Registration Form

WASTEWATER COLLECTION CEU TRAINING COURSE $100.00

48 HOUR RUSH ORDER PROCESSING FEE ADDITIONAL $50.00

Start and finish dates:_____
You will have 90 days from this date in order to complete this course

Name_____**Signature**_____
I have read and understood the disclaimer notice on page 2. Digitally sign XXX

Address: _____

City_____**State**_____ **Zip**_____

Email_____ **Fax (_____)**_____

Phone:
Home (_____)_____ **Work (_____)**_____

Operator ID #_____ **Exp Date**_____

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

Collection___ Wastewater Treatment ___ Pretreatment____

Other _____

Your certificate will be mailed to you in about two weeks unless you pay for the rush service.

Technical Learning College
PO Box 420, Payson AZ 85547-0420
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(928) 468-0665 Toll Free (866) 557-1746

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Visa or MasterCard # _____ **Exp. Date**_____

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We will stop mailing the certificate of completion we need your e-mail address. We will e-mail the certificate to you, if no e-mail address; we will mail 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 caused by this CEU education training course material. 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.

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

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

State Approval Listing URL…
http://www.tlch2o.com/PDF/CEU%20State%20Approvals.pdf

You can obtain a printed version of the course manual from TLC for an additional $79.95 plus shipping charges.

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

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

For security purposes, please fax or e-mail a copy of your driver's license and always call us to confirm we've received your assignment and to confirm your identity.

Thank you…

WW Collections Answer Key

Name_____

Telephone_____

Please Circle, Underline, Bold or X the best answer. One answer per question.

1. A B C D E	51. A B C D E	101. A B C D E	151. A B C D E
2. A B C D E	52. A B C D E	102. A B C D E	152. A B C D E
3. A B C D E	53. A B C D E	103. A B C D E	153. A B C D E
4. A B C D E	54. A B C D E	104. A B C D E	154. A B C D E
5. A B C D E	55. A B C D E	105. A B C D E	155. A B C D E
6. A B C D E	56. A B C D E	106. A B C D E	156. A B C D E
7. A B C D E	57. A B C D E	107. A B C D E	157. A B C D E
8. A B C D E	58. A B C D E	108. A B C D E	158. A B C D E
9. A B C D E	59. A B C D E	109. A B C D E	159. A B C D E
10. A B C D E	60. A B C D E	110. A B C D E	160. A B C D E
11. A B C D E	61. A B C D E	111. A B C D E	161. A B C D E
12. A B C D E	62. A B C D E	112. A B C D E	162. A B C D E
13. A B C D E	63. A B C D E	113. A B C D E	163. A B C D E
14. A B C D E	64. A B C D E	114. A B C D E	164. A B C D E
15. A B C D E	65. A B C D E	115. A B C D E	165. A B C D E
16. A B C D E	66. A B C D E	116. A B C D E	166. A B C D E
17. A B C D E	67. A B C D E	117. A B C D E	167. A B C D E
18. A B C D E	68. A B C D E	118. A B C D E	168. A B C D E
19. A B C D E	69. A B C D E	119. A B C D E	169. A B C D E
20. A B C D E	70. A B C D E	120. A B C D E	170. A B C D E
21. A B C D E	71. A B C D E	121. A B C D E	171. A B C D E
22. A B C D E	72. A B C D E	122. A B C D E	172. A B C D E
23. A B C D E	73. A B C D E	123. A B C D E	173. A B C D E
24. A B C D E	74. A B C D E	124. A B C D E	174. A B C D E
25. A B C D E	75. A B C D E	125. A B C D E	175. A B C D E
26. A B C D E	76. A B C D E	126. A B C D E	176. A B C D E
27. A B C D E	77. A B C D E	127. A B C D E	177. A B C D E
28. A B C D E	78. A B C D E	128. A B C D E	178. A B C D E
29. A B C D E	79. A B C D E	129. A B C D E	179. A B C D E
30. A B C D E	80. A B C D E	130. A B C D E	180. A B C D E
31. A B C D E	81. A B C D E	131. A B C D E	181. A B C D E
32. A B C D E	82. A B C D E	132. A B C D E	182. A B C D E
33. A B C D E	83. A B C D E	133. A B C D E	183. A B C D E
34. A B C D E	84. A B C D E	134. A B C D E	184. A B C D E
35. A B C D E	85. A B C D E	135. A B C D E	185. A B C D E
36. A B C D E	86. A B C D E	136. A B C D E	186. A B C D E
37. A B C D E	87. A B C D E	137. A B C D E	187. A B C D E
38. A B C D E	88. A B C D E	138. A B C D E	188. A B C D E
39. A B C D E	89. A B C D E	139. A B C D E	189. A B C D E
40. A B C D E	90. A B C D E	140. A B C D E	190. A B C D E
41. A B C D E	91. A B C D E	141. A B C D E	191. A B C D E
42. A B C D E	92. A B C D E	142. A B C D E	192. A B C D E
43. A B C D E	93. A B C D E	143. A B C D E	193. A B C D E
44. A B C D E	94. A B C D E	144. A B C D E	194. A B C D E
45. A B C D E	95. A B C D E	145. A B C D E	195. A B C D E
46. A B C D E	96. A B C D E	146. A B C D E	196. A B C D E
47. A B C D E	97. A B C D E	147. A B C D E	197. A B C D E
48. A B C D E	98. A B C D E	148. A B C D E	198. A B C D E
49. A B C D E	99. A B C D E	149. A B C D E	199. A B C D E
50. A B C D E	100. A B C D E	150. A B C D E	200. A B C D E

Please e-mail or fax this with your final exam

Wastewater Collection CEU Course

CUSTOMER SERVICE RESPONSE CARD

NAME: _____

E-
MAIL_____PHONE_____

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

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? _____

5. 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.

Wastewater Collection CEU Training Course Assignment

You will have 90 days from the start of this course to have successfully completed this assignment. If you need any assistance, please contact TLC's Student Services. Please e-mail or fax your answers and registration forms. You can find a copy of this assignment in Microsoft Word if you prefer.

Only one answer per question.

1. Every house, restaurant, business and industry produces waste. Wastewater _____ protects public health and the environment by removing this infectious waste and recycling the water.
A. Collection
B. Sewage
C. Wastewater
D. Sewer
E. None of the Above

2. A network of interconnected pipes accepts the flow from each building's sewer _____ and delivers it to the treatment facilities. In addition to what homes and businesses flush down the drain, the system also collects excess groundwater, infiltration liquids and inflow water.
A. Connection
B. Sewage
C. Wastewater
D. Sewer
E. None of the Above

3. Wastewater collection is therefore a comprehensive _____system.
A. Collection
B. Sewage
C. Wastewater
D. Sewer
E. None of the Above

4. The _____distributed through this system is about 98% water. The waste floats on, is carried along by, and goes into suspension or solution in water.
A. Collection
B. Sewage
C. Wastewater
D. Sewer
E. None of the Above

5. Possible waste includes anything that can be flushed down the drain--_____, body fluids, paper products, soaps and detergents, foods, fats, oil, grease, paints, chemicals, hazardous materials, solvents, disposable and flushable items; the list is almost infinite.
A. Collection
B. Sewage
C. Wastewater
D. Sewer
E. None of the Above

6. This mixture of water and wastes is called "_____." In the past, it was known as "sewage," but this term is now falling out of favor because it refers specifically to domestic sanitary wastewater, like toilet flushing, which represents only a portion of the entire fluid waste content.
A. Collection
B. Sewage
C. Wastewater
D. Sewer
E. None of the Above

7. "_____" is a more accurate description and has become the standard term for this fluid waste because it encompasses the total slurry of wastes in water that is gathered from homes and businesses.
A. Collection
B. Sewage
C. Wastewater
D. Sewer
E. None of the Above

Types of Sewer Systems
8. _____are generally broken out into three different categories: **sanitary sewers, storm sewers, and combined sewers**.
A. Overflows
B. Combined sewers
C. Sanitary sewers
D. Storm sewers
E. None of the Above

9. _____carry wastewater or sewage from homes and businesses to treatment plants.
A. Overflows
B. Combined sewers
C. Sanitary sewers
D. Storm sewers
E. None of the Above

10. Underground _____pipes can clog or break, causing unintentional **"overflows"** of raw sewage that flood basements and streets.
A. Overflows
B. Combined sewers
C. Sanitary sewers
D. None of the Above

11. _____are designed to quickly get rainwater off the streets during rain events.
A. Overflows
B. Combined sewers
C. Sanitary sewers
D. Storm sewers
E. None of the Above

12. Chemicals, trash and debris from lawns, parking lots and streets are washed by the rain into the _____drains.
A. Overflows
B. Combined sewers
C. Sanitary sewers
D. Storm sewers
E. None of the Above

13. Most _____do not connect with a treatment plant, but instead drain directly into nearby rivers, lakes, or oceans.
A. Overflows
B. Combined sewers
C. Sanitary sewers
D. Storm sewers
E. None of the Above

14. _____carry both wastewater and storm water in the same pipe. Most of the time, combined sewers transport the wastewater and storm water to a treatment plant.
A. Overflows
B. Combined sewers
C. Sanitary sewers
D. Storm sewers
E. None of the Above

15. However, when there is too much rain, combined sewer systems cannot handle the extra volume and designed "_____" of raw sewage into streams and rivers occur.
A. Overflows
B. Combined sewers
C. Sanitary sewers
D. Storm sewers
E. None of the Above

16. The great majority of sewer systems have _____, not combined, sanitary and storm water pipes.
A. Overflows
B. Combined sewers
C. Sanitary sewers
D. Storm sewers
E. None of the Above

17. _____, settling, tree root intrusion, and other disturbances that develop over time deteriorate pipelines and other conveyance structures that comprise wastewater collection systems, including stormwater, sanitary and combined sewers.
A. Maintenance
B. Undersized
C. Cracks
D. SSOs
E. None of the Above

18. Leaking, _____ and insufficient wastewater collection systems can release untreated wastewater into receiving waters.
A. Maintenance
B. Undersized
C. Overflowing
D. SSOs
E. None of the Above

19. Outdated pump stations, _____ to carry sewage from newly developed subdivisions or commercial areas, can also create a potential overflow hazard, adversely affecting human health and degrading the water quality of receiving waters.
A. Maintenance
B. Undersized
C. Leaking
D. None of the Above

20. The _____ of the sewer system is therefore a continuous, never-ending cycle.
A. Maintenance
B. Undersized
C. Leaking
D. SSOs
E. None of the Above

21. _____are discharges of raw sewage from municipal sanitary sewer systems.
A. Maintenance
B. Undersized
C. Leaking
D. SSOs
E. None of the Above

22. _____ can release untreated sewage into basements or out of manholes and onto city streets, playgrounds and into streams before it can reach a treatment facility.
A. Maintenance
B. Undersized
C. Leaking
D. SSOs
E. None of the Above

23. _____ are often caused by blockages and breaks in the sewer lines.
A. Maintenance
B. Undersized Systems
C. Blockages
D. SSOs
E. None of the Above

24. _____ occasionally occur in almost every sewer system, even though systems are intended to collect and contain all the sewage that flows into them.
A. Maintenance
B. Undersized Systems
C. Blockages
D. SSOs
E. None of the Above

25. When _____ happen frequently, it means something is wrong with the system.
A. Maintenance
B. Undersized Systems
C. Blockages
D. SSOs
E. None of the Above

26. _____ Too much rainfall or snowmelt infiltrating through the ground into leaky sanitary sewers not designed to hold rainfall or to drain property, and excess water inflowing through roof drains connected to sewers, broken pipes, and badly connected sewer service lines.
A. Maintenance
B. Undersized Systems
C. Blockages
D. I&I
E. None of the Above

27. _____ Sewers and pumps are too small to carry sewage from newly-developed subdivisions or commercial areas.
A. Maintenance
B. Undersized Systems
C. Blockages
D. SSOs
E. None of the Above

28. _____ Blocked, broken or cracked pipes; tree roots grown into the sewer; sections of pipe settle or shift so that pipe joints no longer match; and sediment and other materials build up, causing pipes to break or collapse.
A. Pipe Failures
B. Undersized Systems
C. Blockages
D. SSOs
E. None of the Above

29. _____ Discharges occur at sewer service connections to houses and other buildings; some cities estimate that as much as 60% of overflows comes from the service lines.
A. Sewer Service Connections
B. Undersized Systems
C. Blockages
D. SSOs
E. None of the Above

30. _____Improper installation, improper maintenance; widespread problems that can be expensive to fix develop over time, some municipalities have found severe problems necessitating billion-dollar correction programs; often communities have to curtail new development until problems are corrected or system capacity is increased.
A. Deteriorating Sewer System
B. Undersized Systems
C. Blockages
D. SSOs
E. None of the Above

31. The EPA has found that SSOs caused by poor sewer_____ pose a substantial health and environmental challenge. The response to this challenge varies considerably from state to state.
A. CMOM or MOM
B. Combined sewer systems
C. Combined sewer overflows
D. Collection system management
E. None of the Above

32. Many municipalities have asked for national consistency in the way permits are considered for _____, including SSOs, and in enforcement of the law prohibiting unpermitted discharges.
A. CMOM or MOM
B. Combined sewer systems
C. Combined sewer overflows
D. Wastewater discharges
E. None of the Above

33. _____are sewers that are designed to collect rainwater runoff, domestic sewage, and industrial wastewater in the same pipe.
A. CMOM or MOM
B. Combined sewer systems
C. Combined sewer overflows
D. Wastewater discharges
E. None of the Above

34. _____transport all of their wastewater to a sewage treatment plant, where it is treated and then discharged to a water body.
A. CMOM or MOM
B. Combined sewer systems
C. Combined sewer overflows
D. Wastewater discharges
E. None of the Above

35. During periods of heavy rainfall or snowmelt, however, the wastewater volume in a _____can exceed the capacity of the sewer system or treatment plant.
A. CMOM or MOM
B. Combined sewer system
C. Combined sewer overflows
D. Wastewater discharges
E. None of the Above

36. _____are designed to overflow occasionally and discharge excess wastewater directly to nearby streams, rivers, or other water bodies.
A. CMOM or MOM
B. Combined sewer systems
C. Combined sewer overflows
D. Wastewater discharges
E. None of the Above

37. These overflows, called _____contain not only storm water but also untreated human and industrial waste, toxic materials, and debris. They are a major water pollution concern for the approximately 772 cities in the U.S. that have combined sewer systems.
A. CMOM or MOM
B. Combined sewer systems
C. Combined sewer overflows
D. Wastewater discharges
E. None of the Above

38. _____ may be thought of as a type of "**urban wet weather**" discharge. This means that, like sanitary sewer overflows (**SSOs**) and storm water discharges, they are discharges from a municipality's wastewater conveyance infrastructure that are caused by precipitation events such as rainfall or heavy snowmelt.
A. CMOM or MOM
B. Combined sewer systems
C. Combined sewer overflows
D. Wastewater discharges
E. None of the Above

39. The EPA's _____ Control Policy, published April 19, 1994, is the national framework for control of CSOs. The Policy provides guidance on how communities with combined sewer systems can meet Clean Water Act goals in as flexible and cost-effective a manner as possible.
A. CMOM or MOM
B. Combined sewer systems
C. Combined sewer overflows
D. Wastewater discharges
E. None of the Above

40. EPA's Report to Congress on implementation of the _____ Control Policy assesses the progress made by EPA, states, and municipalities in implementing and enforcing the CSO Control Policy.
A. CMOM or MOM
B. Combined sewer systems
C. Combined sewer overflows
D. Wastewater discharges
E. None of the Above

The Elements of a Proper CMOM Program

Utility Specific
41. The complexity and expense associated with a utility's _____programs is specific to the size and complexity of the Publicly Owned Treatment Works (**POTW**) and related infrastructure. Factors such as population growth rate and soil/groundwater conditions also dictate the level of investment which should be made.
A. CMOM or MOM
B. Combined sewer systems
C. Combined sewer overflows
D. Wastewater discharges
E. None of the Above

42. When _____ programs are present and properly maintained, they support customer service and protect system assets, public health, and water quality.
A. MOM
B. Combined sewer systems
C. Combined sewer overflows
D. Wastewater discharges
E. None of the Above

43. Proper _____ programs have goals directed toward their individual purposes. Progress toward these goals is measurable, and the goals are attainable.
A. MOM
B. Combined sewer systems
C. Combined sewer overflows
D. Wastewater discharges
E. None of the Above

44. Performance measures should be established for each _____ program in conjunction with the program goal. These measures are quantifiable, and used in determining progress to, or beyond, the program goal.
A. MOM
B. Combined sewer systems
C. Combined sewer overflows
D. Wastewater discharges
E. None of the Above

45. An _____toward reaching the goals, or a reassessment of the goals, should be made periodically and based upon the quantified performance measures.
A. Evaluation of the progress
B. Program training is essential
C. Effectiveness a MOM program
D. Made readily available
E. None of the Above

46. The _____quickly breaks down unless it is available in writing. Personnel turnover and lapses in communication between staff and management can change otherwise proper MOM programs to improper ones.
A. Evaluation of the progress
B. Program training is essential
C. Effectiveness a MOM program
D. Made readily available
E. None of the Above

47. Written MOM programs are useful only if they are _____to all personnel and clearly documented.
A. Evaluation of the progress
B. Program training is essential
C. Effectiveness a MOM program
D. Made readily available
E. None of the Above

48. Appropriate safety, equipment, technical, and _____for implementing MOM programs properly.
A. Evaluation of the progress
B. Program training is essential
C. Effectiveness a MOM program
D. Made readily available
E. None of the Above

49. MOM activity at a utility _____wastewater infrastructure.
A. Evaluation of the progress
B. Program training is essential
C. Effectiveness a MOM program
D. Involves its entire
E. None of the Above

50. Common utility management_____ and maintenance activities associated with sewer systems and pretreatment are listed in the Self-Audit Review Document.
A. Evaluation of the progress
B. Program training is essential
C. Effectiveness a MOM program
D. Made readily available
E. None of the Above

51. If a utility owns treatment works or a pond system, then activities associated with the management, operation, and maintenance of these facilities should also be included in the audit. A helpful guide for this part is the _____ Compliance Inspection Manual. Instruction for obtaining this manual is provided in a list of references.
A. Unpermitted discharges
B. NPDES
C. Capital improvements
D. None of the Above

52. Begin by performing a general assessment of the utility, and prioritizing the order of programs to be audited. The _____ Compliance Inspection Manual and Guidance may be useful references in making this assessment.
A. Unpermitted discharges
B. NPDES
C. Capital improvements
D. MOM
E. None of the Above

53. Identify the _____programs present and/or needed at the utility, establish performance measures, and develop a schedule for auditing the programs.
A. Unpermitted discharges
B. NPDES
C. Capital improvements
D. MOM
E. None of the Above

54. Evaluate each MOM program against the defined elements of a proper program. This can be accomplished by reviewing the program's _____, conducting a field evaluation, and comparing the program understanding of both personnel and management.
A. Unpermitted discharges
B. NPDES
C. Capital improvements
D. MOM
E. None of the Above

55. Define any programs needed, or improvements to programs needed, and any _____found. Identify any unpermitted discharges which have occurred in the past five years.
A. Unpermitted discharges
B. NPDES
C. Capital improvements
D. MOM
E. None of the Above

56. Define the utility's plan/schedule to remediate the necessary improvements. This plan should include any short-term or long-term program improvements, and any short-term or long-term _____which need addressing.
A. Unpermitted discharges
B. NPDES
C. Capital improvements
D. MOM
E. None of the Above

57. Generate a report of the audit results, including any _____and the corresponding improvement plan, which is useful for the utility.
A. Unpermitted discharges
B. NPDES
C. Bodies of water
D. SSOs
E. None of the Above

58. This report should be capable of serving the _____when conducting any needed remedial measures, and as a reference to compare current performance with future self-audit results.
A. Unpermitted discharges
B. NPDES
C. Bodies of water
D. SSOs
E. None of the Above

59. _____ also damage property and the environment. When basements flood, the damaged area must be thoroughly cleaned and disinfected to reduce the risk of disease.
A. Unpermitted discharges
B. NPDES
C. Bodies of water
D. SSOs
E. None of the Above

60. Cleanup can be expensive for homeowners and municipalities. Rugs, curtains, flooring, wallboard panels, and upholstered furniture usually must be replaced. A key concern with _____ that enter oceans, bays, estuaries, rivers, lakes, streams, or brackish waters is their effect on water quality.
A. Unpermitted discharges
B. NPDES
C. Bodies of water
D. SSOs
E. None of the Above

Sewer Cleaning Section

61. The purpose of sewer cleaning is to _____from the sewer.
A. Causes a further buildup
B. Remove accumulated material
C. Accumulation of material
D. Helps to prevent blockages
E. None of the Above

62. Cleaning _____and is also used to prepare the sewer for inspections.
A. Causes a further buildup
B. Remove accumulated material
C. Accumulation of material
D. Helps to prevent blockages
E. None of the Above

63. Stoppages in gravity sewers are usually caused by a structural defect, poor design, poor construction, an _____in the pipe (especially grease), or root intrusion.
A. Causes a further buildup
B. Remove accumulated material
C. Accumulation of material
D. Helps to prevent blockages
E. None of the Above

64. _____may catch debris, which then causes a further buildup of solids that eventually block the sewer.
A. Causes a further buildup
B. Remove accumulated material
C. Accumulation of material
D. Helps to prevent blockages
E. None of the Above

65. There are three major _____: hydraulic, mechanical, and chemical.
A. Causes a further buildup
B. Remove accumulated material
C. Accumulation of material
D. Helps to prevent blockages
E. None of the Above

66. _____ (also referred to as flushing) refers to any application of water to clean the pipe.
A. Chemical cleaning
B. Hydraulic cleaning
C. Mechanical cleaning
D. Potential problem areas
E. None of the Above

67. _____uses physical devices to scrape, cut, or pull material from the sewer.
A. Chemical cleaning
B. Hydraulic cleaning
C. Mechanical cleaning
D. Potential problem areas
E. None of the Above

68. _____can facilitate the control of odors, grease buildup, root growth, corrosion, and insect and rodent infestation.
A. Chemical cleaning
B. Hydraulic cleaning
C. Mechanical cleaning
D. Potential problem areas
E. None of the Above

69. The owner or operator should be able to _____system areas, preferably on a map.
A. Chemical cleaning
B. Hydraulic cleaning
C. Mechanical cleaning
D. Identify problem collection
E. None of the Above

70. _____identified should include those due to grease or industrial discharges, hydraulic bottlenecks in the collection system, areas of poor design (e.g., insufficiently sloped sewers), areas prone to root intrusion, sags, and displacements.
A. Chemical cleaning
B. Hydraulic cleaning
C. Mechanical cleaning
D. Potential problem areas
E. None of the Above

71. The connection between _____in the collection system and the preventive maintenance cleaning schedule should be clear.
A. Owner or operator
B. Problem areas
C. Inventory
D. Reviewer
E. None of the Above

72. The _____should also be able to identify the number of stoppages experienced per mile of sewer pipe. If the system is experiencing a steady increase in stoppages, the reviewer should try to determine the cause (i.e., lack of preventive maintenance funding, deterioration of the sewers due to age, an increase in grease producing activities, etc).
A. Owner or operator
B. Problem areas
C. Inventory
D. Reviewer
E. None of the Above

73. An inventory of spare parts, equipment, and supplies should be maintained by the collection system _____.
A. Owner or operator
B. Problem areas
C. Inventory
D. Reviewer
E. None of the Above

74. The _____ should be based on the equipment manufacturer's recommendations, supplemented by historical experience with maintenance and equipment problems.
A. Owner or operator
B. Problem areas
C. Inventory
D. Reviewer
E. None of the Above

75. Without such an _____, the collection system may experience long down times or periods of inefficient operation in the event of a breakdown or malfunction.
A. Owner or operator
B. Problem areas
C. Inventory
D. Reviewer
E. None of the Above

76. Files should be maintained on all pieces of equipment and major tools. The owner or operator should have a system to assure that each _____has adequate and correct tools for the job.
A. Owner or operator
B. Problem areas
C. Inventory
D. Reviewer
E. None of the Above

77. The _____should maintain a yard where equipment, supplies, and spare parts are maintained and personnel are dispatched.
A. Owner or operator
B. Problem areas
C. Inventory
D. Reviewer
E. None of the Above

78. Very large systems may maintain more than one yard. In this case, the _____ should perform a visual survey at the main yard.
A. Owner or operator
B. Problem areas
C. Inventory
D. Reviewer
E. None of the Above

79. In small to medium size systems, _____ may share the yard with the department of public works, water department, or other municipal agencies.
A. Owner or operator
B. Collection system operations
C. Inventory
D. Reviewer
E. None of the Above

I&I (Infiltration and Inflow)

80. _____ occurs when groundwater enters the sewer system through cracks, holes, faulty connections, or other openings.
A. I/I
B. Inflow
C. Infiltration
D. Flow monitoring
E. None of the Above

81. _____ occurs when surface water such as storm water enters the sewer system through roof downspout connections, holes in manhole covers, illegal plumbing connections, or other defects.
A. I/I
B. Inflow
C. Infiltration
D. Flow monitoring
E. None of the Above

82. The sanitary sewer collection system and treatment plants have a maximum flow capacity of wastewater that can be handled. _____, which is essentially clean water, takes up this capacity and can result in sewer overflows into streets and waterways.
A. I/I
B. Inflow
C. Infiltration
D. Flow monitoring
E. None of the Above

83. _____ is water (typically groundwater) entering the sewer underground through cracks or openings in joints.
A. I/I
B. Inflow
C. Infiltration
D. Flow monitoring
E. None of the Above

84. _____ is water (typically stormwater or surface runoff) that enters the sewer from grates or unsealed manholes exposed to the surface.
A. I/I
B. Inflow
C. Infiltration
D. Flow monitoring
E. None of the Above

85. Flow monitoring and flow modeling provide measurements and data used to determine estimates of _____.
A. I/I
B. Inflow
C. Infiltration
D. Flow monitoring
E. None of the Above

86. Flow meters are placed at varying locations throughout the sewer collection system to take measurements and identify general _____source areas.
A. I/I
B. Inflow
C. Infiltration
D. Flow monitoring
E. None of the Above

87. Measurements taken before and after a precipitation event indicate the extent that _____is increasing total flow.
A. I/I
B. Inflow
C. Infiltration
D. Flow monitoring
E. None of the Above

88. Both _____increase with precipitation.
A. I/I
B. Inflow
C. Infiltration
D. Flow monitoring
E. None of the Above

89. _____ increases when groundwater rises from precipitation, and inflow is mainly stormwater and rainwater. Rainfall monitoring is also performed to correlate this data.
A. I/I
B. Inflow
C. Infiltration
D. Flow monitoring
E. None of the Above

90. A _____involves inspection of the sewer system using several methods to identify sources of I/I:
A. I/I
B. Inflow
C. Infiltration
D. Sewer System Evaluation Survey
E. None of the Above

91. _____Accessible pipes, gutter and plumbing connections, and manholes are visually inspected for faults.
A. Smoke testing
B. Visual inspection
C. Dye testing
D. Repair techniques
E. None of the Above

92. _____Smoke is pumped into sewer pipes. Its reappearance aboveground indicates points of I/I. These points can be on public property such as along street cracks or around manholes, or on private property such as along house foundations or in yards where sewer pipes lay underground.
A. Smoke testing
B. Visual inspection
C. Dye testing
D. Repair techniques
E. None of the Above

93. _____Camera equipment is used to do internal pipe inspections. The City will usually have one 2-3 person crew that can perform TV inspection on over 20 miles of sewer pipe per year.
A. Smoke testing
B. Visual inspection
C. Dye testing
D. TV inspection
E. None of the Above

94. _____Dye is used at suspected I/I sources. The source is confirmed if the dye appears in the sewer system.
A. Smoke testing
B. Visual inspection
C. Dye testing
D. Repair techniques
E. None of the Above

95. Sources of I/I are also sometimes identified when sewer backups or overflows bring attention to that part of the system.
A. Flow monitoring plan
B. Characterize peaking factors
C. Sources of I/I
D. Identify areas
E. None of the Above

96. The purpose of the _____ is to reduce these incidences by finding sources before they cause a problem.
A. I/I
B. Inflow
C. Infiltration
D. Sewer System Evaluation Survey
E. None of the Above

97. _____ Include manhole wall spraying, Insituform pipe relining, manhole frame and lid replacement, and disconnecting illegal plumbing, drains, and roof downspouts.
A. Smoke testing
B. Visual inspection
C. Dye testing
D. Repair techniques
E. None of the Above

98. The owner or operator should have in place a program for the efficient identification of excessive _____.
A. Flow monitoring plan
B. Characterize peaking factors
C. I/I
D. Identify areas
E. None of the Above

99. The program should look at the wastewater treatment plant, pump stations, permanent meter flows, and rainfall data to _____for the whole system and major drainage basins.
A. Flow monitoring plan
B. Characterize peaking factors
C. Sources of I/I
D. Identify areas
E. None of the Above

100. The reviewer should evaluate the program including procedures and records associated with the _____.
A. Flow monitoring plan
B. Characterize peaking factors
C. Sources of I/I
D. Identify areas
E. None of the Above

101. Temporary meters should be used on a “roving” basis to _____with high wet weather flows.
A. Flow monitoring plan
B. Characterize peaking factors
C. Sources of I/I
D. Identify areas
E. None of the Above

102. Areas with high wet weather flows should then be _____ and rehabilitation activities.
A. Flow monitoring plan
B. Characterize peaking factors
C. Sources of I/I
D. Identify areas
E. None of the Above

Sewer System Testing

103. Sewer system testing techniques are often used to identify leaks which allow unwanted infiltration into the sewer system and determine the location of _____and other sources of stormwater inflow.

A. Tests
B. Detecting
C. Illicit connections
D. Smoke testing
E. None of the Above

104. Two commonly implemented techniques include _____and dyed water testing.

A. Tests
B. Detecting
C. Illicit connections
D. Smoke testing
E. None of the Above

105. Regardless of the program(s) implemented by the owner or operator, the reviewer should evaluate any _____that have been established for these programs.

A. Tests
B. Detecting
C. Illicit connections
D. Smoke testing
E. None of the Above

106. The reviewer should also evaluate any_____ and assess how the owner or operator communicates with the public during these tests (i.e., when there is a possibility of smoke entering a home or building).

A. Tests
B. Detecting
C. Public relations program
D. Smoke testing
E. None of the Above

107. _____is a relatively inexpensive and quick method of detecting sources of inflow in sewer systems, such as down spouts, or driveway and yard drains and works best suited for detecting cross connections and point source inflow leaks.

A. Tests
B. Detecting
C. Illicit connections
D. Smoke testing
E. None of the Above

108. _____is not typically used on a routine basis, but rather when evidence of excessive I/I already exists. With each end of the sewer of interest plugged, smoke is introduced into the test section.

A. Tests
B. Detecting
C. Illicit connections
D. Smoke testing
E. None of the Above

109. Sources of inflow can then be identified when smoke _____ through them.
A. Tests
B. Detecting
C. Illicit connections
D. Smoke tests
E. None of the Above

110. The results of positive _____should be documented with carefully labeled photographs.
A. Tests
B. Detecting
C. Illicit connections
D. Smoke tests
E. None of the Above

111. _____are sometimes conducted as part of a smoke testing program and, in some cases, may be the only way to find illegal connections.
A. Tests
B. Detecting
C. Building inspections
D. Smoke testing
E. None of the Above

112. If properly connected to the sanitary sewer system, smoke should exit the vent stacks of the surrounding properties. If traces of the smoke or its odor enter the building, it is an_____ from the sewer system may also be entering.
A. Tests
B. Indication that gases
C. Illicit connections
D. Smoke testing
E. None of the Above

113. _____ can be labor intensive and require advanced preparation and communication with the public.
A. Tests
B. Detecting
C. Building inspections
D. Smoke testing
E. None of the Above

114. _____ may be used to establish the connection of a fixture or appurtenance to the sewer. It is often used to confirm smoke testing or to test fixtures that did not smoke.
A. Observing
B. Dyed water testing
C. Smoke testing
D. Visual inspection
E. None of the Above

115. As is the case with _____, it is not used on a routine basis but rather in areas that have displayed high wet weather flows.
A. Observing
B. Dyed water testing
C. Smoke testing
D. Visual inspection
E. None of the Above

116. _____ can be used to identify structurally damaged manholes that might create potential I/I problems.
A. Observing
B. Dyed water testing
C. Smoke testing
D. Visual inspection
E. None of the Above

117. This is accomplished by _____ the area close to the suspected manholes with dyed water and checking for entry of dyed water at the frame-chimney area, cone/corbel, and walls of the manhole.
A. Observing
B. Dyed water testing
C. Smoke testing
D. Visual inspection
E. None of the Above

118. _____ of manholes and pipelines are the first line of defense in the identification of existing or potential problem areas.
A. Observing
B. Dyed water testing
C. Smoke testing
D. Visual inspection
E. None of the Above

119. _____ should take place on both a scheduled basis and as part of any preventive or corrective maintenance activity.
A. Observing
B. Dyed water testing
C. Smoke testing
D. Visual inspection
E. None of the Above

120. _____ provide additional information concerning the accuracy of system mapping, the presence and degree of I/I problems, and the physical state-of-repair of the system.
A. Observing
B. Dyed water testing
C. Smoke testing
D. Visual inspection
E. None of the Above

121. By _____ the manhole directly and the incoming and outgoing lines with a mirror, it is possible to determine structural condition, the presence of roots, condition of joints, depth of debris in the line, and depth of flow.
A. Observing
B. Dyed water testing
C. Smoke testing
D. Visual inspection
E. None of the Above

122. Manholes should undergo _____ typically every one to five years.
A. Sewer system cleaning
B. Lamping
C. Sewer inspection
D. Routine inspection
E. None of the Above

123. There should be a _____ for manhole inspections (e.g., once every two years) with problematic manholes being inspected more frequently.
A. Sewer system cleaning
B. Lamping
C. Sewer inspection
D. Routine inspection
E. None of the Above

124. There are various pipeline inspection techniques, the most common include: _____, camera inspection, sonar, and CCTV.
A. Sewer system cleaning
B. Lamping
C. Sewer inspection
D. Routine inspection
E. None of the Above

125. _____ is an important component of any maintenance program. There are a number of inspection techniques that may be employed to inspect a sewer system.
A. Sewer system cleaning
B. Lamping
C. Sewer inspection
D. Routine inspection
E. None of the Above

126. The reviewer should determine if an inspection program includes frequency and schedule of _____ and procedures to record the results.
A. Sewer system cleaning
B. Lamping
C. Sewer inspection
D. Inspections
E. None of the Above

127. _____ should always be considered before inspection is performed in order to provide adequate clearance and inspection results.
A. Sewer system cleaning
B. Lamping
C. Sewer inspection
D. Routine inspection
E. None of the Above

128. _____is more comprehensive than lamping in that more of the sewer can be viewed.
A. Sonar technique
B. Still camera
C. Sewer scanner
D. Camera inspection
E. None of the Above

129. A _____is mounted on a floatable raft and released into a pipe. The camera takes photographs with a strobe-like flash as it floats through the sewer pipe.
A. Sonar technique
B. Still camera
C. Sewer scanner
D. Camera inspection
E. None of the Above

130. This technique is often employed in _____where access points are far apart.
A. Sonar technique
B. Still camera
C. Sewer scanner
D. Camera inspection
E. None of the Above

131. Similar to _____, portions of the pipe may still be missed using this technique. This technique also does not fully capture the invert of the pipe and its condition.
A. Sonar technique
B. Still camera
C. Sewer scanner
D. Camera inspection
E. None of the Above

132. _____ is a newer technology deployed similarly to CCTV cameras.
A. Sonar
B. Still camera
C. Sewer scanner
D. Camera inspection
E. None of the Above

133. The _____ emits a pulse which bounces off the walls of the sewer. The time it takes for this pulse to bounce back provides data and an image of the interior of the pipe, including its structural condition.
A. Sonar
B. Still camera
C. Sewer scanner
D. Camera inspection
E. None of the Above

134. A benefit of _____is that it can be used in flooded or inaccessible sections of the sewer. The drawback is that the technique requires heavy and expensive equipment.
A. Sonar technique
B. Still camera
C. Sewer scanner
D. Camera inspection
E. None of the Above

135. _____and evaluation is an experimental technology where a 360 degree scanner produces a full digital photograph of the interior of the pipe.
A. Sonar technique
B. Still camera
C. Sewer scanner
D. Camera inspection
E. None of the Above

136. This _____technique is similar to sonar in that a more complete image of a pipe can be made than with CCTV, but not all types of sewer defects may be identified as readily (i.e., infiltration, corrosion).
A. Sonar technique
B. Still camera
C. Sewer scanner
D. Camera inspection
E. None of the Above

137. _____inspections are a helpful tool for early detection of potential problems.
A. Rehabilitation program
B. Structural repairs
C. CCTV inspections
D. Confined space entry
E. None of the Above

138. This technique involves a _____with a light which is self-propelled or pulled down the pipe. As it moves it records the interior of the pipe.
A. Rehabilitation program
B. Structural repairs
C. CCTV
D. Confined space entry
E. None of the Above

139. CCTV inspections may be done on a routine basis as part of the _____ program as well as part of an investigation into the cause of I/I.
A. Rehabilitation program
B. Structural repairs
C. CCTV inspections
D. Confined space entry
E. None of the Above

140. _____, however, eliminates the hazards associated with confined space entry. The output is displayed on a monitor and videotaped.
A. Rehabilitation program
B. Structural repairs
C. CCTV
D. Confined space entry
E. None of the Above

141. A benefit of _____is that a permanent visual record is captured for subsequent reviews.
A. Rehabilitation program
B. Structural repairs
C. CCTV inspections
D. Confined space entry
E. None of the Above

142. The collection system owner or operator should have a sewer _____.
A. Rehabilitation program
B. Structural repairs
C. CCTV inspections
D. Confined space entry
E. None of the Above

143. The objective of _____is to maintain the overall viability of a collection system.
A. Rehabilitation program
B. Structural repairs
C. CCTV inspections
D. Confined space entry
E. None of the Above

144. The _____should build on information obtained as a result of all forms of maintenance and observations made as part of the capacity evaluation and asset inventory to assure the continued ability of the system to provide sales and service at the least cost.
A. Rehabilitation program
B. Structural repairs
C. CCTV inspections
D. Confined space entry
E. None of the Above

145. There are many_____ the choice of methods depends on pipe size, type, location, dimensional changes, sewer flow, material deposition, surface conditions, severity of I/I, and other physical factors.
A. Rehabilitation methods
B. Structural repairs
C. CCTV inspections
D. Confined space entry
E. None of the Above

146. Non-_____typically involve the sealing of leaking joints in otherwise sound pipe.
A. Rehabilitation program
B. Structural repairs
C. CCTV inspections
D. Confined space entry
E. None of the Above

147. _____involve either the replacement of all or a portion of a sewer line, or the lining of the sewer.
A. Rehabilitation program
B. Structural repairs
C. CCTV inspections
D. Confined space entry
E. None of the Above

148. These repairs can be carried out by excavating usually for repairs limited to one or two pipe segments (these are known as point repairs) or by _____ (in which repair is carried out via existing manholes or a limited number of access excavations).
A. Rehabilitation program
B. Structural repairs
C. CCTV inspections
D. Confined space entry
E. None of the Above

149. The rehabilitation program should identify the methods that have been used in the past, their success rating and methods to be used in the future.
A. Rehabilitation program
B. Structural repairs
C. CCTV inspections
D. Confined space entry
E. None of the Above

150. A reviewer who wants further guidance on methods of _____may consult the owner's or operator's policies regarding service lateral rehabilitation since service laterals can constitute a serious source of I/I.
A. Rehabilitation
B. Structural repairs
C. CCTV inspections
D. None of the Above

151. Manholes should not be neglected in the _____.
A. Rehabilitation program
B. Structural repairs
C. CCTV inspections
D. Confined space entry
E. None of the Above

152. Manhole covers can allow significant inflow to enter the system because they are often _____ in the path of surface runoff.
A. Capacity
B. Location
C. Located
D. Conditions
E. None of the Above

153. Manholes themselves can also be a significant source of infiltration from cracks in the barrel of the manhole. The owner or operator should be able to produce documentation on the _____ and methods used for sewer rehabilitation.
A. Capacity
B. Location
C. Located
D. Conditions
E. None of the Above

154. The reviewer should compare the rehabilitation accomplished with that recommended by the _____ evaluation program.
A. Capacity
B. Location
C. Located
D. Conditions
E. None of the Above

Tree Roots vs. Sanitary Sewer Lines
155. Roots require oxygen to grow, they do not grow in pipes that are full of water or where high ground water _____ prevail.
A. Capacity
B. Location
C. Located
D. Conditions
E. None of the Above

156. Roots _____ in the warm, moist nutrient rich atmosphere above the water surface inside sanitary sewers.
A. Penetrate
B. Thrive
C. Attracted
D. Grow
E. None of the Above

157. The flow of warm water inside the sanitary sewer service pipe _____to escape to the cold soil surrounding the pipe.
A. Penetrate
B. Thrive
C. Attracted
D. Grow
E. None of the Above

158. Tree roots are _____to the water vapor leaving the pipe and they follow the vapor trail to the source of the moisture, which are usually cracks or loose joints in the sewer pipe.
A. Penetrate
B. Thrive
C. Attracted
D. Grow
E. None of the Above

159. Upon reaching the crack or pipe joint, tree roots will _____ the opening to reach the nutrients and moisture inside the pipe. This phenomenon continues in winter even though trees appear to be dormant.
A. Penetrate
B. Thrive
C. Attracted
D. Grow
E. None of the Above

160. Once inside the pipe, roots will continue to _____ and if not disturbed, they will completely fill the pipe with multiple hair-like root masses at each point of entry.
A. Penetrate
B. Thrive
C. Attracted
D. Grow
E. None of the Above

161. The root mass inside the pipe _____with grease, tissue paper, and other debris discharged from the residence or business.
A. Exert considerable pressure
B. Becomes matted
C. Observing wet areas
D. Break the pipe
E. None of the Above

162. Homeowners will notice the first signs of a slow flowing drainage system by hearing _____from toilet bowls and observing wet areas around floor drains after completing the laundry.
A. Exert considerable pressure
B. Becomes matted
C. Observing wet areas
D. Break the pipe
E. None of the Above

163. A complete blockage _____if no remedial action is taken to remove the roots/blockage.
A. Exert considerable pressure
B. Becomes matted
C. Observing wet areas
D. Break the pipe
E. None of the Above

164. As roots continue to grow, they expand and _____at the crack or joint where they entered the pipe.
A. Exert considerable pressure
B. Becomes matted
C. Observing wet areas
D. Break the pipe
E. None of the Above

165. The force exerted by the root growth will _____and may result in total collapse of the pipe.
A. Exert considerable pressure
B. Becomes matted
C. Observing wet areas
D. Break the pipe
E. None of the Above

166. Severe root intrusion and pipes that are structurally damaged will _____.
A. Exert considerable pressure
B. Becomes matted
C. Observing wet areas
D. Break the pipe
E. None of the Above

167. Tree roots _____sewer pipes are generally the most expensive sewer maintenance item experienced by City residents.
A. Exert considerable pressure
B. Becomes matted
C. Observing wet areas
D. Break the pipe
E. None of the Above

168. Roots from trees growing on private property and on parkways throughout the City are responsible for many of the _____ and damaged sewer pipes.
A. Exert considerable pressure
B. Sanitary sewer service backups
C. Observing wet areas
D. Break the pipe
E. None of the Above

169. Homeowners should be aware of the location of their sewer service and refrain from _____and hedges near the sewer lines.
A. Exert considerable pressure
B. Becomes matted
C. Observing wet areas
D. Break the pipe
E. None of the Above

170. The _____ of a sanitary sewer service line as a result of damage from tree roots may be very expensive.
A. Exert considerable pressure
B. Replacement cost
C. Observing wet areas
D. Break the pipe
E. None of the Above

171. When designing a wastewater system, the design engineer begins by first determining the_____ of sewage to be handled. This is accomplished through a careful study of the area to be served.
A. Begins by first determining
B. Types and quantities
C. Select the types, sizes, slopes, and distances
D. Acceptance of the preliminary designs
E. None of the Above

172. Use is greater in the summer than in the winter and greater during the morning and evening than it is in the middle of the day or at night. Therefore, the average daily flow (based on the average utilization) is multiplied by a peak flow factor _____.
A. Begins by first determining
B. To obtain the design flow
C. Select the types, sizes, slopes, and distances
D. Acceptance of the preliminary designs
E. None of the Above

173. Typical peak flow factors range from 4 to 6 for small areas down to 1.5 to 2.5 for larger areas. An allowance for unavoidable infiltration of surface and subsurface water into the lines is sometimes added to the peak flow _____.
A. Begins by first determining
B. To obtain the design flow
C. Select the types, sizes, slopes, and distances
D. Acceptance of the preliminary designs
E. None of the Above

174. A typical infiltration allowance is 500 gallons per inch of pipe diameter per mile of sewer per day. From the types of sewage and the estimated design flow, the engineer can then tentatively _____below grade of the piping to be used for the system.
A. Begins by first determining
B. To obtain the design flow
C. Select the types, sizes, slopes, and distances
D. Acceptance of the preliminary designs
E. None of the Above

175. Upon acceptance of the preliminary designs, final design may begin. During this phase, adjustments to the preliminary design _____, based upon additional surveys, soil analysis, or other design factors. The final designs should include a general map of the area that shows the locations of all sewer lines and structures.
A. Begins by first determining
B. Should be made as necessary
C. Select the types, sizes, slopes, and distances
D. Acceptance of the preliminary designs
E. None of the Above

176. They also _____plans and profiles of the sewers showing ground elevations, pipe sizes and slopes, and the locations of any appurtenances and structures, such as should be made as necessary.
A. Begins by first determining
B. To obtain the design flow
C. Select the types, sizes, slopes, and distances
D. Acceptance of the preliminary designs
E. None of the Above

177. Construction plans and details are _____for those appurtenances and structures.
A. Begins by first determining
B. To obtain the design flow
C. Select the types, sizes, slopes, and distances
D. Acceptance of the preliminary designs
E. None of the Above

178. _____ These types of joints are used to connect cast-iron soil pipes (**CISP**) and fittings.
A. Speed Seal Joints
B. Mortar or Bituminous Joints
C. Compression joints
D. Lead and Oakum Joint, Compression Joint and No-Hub Joints
E. None of the Above

179. In lead and oakum joints, oakum (made of hemp impregnated with bituminous compound and loosely twisted or spun into a rope or yarn) is packed into the hub completely around the joint, and _____ is poured over it.
A. Speed Seal Joints
B. Mortar or Bituminous Joints
C. Compression joints
D. Lead and Oakum Joint, OR Compression Joint OR No-Hub Joints
E. None of the Above

180. In _____ , an assembly tool is used to force the spigot end of the pipe or fitting into the lubricated gasket inside the hub.
A. Speed Seal Joints
B. Mortar or Bituminous Joints
C. Compression joints
D. Compression Joint
E. None of the Above

181. A _____ uses a gasket on the end of one pipe and a stainless steel shield and clamp assembly on the end of the other pipe.
A. Speed Seal Joints
B. Mortar or Bituminous Joints
C. Compression joints
D. No-Hub Joints
E. None of the Above

182. _____ This type of joint is common to vitrified clay and concrete pipes and fittings. Mortar joints may be made of grout (a mixture of cement, sand, and water).
A. Speed Seal Joints
B. Mortar or Bituminous Joints
C. Compression joints
D. Lead and Oakum Joint, OR Compression Joint OR No-Hub Joints
E. None of the Above

183. The use of _____ in joining vitrified clay pipe has become widespread.
A. Speed Seal Joints
B. Mortar or Bituminous Joints
C. Compression joints
D. Lead and Oakum Joint, Compression Joint and No-Hub Joints
E. None of the Above

184. _____ eliminate the use of oakum and mortar joints for sewer mains. This type of seal is made a part of the vitrified pipe joint when manufactured. It is made of polyvinyl chloride and is called a plastisol joint connection
A. Speed Seal Joints
B. Mortar or Bituminous Joints
C. Compression joints
D. Lead and Oakum Joint, Compression Joint and No-Hub Joints
E. None of the Above

185. The _____utilizes both a high pressure stream of water and a vacuum system to clean and remove built up debris from sewer lines.
A. Televising Van
B. Sewer vacuum truck
C. Versatile vehicles
D. None of the Above

186. These _____are also used to clean lift station wet wells, stormwater catch basins and to perform excavations to locate broken water or sewer lines. It reduces repair times and costs by over 50%.
A. Televising Van
B. Sewer vacuum truck
C. Versatile vehicles
D. None of the Above

187. The _____should be equipped with two cameras, one color camera for televising main sanitary lines and one black & white camera for televising house services (connection from the main sanitary line to a house).
A. Televising Van
B. Sewer vacuum truck
C. Versatile vehicles
D. None of the Above

188. The importance of maintaining accurate, current maps of the _____cannot be overstated.
A. Mapping
B. Updating maps
C. Collection system
D. Sewer line maps
E. None of the Above

189. Efficient collection system maintenance and repairs are unlikely if _____ is not adequate.
A. Mapping
B. Updating maps
C. Collection system maps
D. Sewer line maps
E. None of the Above

190. _____should clearly indicate the information that personnel need to carry out their assignments.
A. Mapping
B. Updating maps
C. Collection system maps
D. Sewer line maps
E. None of the Above

191. _____should have a numbering system which uniquely identifies all manholes and sewer cleanouts.
A. Mapping
B. Updating maps
C. Collection system maps
D. Sewer line maps
E. None of the Above

192. The _____ should be simple and easy to understand. Manholes and sewer cleanouts should have permanently assigned numbers and never be renumbered.
A. Mapping
B. Updating maps
C. System
D. Sewer line maps
E. None of the Above

193. _____ should also indicate the property served and reference its cleanout.
A. Mapping
B. Updating maps
C. Collection system maps
D. Maps
E. None of the Above

194. _____should indicate the diameter, the length between the centers of manholes, and the slope or direction of flow.
A. Mapping
B. Updating maps
C. Collection system maps
D. Sewer line maps
E. None of the Above

195. The dimensions of _____ should be included on the maps. Other information that should be included on maps are access and overflow points, a scale, and a north arrow.
A. Mapping
B. Updating maps
C. Collection system maps
D. Easements and property lines
E. None of the Above

196. All maps should have the _____was drafted and the date of the last revision. Although optional, maps often include materials of pipe construction.
A. Mapping
B. Updating maps
C. Collection system maps
D. Sewer line maps
E. None of the Above

197. Maps may come in different sizes and scales to be used for different purposes. Detailed local maps may be used by maintenance or repair crews to perform the duties. However, these detailed _____should be keyed to one overall map that shows the entire system.
A. Mapping
B. Updating maps
C. Collection system maps
D. Local maps
E. None of the Above

198. _____has made the mapping and map updating process considerably more efficient.
A. Mapping
B. Updating maps
C. Collection system maps
D. Sewer line maps
E. None of the Above

199. GIS is a _____ capable of combining mapping with detailed information about the physical structures within the collection system.
A. Mapping
B. Updating maps
C. Collection system maps
D. Computerized mapping program
E. None of the Above

200. If a GIS program is being used by the owner or operator, the reviewer should ask if the program is _____ from the owner or operator's management program.
A. Mapping
B. Updating maps
C. Capable of accepting information
D. Sewer line maps
E. None of the Above