

Oxygen-Deficient Atmosphere

189. The ever-present possibility of _____ is one of the major problems confronting construction workers while working in vaults.

A. A common confined space
B. Vaults
C. An oxygen-deficient atmosphere
D. None of the above

Explosive or Toxic Gases, Vapors, or Fumes

190. _____ produce toxic fumes which are confined in the limited atmosphere of a confined space.

A. Purging agents
B. Below-grade locations
C. Welding and soldering
D. None of the above

Electrical Shock

191. _____ results because the contractor has not provided an approved grounding system or the protection afforded by ground-fault circuit interrupters or low-voltage systems.

A. Common confined space
B. Electrical shock
C. An oxygen-deficient atmosphere
D. None of the above

Materials Falling In and On

192. According to the text, a _____ normally considered a problem associated with confined spaces is material or equipment which may fall into the vault.

A. Common confined space
B. Hazard
C. Oxygen-deficient atmosphere
D. None of the above

Condenser Pits

193. Because of their large size, condenser pits found in the construction of nuclear power plants are often overlooked as _____.

A. Common confined spaces
B. Hazards
C. Potentially hazardous confined spaces
D. None of the above

Manholes

194. Manholes are necessary to provide a means of entry into and exit from vaults, tanks, and pits, but these confined spaces may present _____ which could cause injuries and fatalities.

A. Serious hazards
B. Ventilation ducts
C. Sumps
D. None of the above

Pipe Assemblies
195. Once inside a pipe assembly, workers are faced with _____, often caused by purging with argon or another inert gas.
A. Nitrogen purge or dry air
B. Collection places
C. Potential oxygen-deficient atmospheres
D. None of the above

Ventilation Ducts
196. Ventilation ducts create a _____ which moves heated and cooled air and exhaust fumes to desired locations in the plant.
A. Collection place
B. Complex network
C. Shortcut to other areas
D. None of the above

Tanks
197. Tanks are _____ that are used for a variety of purposes, including the storage of water and chemicals.
A. Nitrogen purge locations
B. Collection places
C. Another type of confined workspace
D. None of the above

Sumps
198. Workers may encounter _____ when entering sumps.
A. Nitrogen purge or dry air
B. Problems with pumps
C. An oxygen-deficient atmosphere
D. None of the above

Unusual Conditions
Confined Space within a Confined Space
199 The _____ associated with the outer confined space and those of the inner confined space both require testing, monitoring, and control.
A. Potential hazards
B. Access passages
C. Manholes
D. None of the above

200. Often, only the outer space is evaluated for potential hazards. Workers are also faced with _____ when they enter the inner space.
A. Poor lighting
B. Excavations
C. Potentially hazardous conditions
D. None of the above

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

When finished with your assignment.

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