Course: 8355 POWTS Inground Quiz Part 1 **Fees $55**

This course is valid for these credentials:

Credential Description	Cred Code	Credit Hours
Journeyman Plumber	PJ	6.0
Journeyman Plumber-Restricted Service	PJRS	6.0
Master Plumber	PM	6.0
Master Plumber-Restricted Service	PMRS	6.0
POWTS Inspector	PI	6.0
POWTS MAINTAINER	PO	6.0
Soil Tester	ST	6.0

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1. Print these pages.
2. Circle the correct answers.
3. Page down to the last page for the verification forms and mailing instructions.
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I. INTRODUCTION AND SPECIFICATIONS

1. This Private Onsite Wastewater Treatment System (POWTS) component manual provides design, construction, inspection, operation, and maintenance specifications for an in-ground soil absorption component. However, these items must accompany a properly prepared and reviewed plan acceptable to the governing unit to help provide a system that can be installed and function properly.

   A. True
   B. False

2. Violations of this manual constitute a violation of SPS 382.

   A. True
   B. False

3. The in-ground soil absorption component must receive influent flows and loads less than or equal to those specified in Table 1.

   A. True
   B. False

4. Final effluent characteristics will comply with SPS 383.41, Wis. Adm. Code when inputs are within the range specified in Tables 1 to 3.

   A. True
   B. False

Use Table 1 for questions 5-11

5. The abbreviation “DWF” stands for? _____

6. The abbreviation “FOG” stands for? _____

7. The abbreviation “BOD” stands for? _____

8. The abbreviation “TSS” stands for? _____

9. Monthly average value of five day BOD is ≤ 220 mg/L

   A. True
   B. False

10. Volume of a single dose to soil absorption component when effluent is delivered to a nonpressure distribution system is > 20% of the design wastewater flow?

    A. True
    B. False

11. Distribution cell area per orifice when pressure distribution system is used is ≤ 12 sq ft.

    A. True
    B. False

Use Table 2 for questions 12-16

12. The minimum area of distribution cell is ≥ Design wastewater flow ÷ soil application rate for the in situ soil at the infiltrative surface or a lower horizon if the lower horizon adversely affects the dispersal of wastewater in accordance with SPS 383.44 (4) (a) and (c)

    A. True
    B. False

13. Distribution cell width ≥ 2 foot and ≤ 6 feet

    A. True
    B. False

14. Distribution cell depth ≥ 12 inches + nominal size of distribution pipe

    A. True
    B. False

15. Depth of cover over top of distribution cell ≥ 24 inches

A. True
B. False

16. Depth of cover over top of distribution cell measured from in situ soil surface ≥ 0 inches

A. True
B. False

Use Table 3 for questions 17-48

17. Vertical separation between distribution cell and seasonal saturation defined by redoximorphic features, groundwater, or bedrock shall be ≥ Equal to depth required by SPS 383 Table 383.44-3, Wis. Adm. Code

A. True
B. False

18. Bottom of distribution cell shall be Level

A. True
B. False

19. Horizontal separation between distribution cells shall be ≥ 3 inches.

A. True
B. False

20. The distance between bottom of distribution lateral and in situ soil when stone aggregate is used shall be ≥ 6 inches.

A. True
B. False

21. The distance between top of distribution lateral and geotextile fabric when stone aggregate is used shall be ≥ 2 ft.

A. True
B. False

22. The distribution cell stone aggregate material must meet the requirements of SPS 384.30 (6) (i), Wis. Adm. Code for stone aggregate.

A. True
B. False

23. Piping material in the distribution system must meet the requirements of SPS 384.30 (2), Wis. Adm. Code for its intended use.

    A. True
    B. False

24. Piping material for observation, vent, and observation/vent pipes must meet the requirements of SPS 384.30 Table 384.30-1, Wis. Adm. Code.

    A. True
    B. False

25. Leaching chamber must meet the requirements of SPS 384.30 (6) (h), Wis. Adm. Code.

    A. True
    B. False

26. Geotextile fabric cover over distribution cell when stone aggregate is used Geotextile fabric must meet the requirement of SPS 384.30 (6) (g), Wis. Adm. Code.

    A. True
    B. False

27. The location of gravity flow perforated distribution pipe in distribution cell must be centered in the length of the cell or equally spaced in the length of the cell.

    A. True
    B. False

28. Location of leaching chambers in distribution cell Located as follows:

    A. Single row of chambers that are in contact with the soil of the distribution cell walls, or
    B. Multiple rows of chambers that are in contact with each other and have the outside sides in contact with the soil of the distribution cell walls.
    C. None of the above
    D. Both A and B

29. The length of distribution pipe for components using stone aggregate and gravity flow distribution must be < Equal to length of distribution cell minus 6 feet.

    A. True
    B. False

30. The distance between distribution pipe end orifice and end of distribution cell for components using stone aggregate and gravity flow distribution must be ≥ 3 feet.

A. True
B. False

31. Length of leaching chamber row the chamber must extend to end walls of distribution cell.

A. True
B. False

32. Location of observation pipes must be at opposite ends of the distribution cell, and 1/5 to 1/10 the length of the distribution cell measured from the end of the cell.

A. True
B. False

33. The design and installation of observation pipes installed in stone aggregate must have?

A. an open bottom
B. a nominal pipe size of 4 inches
C. The lower 6 inches slotted
D. Slots are ≥ 1/4" and ≤ 1/2" in width and located on opposite sides
E. All of the above

34. The design and installation of observation pipes installed in stone aggregate must be?

A. Anchored in a manner that will prevent the pipe from being pulled out
B. Extend from the infiltrative surface up to or above finish grade
C. Terminate with a removable watertight cap
D. Terminate with a vent cap if > 2 ft. above finish grade
E. Only A, B, & C

35. The design and installation of observation pipes installed on leaching chambers must have?

A. an open bottom
B. a nominal pipe size of 4 inches
C. only B
D. both A & B

36. The design and installation of observation pipes installed on leaching chambers

A. Anchored to the leaching chamber in a manner that will prevent the pipe from being pulled out.
B. 5. Terminate with a removable watertight cap
C. 6. Terminate with a vent cap if ≥ 12 inches above finish grade
D. All of the above

37. The effluent application to distribution cell

    A. If DWF < 1500 gpd, effluent may be applied by gravity flow, dosed to distribution cell or distribution box, then applied by gravity flow to the distribution cell, or by use of pressure distribution, unless pressure distribution is required in accordance with SPS 383.44 (5) (b)
    B. 2. If DWF ≥ 1500 gpd, effluent must be dosed to distribution cell or distribution box, then applied by gravity flow to the distribution cell, or by use of pressure distribution, unless pressure distribution is required in accordance with SPS 383.44 (5) (b)
    C. Only A
    D. Both A & B

38. The septic tank effluent pump system must meets requirements of SPS 384.10, Wis. Adm. Code and the Component manual.

    A. True
    B. False

39. Dosing effluent to leaching chambers must be protection of the infiltrative surface must be provided to prevent erosion at the area where the effluent enters the chamber.

    A. True
    B. False

40. The dose tank or compartment volume employing one pump must have.

    A. Reserve capacity ≥ the estimated daily flow.
    B. Drain back volume ≥ volume of wastewater that will drain into the dose tank from the distribution cell.
    C. Four inches of this dimension ≥ vertical distance from pump intake to bottom of tank. Two inches of this dimension ≥ vertical distance between pump on elevation and high water alarm activation elevation.
    D. All of the above

41. Dose tank or compartment volume employing duplex pumps.

    A. Drain back volume < volume of wastewater that will drain into the dose tank from the force main.
    B. Four inches of this dimension < vertical distance from pump intake to bottom of tank. Two inches of this dimension ≥ vertical distance between pump on elevation and high water alarm activation elevation.
    C. Neither A or B
    D. Both A & B

42. Siphon tank or compartment volume must be < what is required to accommodate volumes necessary to provide dosing as specified in this manual.

    A. True
    B. False

43. Vent pipes installed in stone aggregate system must.

    A. Connect to a gravity flow distribution lateral by the use of a fitting
    B. Have a nominal pipe size of 4 inches
    C. Extend from the distribution lateral $\geq$ 12 inches above finish grade
    D. Terminate in a manner that will allow a free flow of air between the distribution lateral and the atmosphere
    E. All of the above

44. Vent pipes installed on leaching chambers must have

    A. Anchored to the leaching chamber in a manner that will prevent the pipe from being pulled down
    B. an closed bottom
    C. a nominal pipe size of 4 inches
    D. All of the above

45. Vent pipes installed on leaching chambers must have

    A. Extend from inside of the leaching chamber > 6 inches above finish grade
    B. Terminate in a manner that will allow a free flow of air between the leaching chamber and the ground
    C. The vent opening port is downward
    D. None of the above

46. Combination observation/vent pipes installed in a stone aggregate system must Meets all of the requirements of observation pipes with the following exceptions:

    A. Have a minimum 4 inch pipe connection to a distribution lateral
    B. Connect to the vent pipe at a point above the stone aggregate
    C. Extend from the infiltrative surface $\geq$ 12 inches above finish grade
    D. All of the above

47. Combination observation/vent pipes installed in a stone aggregate system must Meets all of the requirements of observation pipes with the following exceptions:

    A. Terminate in a manner that will allow a free flow of air between the distribution lateral and the atmosphere
    B. The vent opening port is downward
    C. Neither A or B
    D. Both A & B

48. Combination observation/vent pipes installed on a leaching chamber Meets all of the requirements of observation pipes with the following exceptions:

    A. Extend from the infiltrative surface $\leq$ 12 inches above finish grade
    B. Terminate in a manner that will allow a free flow of air between the leaching chamber and the ground
    C. The vent opening port is downward
    D. All of the above

DEFINITIONS 49-52

49. Cobbles

A. Rock fragments greater than 3 inches, but less than 10 inches in diameter.
B. A septic tank which has a pump installed in the tank that will pump effluent from the clear zone.
C. A scaled or completely dimensioned drawing, drafted by hand or computer aided technology, presented in a permanent form that shows the relative locations of setback encumbrances to a regulated object. The site plan also includes a reference to north and the permanent vertical and horizontal reference point or benchmark.
D. Rock fragments found in soil material that are greater than 10 inches in diameter, but less than 24 inches.

50. Septic tank effluent pump system

A. Rock fragments greater than 3 inches, but less than 10 inches in diameter.
B. A septic tank which has a pump installed in the tank that will pump effluent from the clear zone.
C. A scaled or completely dimensioned drawing, drafted by hand or computer aided technology, presented in a permanent form that shows the relative locations of setback encumbrances to a regulated object. The site plan also includes a reference to north and the permanent vertical and horizontal reference point or benchmark.
D. Rock fragments found in soil material that are greater than 10 inches in diameter, but less than 24 inches.

51. Site plan

A. Rock fragments greater than 3 inches, but less than 10 inches in diameter.
B. A septic tank which has a pump installed in the tank that will pump effluent from the clear zone.
C. A scaled or completely dimensioned drawing, drafted by hand or computer aided technology, presented in a permanent form that shows the relative locations of setback encumbrances to a regulated object. The site plan also includes a reference to north and the permanent vertical and horizontal reference point or benchmark.
D. Rock fragments found in soil material that are greater than 10 inches in diameter, but less than 24 inches.

52. Stones

A. Rock fragments greater than 3 inches, but less than 10 inches in diameter.
B. A septic tank which has a pump installed in the tank that will pump effluent from the clear zone.
C. A scaled or completely dimensioned drawing, drafted by hand or computer aided technology, presented in a permanent form that shows the relative locations of setback encumbrances to a regulated object. The site plan also includes a reference to north and the permanent vertical and horizontal reference point or benchmark.
D. Rock fragments found in soil material that are greater than 10 inches in diameter, but less than 24 inches.

III. DESCRIPTION AND PRINCIPLE OF OPERATION

53. In-ground soil absorption component operation is a two-stage process involving both wastewater treatment and dispersal. Treatment is accomplished predominately by physical and biochemical processes within the treatment/dispersal zone. The physical characteristics of the_____ affect these processes.

    A. influent wastewater
    B. influent application rate
    C. temperature
    D. the nature of the receiving soil
    E. All of the above

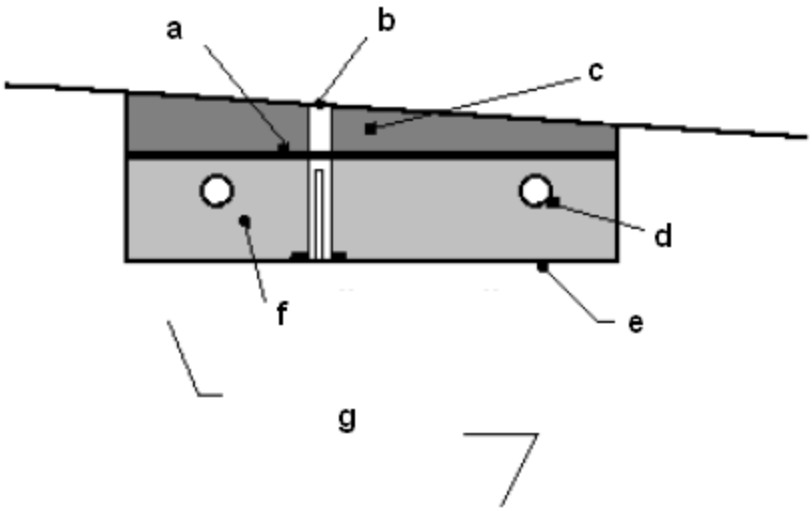
54. _____ in the wastewater are important treatment objectives accomplished under unsaturated soil conditions. Pathogens contained in the wastewater are eventually deactivated through filtering, retention, and adsorption by in situ soil.

    A. Physical entrapment
    B. increased retention time
    C. conversion of pollutants
    D. All of the above

55. Dispersal is primarily affected by the depth of the unsaturated receiving soil, _____, and the area available for dispersal.

    A. the soil's hydraulic conductivity
    B. influent application rate
    C. land slope
    D. All of the above

Use Figure 1 - Cross-section of an in-ground soil absorption component with multiple laterals to answer questions 56-62



56. The letter ‘a’ in the above diagram represents _____

57. The letter ‘b’ in the above diagram represents _____

58. The letter ‘c’ in the above diagram represents _____

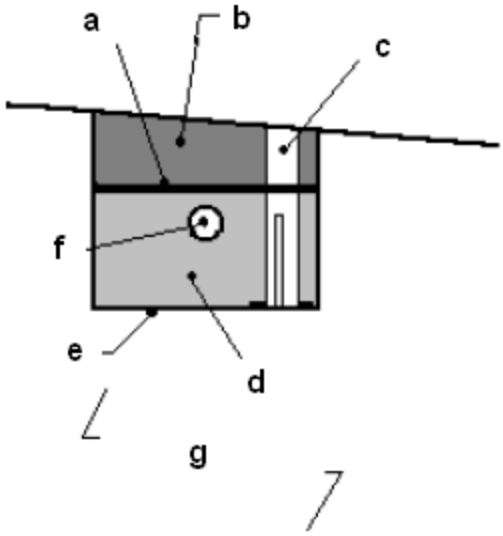
59. The letter‘d’ in the above diagram represents _____

60. The letter ‘e’ in the above diagram represents _____

61. The letter ‘f’ in the above diagram represents _____

62. The letter ‘g’ in the above diagram represents _____

Use Figure 2 - Cross-section of an in-ground soil absorption component with a single lateral to answer questions 63- 69



63. The letter 'a' in the above diagram represents _____

64. The letter 'b' in the above diagram represents _____

65. The letter 'c' in the above diagram represents _____

66. The letter 'd' in the above diagram represents _____

67. The letter 'e' in the above diagram represents _____

68. The letter 'f' in the above diagram represents _____

69. The letter 'g' in the above diagram represents _____

70. In open areas, exposure to sun and wind increases the assistance of evaporation and transpiration in the dispersal of the wastewater. This describes which statement below?

    A. In-ground soil absorption component location
    B. Sites with trees and large boulders
    C. Setback distances
    D. None of the above

71. Generally, sites with large trees, numerous smaller trees or large boulders are less desirable for installing an in-ground soil absorption component because of difficulty in preparing the distribution cell area. As with rock fragments, tree roots, stumps and boulders occupy area, thus reducing the amount of soil available for proper treatment. If no other site is available, trees in the distribution cell area must be removed. This describes which statement below?

    A. In-ground soil absorption component location

B. Sites with trees and large boulders
C. Setback distances
D. None of the above

72. The setbacks specified in SPS 383, Wis. Adm. Code for soil subsurface treatment/dispersal component, apply to in-ground soil absorption components. The distances are measured from the edge of the distribution cell area. This describes which phrase statement below?

A. In-ground soil absorption component location
B. Sites with trees and large boulders
C. Setback distances
D. None of the above

Design Wastewater Flow Calculations- One- and two-family dwellings.

Questions 73-75

73. Distribution cell size for one- and two-family dwelling application is determined by calculating the design wastewater flow (DWF). Formula 1 is for?

A. combined wastewater flows , which consist of blackwater, clearwater and graywater.
B. is for clearwater and graywater only
C. blackwater only.

74. Distribution cell size for one- and two-family dwelling application is determined by calculating the design wastewater flow (DWF). Formula 2 is for?

A. combined wastewater flows , which consist of blackwater, clearwater and graywater.
B. is for clearwater and graywater only
C. blackwater only.

75. Distribution cell size for one- and two-family dwelling application is determined by calculating the design wastewater flow (DWF). Formula 3 is for?

A. combined wastewater flows , which consist of blackwater, clearwater and graywater.
B. is for clearwater and graywater only
C. blackwater only.

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