Registration Form

Collection System Operator CEU Training Course

48 HOUR RUSH ORDER PROCESSING FEE ADDITIONAL $50.00

Start and Finish Dates:_____

You will have 90 days from this date in order to complete this course

List number of hours worked on assignment must match State Requirement. _____

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 (____)** _____

License or Operator ID #_____

Class/Grade_____

Please circle/check which certification you are applying the course CEU's.
Pretreatment ___ Collection___ Wastewater Treatment ___

Other _____

Technical Learning College TLC PO Box 3060, Chino Valley, AZ 86323
Toll Free (866) 557-1746 Fax (928) 272-0747 info@tlch2o.com

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DISCLAIMER NOTICE

I understand that it is my responsibility to ensure that this CEU course is either approved or accepted in my State for CEU credit. I understand State laws and rules change on a frequent basis and I believe this course is currently accepted in my State for CEU or contact hour credit, if it is not, I will not hold Technical Learning College responsible. I fully understand that this type of study program deals with dangerous, changing conditions and various laws and that I will not hold Technical Learning College, Technical Learning Consultants, Inc. (TLC) liable in any fashion for any errors, omissions, advice, suggestions or neglect contained in this CEU education training course or for any violation or injury, death, neglect, damage or loss of your license or certification caused in any fashion by this CEU education training or course material suggestion or error or my lack of submitting paperwork. It is my responsibility to call or contact TLC if I need help or assistance and double-check to ensure my registration page and assignment has been received and graded. It is my responsibility to ensure all information is correct and to abide with all rules and regulations.

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

State Approval Listing URL…

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

You can obtain a printed version of the course manual from TLC for an additional $169.95 plus shipping charges.

AFFIDAVIT OF EXAM COMPLETION

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

Grading Information

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

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.

Do not solely depend on TLC's Approval list for it may be outdated.

Some States and many employers require the final exam to be proctored.
http://www.abctlc.com/downloads/PDF/PROCTORFORM.pdf

All downloads are electronically tracked and monitored for security purposes.

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

Collection System Operator Answer Key

Name _____ Phone_____

Did you check with your State agency to ensure this course is accepted for credit?
No refunds
Method of Course acceptance confirmation. Please fill this section

Website __ Telephone Call___ Email____ Spoke to_____

Did you receive the approval number, if applicable? _____

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 circle, underline, bold or X only one correct answer

Please Circle, Bold, Underline or X, one answer per question. A **felt tipped pen** works best.

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334. A B C D	351. A B C D	368. A B C D	385. A B C D
335. A B C D	352. A B C D	369. A B C D	386. A B C D
336. A B C D	353. A B C D	370. A B C D	387. A B C D
337. A B C D	354. A B C D	371. A B C D	388. A B C D
338. A B C D	355. A B C D	372. A B C D	389. A B C D
339. A B C D	356. A B C D	373. A B C D	390. A B C D
340. A B C D	357. A B C D	374. A B C D	391. A B C D
341. A B C D	358. A B C D	375. A B C D	392. A B C D
342. A B C D	359. A B C D	376. A B C D	393. A B C D
343. A B C D	360. A B C D	377. A B C D	394. A B C D
344. A B C D	361. A B C D	378. A B C D	395. A B C D
345. A B C D	362. A B C D	379. A B C D	396. A B C D
346. A B C D	363. A B C D	380. A B C D	397. A B C D
347. A B C D	364. A B C D	381. A B C D	398. A B C D
348. A B C D	365. A B C D	382. A B C D	399. A B C D
349. A B C D	366. A B C D	383. A B C D	400. A B C D

I understand that I am 100 percent responsible to ensure that TLC receives the Assignment and Registration Key. 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.

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

COLLECTION SYSTEM OPERATOR CEU TRAINING COURSE

CUSTOMER SERVICE RESPONSE CARD

NAME: _____

E-MAIL_____PHONE_____

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

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

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

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

How did you hear about this Course? _____

What would you do to improve the Course? _____

_____

_____

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.

_____

_____

This course contains general EPA's CWA federal rule requirements. Please be aware that each state implements wastewater/safety/environmental /building regulations that may be more stringent than EPA's regulations. Check with your state environmental/health agency for more information. These rules change frequently and are often difficult to interpret and follow. Be careful to not be in non-compliance and do not follow this course for proper compliance.

When Finished with Your Assignment...

REQUIRED DOCUMENTS
Please scan the **Registration Page, Answer Key, Survey and Driver's License** and email these documents to info@TLCH2O.com.

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

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

Rush Grading Service
If you need this assignment graded and the results mailed to you within a 48-hour period, prepare to pay an additional rush service handling fee of $50.00. This fee may not cover postage costs. If you need this service, simply write RUSH on the top of your Registration Form. We will place you in the front of the grading and processing line. *Thank you…*

Collection System Operator CEU Training Assignment

You will have 90 days from the start of this assignment to finish it. Only one answer per question. Please utilize the Answer Key. Please e-mail your completed answer key and registration form to TLC.

You are expected to circle or mark the correct answer on the enclosed answer key. Please include your name and address on your exam. The answer key is in the front. There are no intentional trick questions. (s) means the answer may be plural or singular in nature.

You can e-mail or fax your Answer Key along with the Registration Form to TLC.

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

Collection Rules and Regulation Section

Clean Water Act (Rule) Summary
33 U.S.C. s/s 1251 et seq. (1977)

1. Which of the following has clarified and expanded permit requirements under the Clean Water Act for 19,000 municipal sanitary sewer collection systems in order to reduce sanitary sewer overflows?
A. OSHA C. Environmental Protection Agency (EPA)
B. Clean water legislation D. None of the above

2. The requirements will help communities improve some of water quality standards–by requiring facilities to develop and implement new capacity, management, operation, and maintenance programs and public notification programs.
A. True B. False

3. The Clean Water Act is a _____ amendment to the Federal Water Pollution Control Act of 1972, which set the basic structure for regulating discharges of pollutants to waters of the United States.
A. 1977 C. 2009
B. 1999 D. None of the above

4. Which of the following gave the authority to set effluent standards on an industry basis and continued the requirements to set water quality standards for all contaminants in surface waters?
A. EPA C. Public notification program(s)
B. Congress D. None of the above

5. The _____makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit (NPDES) is obtained under the Act?
A. CWA C. OSHA
B. EPA D. None of the above

6. The CWA provisions for the delegation by EPA of many permitting, administrative, and enforcement aspects of the law to state governments. In _____with the authority to implement CWA programs, the EPA still retains oversight responsibilities.
A. POTW's areas C. States
B. Some counties D. None of the above

7. Which of the following's primary objective is to restore and maintain the integrity of the nation's waters?

A. Clean Water Act
B. Clean water legislation
C. EPA oversight responsibilities
D. None of the above

The Future

8. All Americans will enjoy clean water that is safe for fishing and swimming. We will achieve a net gain of wetlands by preventing additional losses and restoring hundreds of thousands of acres of wetlands.

A. True B. False

Prohibited Discharge Standards

9. Which of the following of any pollutants released at a flow rate and/or concentration which will cause interference with the POTW?

A. Pass through
B. Discharge(s)
C. Flow rate and/or concentration
D. None of the above

10. Discharges of petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause?

A. Interference or pass through
B. Discharge or discharges
C. Eight categories of pollutant discharges
D. None of the above

11. Which of the following which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems?

A. Categorical pretreatment standards
B. Pass through
C. Discharge(s) of pollutants
D. None of the above

12. Which of the following, except at discharge points designated by the POTW?

A. Interference or pass through
B. Discharge or discharges
C. Discharges of trucked or hauled pollutants
D. None of the above

What are Sanitary Sewer Overflows?

13. Sanitary Sewer Overflows (SSOs) are discharges of raw sewage from?

A. Deteriorating Sewer Systems
B. Pipe Failure(s)
C. Municipal sanitary sewer systems
D. None of the above

14. Which of the following 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. Pipe Failure(s)
B. Destructive compounds
C. SSOs
D. None of the above

Why do Sewers Overflow?

15. Which of the following occasionally occur in almost every sewer system, even though systems are intended to collect and contain all the sewage?

A. SSOs
B. Undersized Systems
C. Poor sewer collection system management
D. None of the above

Problems that Can Cause Chronic SSOs Include:

16. Which of the following is too much rainfall or snowmelt infiltrating through the ground into leaky sanitary sewers?

A. Infiltration and Inflow (I&I)
B. Destructive compounds
C. Sanitary Sewer Overflows or (SSOs)
D. None of the above

17. Which of the following represents sewers and pumps are too small to carry sewage from newly-developed subdivisions or commercial areas?
A. Undersized Systems C. Oversized Systems
B. Sewer Service Connections D. None of the above

18. Which of the following: blocked, broken or cracked pipes, tree roots grow into the sewer, sections of pipe settle or shift?
A. Deteriorating Sewer System C. Badly connected sewer service lines
B. Pipe Failure(s) D. None of the above

19. Which of the following 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. Undersized Systems C. Back-ups and sewer overflows
B. Sewer Service Connections D. None of the above

20. Which of the following is improper installation, improper maintenance; widespread problems that can be expensive to fix develop over time?
A. Deteriorating Sewer System C. Badly connected sewer service lines
B. Sanitary Sewer Overflows or (SSOs) D. None of the above

Why are SSOs a Problem?
21. Many municipalities have asked for national consistency in the way permits are considered for wastewater discharges, including _____, and in enforcement of the law prohibiting unpermitted discharges.
A. Deteriorating Sewer System C. Badly connected sewer service lines
B. SSOs D. None of the above

Combined Sewer Overflows
22. Which of the following are sewers that are designed to collect rainwater runoff, domestic sewage, and industrial wastewater in the same pipe?
A. Combined sewer systems C. Centralized sewer systems
B. Decentralized sewer systems D. None of the above

23. Which of the following transport all of their wastewater to a sewage treatment plant, where it is treated and then discharged to a water body?
A. Combined sewer systems C. Centralized sewer systems
B. Decentralized sewer systems D. None of the above

24. Which of the following are designed to overflow occasionally and discharge excess wastewater directly to nearby streams, rivers, or other water bodies?
A. Combined sewer systems C. Centralized sewer systems
B. Decentralized sewer systems D. None of the above

25. Which of the following release raw sewage from the collection system before it can reach a treatment facility?
A. Sanitary sewage overflows (SSOs) C. Centralized sewer systems
B. Decentralized sewer systems D. None of the above

(s) means the answer may be plural or singular in nature.

26. A SSO is a release of untreated wastewater before the flow reaches a treatment plant. SSOs pose a significant threat to public health and?
A. Dissolved organics C. Certain compounds and undesirable solids
B. Water quality D. None of the above

27. High levels of inflow and infiltration (I/I) during wet weather can cause_____.
A. Dissolved organics C. Certain compounds and undesirable solids
B. SSOs D. None of the above

28. Many collection SSOs include untreated discharges from _____that reach waters of the United States systems that were designed according to industry standards experience wet weather SSOs because levels of I/I may exceed levels originally expected.
A. Sanitary sewer systems C. Centralized sewer systems
B. Decentralized sewer systems D. None of the above

Purpose of CMOM Programs
29. Once the GIS is complete, a new goal might be to use the GIS to track emergency calls and use the information to improve _____.
A. Maintenance planning C. A matter of policy
B. Performance goals D. None of the above

30. CMOM can help utilities optimize use of human and material resources by shifting maintenance activities from “reactive” to “proactive”–often leading to savings through avoided costs due to overtime, reduced emergency construction costs, lower insurance premiums, changes in financial performance goals, and_____.
A. Fewer lawsuits C. Regulatory noncompliance
B. Overflows and backups D. None of the above

31. In CMOM planning, the owner or operator selects _____ targets, and designs CMOM activities to meet the goals.
A. Maintenance planning C. A matter of policy
B. Performance goal D. None of the above

32. Information collection and management practices are used to track how the elements of the CMOM program are meeting _____, and whether overall system efficiency is improving.
A. Maintenance planning C. A matter of policy
B. Performance goals D. None of the above

33. An important component of a _____is periodically collecting information on current systems and activities to develop a “snapshot-in-time” analysis. From this analysis, the owner or operator evaluates its performance and plans its CMOM program activities.
A. Catastrophic system failure C. Successful CMOM program
B. CMOM program activity D. None of the above

34. Equipment and facilities will deteriorate through_____. Maintaining value of the capital asset is a major goal of the CMOM program.
A. Normal use and age C. Compliance with environmental requirements
B. CMOM program activities D. None of the above

35. Proper reinvestment in capital facilities maintains the ability to provide service and generate sales at the least cost possible and helps ensure compliance with _____.
A. Catastrophic system failures C. Environmental requirements
B. CMOM program activities D. None of the above

36. Performance characteristics of a system with an inadequate CMOM program include frequent blockages resulting in _____.
A. Performance goals C. Regulatory noncompliance
B. Overflows and backups D. None of the above

37. Other major performance indicators include pump station reliability, equipment availability, and avoidance of _____ such as a collapsed pipe.
A. Catastrophic system failures C. Compliance with environmental requirements
B. CMOM program activities D. None of the above

The Elements of a Proper CMOM Program
Purposeful
38. Which of the following when present and properly maintained, they support customer service and protect system assets, public health, and water quality?
A. MOM programs C. Publicly Owned Treatment Works (POTW)
B. Combined sewer systems D. None of the above

Goal-Oriented
39. Which of the following have goals directed toward their individual purposes. Progress toward these goals is measurable, and the goals are attainable?
A. MOM program(s) C. Proper MOM programs
B. Combined sewer system(s) D. None of the above

Uses Performance Measures
40. Performance measures should be established for each of this _____ in conjunction with the program goal.
A. MOM program C. Publicly Owned Treatment Works (POTW)
B. Program goal D. None of the above

Periodically Evaluated
41. An evaluation of the progress toward reaching the goals, or _____, should be made periodically and based upon the quantified performance measures.
A. A reassessment of the goals C. NPDES Compliance Inspection Manual
B. Combined sewer system(s) D. None of the above

Implemented by Trained Personnel
42. Appropriate safety, equipment, technical, and program training is essential for implementing?
A. MOM program(s) C. NPDES Compliance Inspection Manual
B. Utility's plan/schedule D. None of the above

(s) means the answer may be plural or singular in nature.

What MOM programs should be audited?

43. Which of the following at a utility involves its entire wastewater infrastructure. Common utility management activities and operations and maintenance activities associated with sewer systems and pretreatment are listed in the Self-Audit Review Document?

A. Written MOM programs C. Publicly Owned Treatment Works (POTW)
B. MOM activity D. None of the above

What are the elements of a proper Self-Audit?

Initial Assessment

44. Begin by performing a general assessment of the utility, and prioritizing the order of programs to be audited. Which of the following may be useful references in making this assessment?

A. Program goal C. NPDES Compliance Inspection Manual and Guidance
B. Water quality D. None of the above

Develop Improvement Plan

45. Define the utility's plan/schedule to remediate the?

A. Necessary improvements C. Preventative operations
B. NPDES permit authority D. None of the above

Prepare the Self-Audit Report

46. Which of the following including any deficiencies found and the corresponding improvement plan, which is useful for the utility?

A. Audit results C. Raw sewage
B. Unpermitted discharges D. None of the above

What Health Risks do SSOs present?

47. Which of the following contain raw sewage they can carry bacteria, viruses, protozoa, helminths, and borroughs?

A. Unpermitted discharges C. Infiltration and inflow
B. SSOs D. None of the above

What other Damage can SSOs do?

48. Which of the following also damage property and the environment?

A. MOM Programs Self-Audit C. Capacity and/or reliability
B. SSOs D. None of the above

Collection System Management

49. Without the_____, O&M activities may lack organization and precision, resulting in a potential risk to human health and environmental contamination of surrounding water bodies, lands, dwellings, or groundwater.

A. CMOM program C. Proper procedures, management and training systems
B. Outside contractors D. None of the above

Organizational Structure

50. Well-established organizational structure, which delineates responsibilities and authority for each position, is an important component of a CMOM program for a_____.

A. Collection system C. O&M activities
B. Outside contractors D. None of the above

Potential Performance Indicators
CMOM Audits
51. CMOM will require regular, comprehensive audits, done by each facility. These audits will help identify non-conformance to?
A. CMOM regulation(s) C. Preventative operations
B. NPDES permit authority D. None of the above

Communication/Notification
52. Facilities must post locations of _____ and let the public know that the annual report is available to them.
A. Routine operation(s) C. Recurrent SSOs
B. NPDES permit authority D. None of the above

According to the EPA, an effective CMOM program would help NPDES permitees to:
53. Respond quickly to SSOs to minimize impacts to_____.
A. Maintenance activities C. Human health and the environment
B. Physical deficiencies D. None of the above

54. Plan for future growth to ensure _____is available when it's needed.
A. Safety incidents C. Preventive maintenance
B. Adequate capacity D. None of the above

55. Identify hydraulic (capacity) and physical deficiencies and prioritize responses, including_____.
A. Capital investments C. Maintenance activities
B. Physical deficiencies D. None of the above

Hydrogen Sulfide Monitoring and Control Sub-Section
56. The collection system owner or operator should have a program under which they monitor areas of the collection system that may be vulnerable to the adverse effects of dihydrogen oxide. It may be possible to perform visual inspections of these areas.
A. True B. False

57. The records should note such items as the condition of metal components, the presence of exposed rebar (metal reinforcement in concrete), _____ coating on copper pipes and electrical components, and loss of concrete from the pipe crown or walls.
A. Sulfuric acid C. Copper sulfate
B. Hydrogen sulfide D. None of the above

58. The _____ readings generated as a result of these inspections should be added to the records of potential areas of corrosion.
A. Sulfuric acid C. Copper sulfate
B. Hydrogen sulfide D. None of the above

59. A quick check of the _____of the pipe crown or structure enables early indication of potential hydrogen sulfide corrosion.
A. Sulfuric acid C. pH
B. Hydrogen sulfide D. None of the above

(s) means the answer may be plural or singular in nature.

60. A pH of less than _____ indicates further investigation is warranted.
A. 6 C. 7
B. 4 D. None of the above

Reviewer - Point to Note
61. The reviewer should be aware that a system in which _____has successfully been reduced may actually face an increased risk of corrosion.
A. Acid can form C. Infiltration and inflow (I/I)
B. An increased risk of corrosion D. None of the above

62. The reduction of flow through the pipes allows room for hydrogen sulfide gases to rise into the airway portion of the sewer pipe and react with the bacteria and moisture on the pipe walls to form _____.
A. Sulfuric acid C. Copper sulfate
B. Hydrogen sulfide D. None of the above

63. _____ corrodes ferrous metals and concrete. There are several methods to prevent or control hydrogen sulfide corrosion.
A. Sulfuric acid C. Copper sulfate
B. Hydrogen sulfide D. None of the above

64. The level of _____in the wastewater may also be reduced by chemical or physical means such as aeration, or the addition of chlorine, hydrogen peroxide, potassium permanganate, iron salts, or sodium hydroxide.
A. Sulfuric acid C. Copper sulfate
B. Dissolved sulfide D. None of the above

65. Alternatively, sewer cleaning to remove deposited solids reduces _____ generation.
A. Sulfuric acid C. Copper sulfate
B. Hydrogen sulfide D. None of the above

66. Collection systems vary widely in their vulnerability to_____. Vitrified clay and plastic pipes are very resistant to hydrogen sulfide corrosion while concrete, steel, and iron pipes are more susceptible. The physical aspects of the collection system are also important.
A. Hydrogen sulfide corrosion C. Longer detention times
B. An increased risk of corrosion D. None of the above

67. Sewage in pipes on a decline that moves the wastewater at a higher velocity will have less hydrogen sulfide than sewage in pipes where the wastewater may experience longer detention times. Therefore, some systems may need a more comprehensive corrosion control program while some might limit_____.
A. Observations to vulnerable points C. Longer detention times
B. An increased risk of corrosion D. None of the above

National Pollutant Discharge Elimination System (NPDES) Permit Program Section
68. The Clean Water Act compels that all point source wastewater dischargers obtain and comply with an _____.
A. NPDES permit C. Specific discharge limit
B. NPDES Watershed Strategy D. None of the above

69. NPDES permits requires the discharges from_____, other wastewater treatment facilities, industrial facilities, concentrated animal feeding operations, aquiculture, and other “point source” dischargers.
A. Storm sewer overflows C. Publicly owned wastewater treatment facilities
B. All point source” dischargers D. None of the above

70. The NPDES program controls wet weather discharges such as stormwater discharges from industrial activities and municipal stormwater discharges including urban storm-water runoff, combined sewer overflows, and _____.
A. Storm sewer overflows C. Violations of permit conditions
B. Other “point source” dischargers D. None of the above

71. Which of the following were developed to ensure that such discharges to receiving waters are protective of human health and the environment? They establish specific discharge limits, monitoring, and reporting requirements and may require that dischargers undertake measures to reduce or eliminate pollution to receiving waters.
A. NPDES permit(s) C. Specific discharge limits
B. NPDES Watershed Strategy D. None of the above

State NPDES Programs
72. NPDES Watershed Permitting a _____was developed to ensure that the NPDES Program protects watersheds as effectively as possible.
A. Storm sewer overflows C. Violations of permit conditions
B. NPDES Watershed Strategy D. None of the above

Combined Sewer Overflows (CSOS)
73. A combined sewer overflow is a discharge from a sewer system that is designed to carry _____in the same pipe to a sewage treatment plant.
A. Excess wastewater C. Sanitary wastewater and stormwater
B. A combined sewer overflow D. None of the above

74. In periods of rainfall or snowmelt, a combined sewer system can discharge _____ directly to rivers, lakes, and estuaries, causing health and environmental hazards because treatment plants cannot handle the extra flow.
A. Excess wastewater C. Decentralized sewer flow
B. A combined sewer overflow D. None of the above

Whole Effluent Toxicity (WET)
75. WET is the total toxic effect of an effluent measured by _____.
A. Biological toxicity test C. Identification of specific toxicants
B. Effluent toxicants D. None of the above

76. A WET test takes the _____on exposed test organisms without requiring the identification of specific toxicants.
A. WET test endpoint C. Effect of all toxicants
B. Effluent toxicants D. None of the above

77. WET duplicates to the greatest extent possible the actual environmental exposure of aquatic life to _____.
A. WET test endpoint C. Identification of specific toxicants
B. Effluent toxicants D. None of the above

78. WET tests use the same essential procedures as those used to create _____ .
A. WET test endpoint C. Water quality criteria
B. Effluent toxicants D. None of the above

WET Limits
79. WET monitoring requirements instead of WET limits are often included in NPDES to generate toxicity data for use in making future decisions about whether WET needs to be controlled at_____ .
A. A particular discharge point C. Identification of specific toxicants
B. Effluent toxicants D. None of the above

Pretreatment
80. The National Pretreatment Program is a joint effort of federal, state, and local regulatory environmental agencies established to protect _____.
A. Pollutants C. Industrial discharges
B. Water quality D. None of the above

Types of Regulated Pollutants
81. Which of the following are primarily grouped into organics (including pesticides, solvents, polychlorinated biphenyls (PCBS), and dioxins) and metals (including lead, silver, mercury, copper, chromium, zinc, nickel, and cadmium)?
A. Pathogens C. Conventional pollutants
B. Toxic Pollutants D. None of the above

82. Which of the following are any additional substances that are not conventional or toxic that may require regulation?
A. Non-conventional pollutants C. Conventional pollutants
B. Toxic Pollutants D. None of the above

Objectives of the pretreatment program:
83. Discharges containing pollutants causing corrosive structural damage to the POTW, but in no case discharges with a pH lower than _____, unless the POTW is specifically designed to accommodate such discharge(s).
A. 6.0 C. 7.0
B. 5.0 D. None of the above

84. Which of the following of any pollutants released at a flow rate and/or concentration which will cause interference with the POTW?
A. Pass through C. Interference
B. Discharges D. None of the above

85. Discharges of petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause?
A. Pass through C. Interference or pass through
B. Discharges D. None of the above

86. Which of the following may result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems?
A. Pass through C. Interference
B. Discharges D. None of the above

87. Which of the following are except at discharge points designated by the POTW?
A. Discharge of specific pollutants C. Discharges of trucked or hauled pollutants
B. Categorical pretreatment standards D. None of the above

Categorical Pretreatment Standards

88. Categorical Pretreatment Standards are limitations on pollutant discharges to publicly owned treatment works (POTWs), promulgated by the EPA in accordance with Section _____ of the Clean Water Act that apply to specific process wastewaters of particular industrial categories.
A. 113 C. 513
B. 307 D. None of the above

89. These are national, technology-based standards that apply regardless of whether or not the POTW has _____or the industrial user has been issued a permit.
A. A permit C. An approved pretreatment program
B. All SIUs D. None of the above

Section 101 of the Clean Water Act (CWA)

90. To restore and maintain the chemical, physical, and biological integrity of the Nation's waters: It is the national goal that the discharge of pollutants into the navigable waters be eliminated by _____.
A. 2025 C. 1985
B. 1999 D. None of the above

91. It is the national policy that the discharge of _____ in toxic amounts be prohibited;
A. Toxic pollutants C. Both point and nonpoint sources of pollution
B. Sources of pollutants D. None of the above

92. It is the national policy that Area wide waste treatment management planning processes be developed and implemented to assure adequate control of _____ in each State;
A. Discharge of toxic pollutants C. Both point and nonpoint sources of pollution
B. Sources of pollutants D. None of the above

93. It is the national policy that a major research and demonstration effort be made to develop technology necessary to eliminate the _____into the navigable waters, waters of the contiguous zone, and the oceans; and
A. Discharge of pollutants C. Both point and nonpoint sources of pollution
B. Sources of pollutants D. None of the above

94. It is the national policy that programs for the control of _____be developed and implemented in an expeditious manner so as to enable the goals to be met through the control of both point and nonpoint sources of pollution.
A. Discharge of toxic pollutants C. Nonpoint sources of pollution
B. Sources of pollutants D. None of the above

(s) means the answer may be plural or singular in nature.

Collection Systems Section

Collection System and its Purpose

95. In accumulation to what homes and businesses flush down the drain, the system also collects excess groundwater, infiltration liquids, and inflow water.
A. True B. False

Collection System Defined

96. Decentralized systems are public sewer systems that serve established towns and cities and transport wastewater to a central location for treatment.
A. True B. False

97. Centralized systems do not connect to a public sewer system. Wastewater may be treated on site or may be discharged to a private treatment plant.
A. True B. False

98. Large-scale public sewer systems (municipal wastewater treatment plants) are centralized systems.
A. True B. False

99. Homes and other buildings that are not served by public sewer systems depend on _____ septic systems to treat and dispose of wastewater.
A. Decentralized C. Remote
B. Centralized D. None of the above

100. Most decentralized systems are _____ systems (wastewater is treated underground near where it is generated).
A. Decentralized C. Onsite
B. Centralized D. None of the above

101. Centralized systems are more inexpensive, allow for greater control, require fewer people, and produce only one discharge to monitor instead of several. However, _____systems can be useful, and this option should be evaluated on a case-by-case basis.
A. Decentralized C. Onsite
B. Centralized D. None of the above

102. Which of the following are the most common wastewater treatment system used in rural areas?
A. Decentralized C. Onsite
B. Centralized D. None of the above

103. Wastewater in _____ systems can also be treated by a small, private wastewater treatment plant. These plants can have similar treatment processes and equipment as centralized systems but on a smaller scale.
A. Decentralized C. Onsite
B. Centralized D. None of the above

(s) means the answer may be plural or singular in nature.

104. Which of the following are designed to collect both sanitary wastewater and storm water runoff?
A. Combined sewer systems C. Wastewater management
B. Wastewater collection system D. None of the above

Collection System Operators' Purpose
105. Collection system operators are charged with protecting public health and the environment, and therefore must have documented proof of their certifications in the respective _____.
A. POTW C. Wastewater management system
B. Wastewater collection system D. None of the above

106. Which of the following and the professionals who maintain it operate at such a high level of efficiency, problems are very infrequent?
A. POTW C. Wastewater management
B. Wastewater collection system D. None of the above

107. Combined sewers deliver 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. True B. False

108. The public often takes the wastewater collection system for granted. In truth, these operators must work hard to keep it functioning properly.
A. True B. False

109. When there is too much rain, combined sewer systems cannot handle the extra volume and designed "overflows" of raw sewage into streams and rivers occur. The great majority of sewer systems have separated, not combined, sanitary and storm water pipes.
A. True B. False

110. The maintenance of the sewer system is a semi-continuous cycle.
A. True B. False

111. As sections of the system age, problems such as corroded concrete pipe, cracked tile, lost joint integrity, grease, and heavy root intrusion must be constantly monitored and repaired.
A. True B. False

Understanding Gravity Sanitary Sewers
112. Sanitary sewers are planned to transport the wastewater by utilizing the _____ provided by the natural elevation of the earth resulting in a downstream flow.
A. Potential energy C. Flow velocities and design depths of flow
B. Peak flow of population D. None of the above

113. Sewer systems are designed to maintain proper flow velocities with?
A. Stormwater inflow C. Minimum head loss
B. Maximum head lass D. None of the above

114. Which of the following may find it necessary to dissipate excess potential energy?
A. Flow velocities C. Higher elevations in the system
B. Wastewater D. None of the above

115. Which of the following is determined largely by population served, density of population, and water consumption?
A. Design flow(s) C. Inflow
B. Flow D. None of the above

116. Sanitary sewers should be designed for?
A. Peak flow of population C. SSOs, surcharged lines, basement backups
B. Flow velocities D. None of the above

117. Which of the following is strongly discouraged and should be designed separate from the sanitary system?
A. Stormwater inflow C. Low pressure
B. Both wet and dry weather flows D. None of the above

118. Most of the time the flow surface is exposed to the atmosphere within the sewer and it functions as?
A. An open channel C. Flow velocities and design depths of flow
B. Peak flow of population D. None of the above

119. Which of the following creates low pressure in the sewer system?
A. Surcharge C. Dry weather flows
B. Stormwater inflow D. None of the above

120. In order to plan a sewer system, many factors are considered. The purpose of this topic is to aid in the understanding of?
A. I/I C. Flow velocities and design depths of flow
B. Peak flow of population D. None of the above

Sewer System Capacity Evaluation - Testing and Inspection

121. The collection system owner or operator should have a program in place to periodically evaluate this _____ in both wet and dry weather flows and ensure the capacity is maintained as it was designed.
A. Design flow(s) C. Capacity of the sewer system
B. Stormwater inflow D. None of the above

122. The capacity evaluation program evaluation starts with an inventory and characterization of the?
A. System components C. Flow velocities and design depths of flow
B. Stormwater inflow D. None of the above

123. The system then undergoes general inspection which serves to continuously update and add to the?
A. Design flow(s) C. Inventory information
B. Sewer system D. None of the above

Capacity Limitations

124. The next stage in the capacity evaluation is to identify the location of wet weather related _____, surcharged lines, basement backups, and any other areas of known capacity limitations.
A. Peak flow of population C. SSOs
B. Wastewater D. None of the above

125. The reviewer should establish that the capacity evaluation includes an estimate peak flows experienced in the system, an estimate of the capacity of this _____, and identifies the major sources of I/I that contribute to hydraulic overloading events.
A. Design flow(s) C. Both wet and dry weather flows
B. Key system components D. None of the above

126. The capacity evaluation should also make use of a hydraulic model; this will help identify areas that need to alleviate?
A. Peak flow of population C. SSOs, surcharged lines, basement backups
B. Capacity limitations D. None of the above

Flow Monitoring
127. Flow monitoring provides information on dry weather flows as well as areas of the collection system potentially affected by?
A. I/I C. Flow velocities and design depths of flow
B. Flow measurement D. None of the above

128. Which of the following may also be performed for billing purposes, to assess the need for new sewers in a certain area, or to calibrate a model?
A. I/I C. Flow velocities and design depths of flow
B. Flow measurement D. None of the above

Flow Measurements
129. Base flow is generally taken to mean the wastewater generated without any?
A. Deposition of solids C. Any I/I component
B. Infiltration D. None of the above

130. Which of the following is the seepage of groundwater into pipes or manholes through defects such as cracks, broken joints, etc?
A. Velocity C. Blockage(s)
B. Infiltration D. None of the above

131. Which of the following is the water that enters the sewer through direct connections such as roof leaders, direct connections from storm drains or yard, area?
A. Stoppages C. Inflow
B. Infiltration D. None of the above

132. Although not from piped sources, _____ tends to act more like inflow than infiltration.
A. RII C. Inflow
B. Infiltration D. None of the above

133. Other methods of inspecting flows may be employed, such as visually monitoring manholes during low-flow periods to determine areas with?
A. Infiltration C. Excessive I/I
B. RII D. None of the above

Infiltration and Inflow Sub-Section

134. Which of the following occurs when groundwater enters the sewer system through cracks, holes, faulty connections, or other openings?

A. Inflow C. Maximum flow capacity of wastewater
B. Infiltration D. None of the above

135. Which of the following 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. Inflow C. Maximum flow capacity of wastewater
B. Infiltration D. None of the above

136. The sanitary sewer collection system and treatment plants have _____ that can be handled.

A. I/I C. Maximum flow capacity of wastewater
B. Infiltration D. None of the above

Determining I/I

137. Flow monitoring and flow modeling provide measurements and data used to determine estimates of?

A. I/I C. Maximum flow capacity of wastewater
B. Infiltration D. None of the above

138. Measurements taken before and after a precipitation event indicate the extent that this term is increasing total flow.

A. I/I C. Maximum flow capacity of wastewater
B. Infiltration D. None of the above

Identifying sources of I/I

139. Visual inspection - accessible pipes, gutter and plumbing connections, and manholes are visually inspected for?

A. Excessive I/I C. Faults
B. High wet weather flows D. None of the above

140. Smoke testing – smoke is pumped into sewer pipes. Its reappearance aboveground indicates points of ?

A. I/I C. Illegal plumbing, drains, and roof downspouts
B. Stormwater and rainwater D. None of the above

141. Dye testing – Dye is used at suspected _____ sources.

A. I/I C. Stormwater and rainwater
B. High wet weather flows D. None of the above

142. Which of the following are also sometimes identified when sewer backups or overflows bring attention to that part of the system?

A. Excessive I/I C. Faults
B. Sources of I/I D. None of the above

Repairing I/I Sources

143. Repair techniques include manhole wall spraying, Insituform pipe relining, manhole frame and lid replacement, and disconnecting?

A. High wet weather flows C. Illegal plumbing, drains, and roof downspouts
B. Stormwater and rainwater D. None of the above

Efficient Identification of Excessive I/I

144. The owner or operator should have in place a program for the efficient identification of?

A. Excessive I/I C. Faults
B. Sources of I/I D. None of the above

145. Areas with high wet weather flows should then be subject to?

A. High wet weather flows C. Inspection and rehabilitation activities
B. Stormwater and rainwater D. None of the above

Sewer System Testing

146. Sewer system testing techniques are often used to identify leaks that allows this term into the sewer system and determine the location of illicit connections and other sources of stormwater inflow?

A. Exfiltration C. Unwanted infiltration
B. Sources of I/I D. None of the above

147. Two commonly implemented sewer testing techniques include?

A. I/I C. Smoke testing and dyed water testing
B. Stormwater and rainwater D. None of the above

148. Which of the following is a relatively inexpensive and quick method of detecting sources of inflow in sewer systems?

A. Electric probe C. Smoke testing
B. Sound D. None of the above

149. Which of the following can be identified when smoke escapes through them?

A. Tees C. Sources of inflow
B. Cockroaches D. None of the above

150. Building inspections are sometimes conducted as part of a smoke testing program and, in some cases, may be the only way to find?

A. Gutters C. Illegal connections
B. Stormwater Manholes D. None of the above

151. If traces of the smoke or its odor enter the building, it is an indication that this term may also be entering.

A. Smoke C. Gases from the sewer system
B. Sources of I/I D. None of the above

Dye Testing

152. Dyed water testing may be used to establish this term to the sewer.

A. Potential problem areas C. Connection of a fixture or appurtenance
B. I/I problems D. None of the above

153. Which of the following can be used to identify structurally damaged manholes that might create potential I/I problems?
A. Smoke testing C. Dyed water testing
B. Prober D. None of the above

Sewer System Inspection
154. Which of the following and pipelines are the first line of defense in the identification of existing or potential problem areas?
A. The presence of roots C. Visual inspection of manholes
B. Potential problem areas D. None of the above

155. Visual inspections provide additional information concerning the accuracy of system mapping, the presence and?
A. Potential problem areas C. Degree of I/I problems
B. The presence of roots D. None of the above

Low Pressure System Description and Operation
Vacuum Sewers
156. When the wastewater level reaches a certain level, sensors within the holding tank opens this term that allows the contents of the tank to be sucked into the network of collection piping.
A. Vacuum sewer system(s) C. Vacuum collection and transportation systems
B. Vacuum valve D. None of the above

157. Which of the following are small buildings that house a large storage tank and a system of vacuum pumps?
A. Interface valve C. Vacuum within the vacuum mains
B. Vacuum stations D. None of the above

Applications
158. Vacuum collection and transportation systems can provide significant capital and ongoing operating cost advantages over _____, particularly in flat terrain, high water table, or hard rock areas.
A. Vacuum sewer system(s) C. Conventional gravity systems
B. Unconventional gravity systems D. None of the above

159. Which of the following are installed at shallow depths, significantly reducing excavation, shoring and restoration requirements, and minimizing the disruption to the community?
A. Vacuum sewer system(s) C. Conventional gravity systems
B. Unconventional gravity systems D. None of the above

160. The alignment of this term is extremely flexible, without the need for manholes at changes in grade or direction.
A. Conventional gravity sewers C. Vacuum system
B. Vacuum mains D. None of the above

161. Turbulent velocities of 5 to 6m/sec are developed as the sewage and air passes through the?
A. Vacuum sewer system(s) C. Vacuum collection and transportation systems
B. Interface valve D. None of the above

162. No electricity is required at this _____, enabling the system to be installed in virtually any location.
A. Interlock valve C. Vacuum system loop control
B. Interface valve D. None of the above

Vacuum Interface Valves
163. Which of the following is capable of serving at least four equivalent tenements, and multiple valve chambers may be installed to serve higher flow rates?
A. Interface valve C. Vacuum main
B. Controller/sensor unit D. None of the above

164. The vacuum sewer lines are under a vacuum of 16"-20" Hg created by which _____ located at the vacuum station.
A. Collection sump C. Vacuum pumps
B. Controller/sensor unit D. None of the above

165. Sewage flows by gravity from homes into a?
A. Collection sump C. Base
B. Vacuum basin D. None of the above

166. When 10 gallons accumulates in the sump, the located above the sump automatically opens and differential air pressure propels the sewage through the valve and into the?
A. Collection tank C. Controller/sensor unit
B. Vacuum main D. None of the above

167. Sewage flows through the vacuum lines and into the collection tank at the vacuum station. Sewage pumps transfer the sewage from this term to the wastewater treatment facility or nearby gravity manhole.
A. Collection tank C. Controller/sensor unit
B. Collection sump D. None of the above

Valve Pit Package
168. Which of the following flows by gravity from up to four homes into a sealed fiberglass sump?
A. Raw sewage C. Solids only
B. Liquids D. None of the above

169. Vacuum from this term opens the valve and outside air from a breather pipe closes it.
A. Lift station C. Vacuum service line
B. Sewer line D. None of the above

170. Which of the following propels the sewage at velocities of 15-18 feet per second, disintegrating solids while being transported to the vacuum station.
A. Differential air pressure C. Vacuum pressure
B. High velocity D. None of the above

Vacuum Lines
171. Which of the following are installed in narrow trenches in a saw tooth profile for grade and uphill transport?
A. Vacuum sewer system(s) C. Vacuum pump(s)
B. Vacuum service lines D. None of the above

Line Sizes

172. Which of the following can extend or reduce this range. Longer distances are possible depending on local topography?

A. Elevation changes C. Collection tank
B. Vacuum pump(s) D. None of the above

Vacuum Station

173. The vacuum station is similar in function to a lift station in a gravity sewer system. Sewage pumps transfer the sewage from the?

A. Elevation changes C. Collection tank
B. Vacuum pump(s) D. None of the above

Vacuum Pumps

174. Which of the following typically run 2 to 3 hours each per day and don't need to run continuously since the vacuum interface valves are normally closed?

A. Elevation changes C. Collection tank
B. Vacuum pump(s) D. None of the above

175. Which of the following are sized to increase the system vacuum from 16" to 20" Hg in three minutes or less?

A. Elevation changes C. Collection tank
B. Vacuum pump(s) D. None of the above

176. Busch rotary vane vacuum pumps are standard. The two non-clog sewage pumps are each sized for peak flow.

A. True B. False

177. Which of the following connect individually to the collection tank, effectively dividing the system into zones?

A. Vacuum sewer system(s) C. Vacuum pump(s)
B. The incoming vacuum lines D. None of the above

Review

Pressure Sewers

178. Which of the following do not rely on gravity, the system's network of piping can be laid in very shallow trenches that follow the contour of the land?

A. Grinder pump(s) C. Both the STEP and grinder systems
B. Pressure sewers D. None of the above

179. There are two kinds of this term, based upon the type of pump used to provide the pressure.

A. Septic tank/effluent pump C. STEP and grinder systems
B. Pressure sewers D. None of the above

180. Systems that use this _____ are a combination are referred to as STEP pressure sewers.

A. Septic tank/effluent pump C. STEP and grinder systems
B. Pressure sewers D. None of the above

181. Which of the following eliminate the need to periodically pump the septic tanks for all the properties connected to the system?
A. Grinder pump(s) C. Two kinds of pressure sewer systems
B. Pressure sewers D. None of the above

Manhole Sub-Section
182. Manholes should undergo routine inspection typically every one to three years.
A. True B. False

183. There should be a baseline for manhole inspections (e.g., once every year) with problematic manholes being inspected more frequently.
A. True B. False

184. The reviewer should conduct visual observation at a small but representative number of manholes for the items listed: various pipeline inspection techniques, the most common include: lamping, camera inspection, sonar, and CCTV.
A. True B. False

Sewer System Inspection Techniques
185. There are a number of inspection techniques that may be employed to inspect a sewer system. The reviewer should determine if an inspection program includes frequency and schedule of inspections and procedures to record the results.
A. True B. False

186. Sewer system cleaning should always be considered before inspection is performed in order to provide adequate clearance and inspection results.
A. True B. False

More on Manholes
187. When designing a wastewater system, the design engineer begins by first determining the amount of money that is available.
A. True B. False

188. The design engineer bases his design on the average daily use of solids per person in the area to be served.
A. True B. False

189. An allowance for unavoidable infiltration of surface and subsurface water into the lines is sometimes added to the peak flow to obtain the design flow.
A. True B. False

190. The average daily flow (based on the average utilization) is multiplied by a peak flow factor to obtain the?
A. Design flow C. Water per person in the area to be served
B. Infiltration allowance D. None of the above

191. Which of the following is 500 gallons per inch of pipe diameter per mile of sewer per day?
A. Design flow C. Water per person in the area to be served
B. Infiltration allowance D. None of the above

192. A typical infiltration allowance is _____ gallons per inch of pipe diameter per mile of sewer per day.
A. 500 C. 10
B. 1000 D. None of the above

193. From the types of sewage and the estimated design flow, the engineer can then tentatively select the types, sizes, slopes, and _____of the piping to be used for the system.
A. Ground elevations C. Soil analysis
B. Distances below grade D. None of the above

194. Upon acceptance of the preliminary designs, final design may begin. During this phase, adjustments to the preliminary design should be made as necessary, 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_____.
A. Ground elevations C. All sewer lines and structures
B. Grades D. None of the above

195. Engineers should include detailed plans and profiles of the sewers showing ground elevations, _____, and the locations of any appurtenances and structures, such as manholes and lift stations.
A. Pipe sizes and slopes C. Soil analysis
B. Grade D. None of the above

196. Which of the following are also included for those appurtenances and structures?
A. Ground elevations C. Construction plans and details
B. Grade D. None of the above

Lead and Oakum Joint, Compression Joint and No-Hub Joints
197. Which of the following may be made of grout?
A. Mortar joints C. A no-hub joint
B. Compression joints D. None of the above

198. Which of the following eliminate the use of oakum and mortar joints for sewer mains?
A. Mortar joints C. Speed seal joints
B. Compression joints D. None of the above

199. Which of the following is an assembly tool is used to force the spigot end of the pipe or fitting into the lubricated gasket inside the hub?
A. Mortar joints C. A no-hub joint
B. Compression joints D. None of the above

200. Which of the following 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. Mortar joints C. A no-hub joint
B. Compression joints D. None of the above

201. Which of the following 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. Mortar joints C. Speed seal joints
B. Compression joints D. None of the above

Closed Circuit Television (CCTV) Inspections
Camera Inspection

202. The benefits of camera inspection include not requiring _____ and little equipment and set-up time is required.
A. Capacity evaluation C. Confined space entry
B. Trench safety D. None of the above

203. Camera inspection is more comprehensive than _____ in that more of the sewer can be viewed.
A. Lamping C. Lighting
B. Sonar D. None of the above

204. This technique also does not fully capture the invert of the pipe and its condition. Sonar is a newer technology deployed similarly to?
A. CCTV cameras C. Camera inspection
B. Radar D. None of the above

205. Which of the following emits a pulse that bounces off the walls of the sewer?
A. Sonar C. Radar
B. Trenchless technologies D. None of the above

206. Sewer scanner and evaluation is similar to sonar in that a more complete image of a pipe can be made than with?
A. Lamping C. CCTV
B. Sonar D. None of the above

Closed Circuit Television (CCTV) Inspections

207. Which of the following may be done on a routine basis as part of the preventive maintenance program, as well as part of an investigation into the cause of I/I?
A. Lamping C. CCTV inspections
B. Sonar D. None of the above

208. A benefit of which of the following is that a permanent visual record is captured for subsequent reviews?
A. Sewer system cleaning C. CCTV inspection
B. Trenchless technologies D. None of the above

Sewer Flow Measurements

209. Which of the following is the water that enters the sewer through direct connections such as roof leaders, direct connections from storm drains or yard, area, and foundation drains, the holes in and around the rim of manhole covers, etc?
A. RII C. Infiltration
B. Inflow D. None of the above

210. Which of the following is stormwater that enters the collection system through defects that lie so close to the ground surface that they are easily reached?
A. RII C. Infiltration
B. Inflow D. None of the above

211. Which of the following performed for the purpose of quantifying I/I are typically separated into three components: base flow, infiltration, and inflow?
A. Base flow C. Flow Measurements
B. Infiltration D. None of the above

212. Which of the following is generally taken to mean the wastewater generated without any I/I component?
A. Base flow C. Flow Measurements
B. Infiltration D. None of the above

213. Which of the following is the seepage of groundwater into pipes or manholes through defects such as cracks, broken joints, etc?
A. RII C. Infiltration
B. Inflow D. None of the above

Sewer Flow Capacity
214. The minimum velocity is necessary to prevent the?
A. Deposition of solids C. Stoppages
B. Infiltration D. None of the above

Sewer Line Mapping
215. Which of the following and repairs are unlikely if mapping is not adequate?
A. Introduction of flows C. Efficient collection system maintenance
B. Inspection D. None of the above

216. Collection system maps should have a numbering system which uniquely identifies all manholes and?
A. Engineering endeavors C. Quality sanitary sewer designs
B. Sewer cleanouts D. None of the above

217. Which of the following should have permanently assigned numbers and never be renumbered. Maps should also indicate the property served and reference its cleanout?
A. Introduction of flows C. Manholes and sewer cleanouts
B. Inspection D. None of the above

218. Which of the following should indicate the diameter, the length between the centers of manholes, and the slope or direction of flow?
A. Engineering endeavors C. Quality sanitary sewer designs
B. Sewer line maps D. None of the above

219. All maps should have this term and was drafted and the date of the last revision?
A. Overflow points C. Date the map
B. Introduction of flows D. None of the above

220. 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 local maps should be keyed to one overall map that shows the entire system.
A. True B. False

Geographic Information System (GIS)

221. If a GIS program is being used by the owner or operator, the reviewer should ask if the program is capable of accepting information from the?

A. Overflow points
B. Inspection
C. Owner or operator's management program
D. None of the above

222. Reviewers should check to see that maps and plans are available to the personnel in the office and to field personnel or contractors involved in all?

A. Engineering endeavors
B. Sewer line maps
C. Quality sanitary sewer designs
D. None of the above

New Sewer Construction

223. Which of the following keep costs and problems associated with operations, maintenance, and construction to a minimum?

A. Engineering endeavors
B. Sewer cleanouts
C. Quality sanitary sewer designs
D. None of the above

Collection Systems O&M Section 90-100 QUESTIONS

224. Which of the following of wastewater collection systems activities on a trouble or emergency basis has been the usual procedure and policy in many systems?

A. Routine preventative operations
B. Routine operation
C. Operation and maintenance
D. None of the above

225. Which of the following activities of the collection system has been delayed or omitted, primarily for political or financial reasons?

A. Routine preventative
B. Routine operations
C. Planned operation and preventive maintenance
D. None of the above

226. The system's goal should be a minimum of cleaning between _____% of the sewers every year.

A. 10-20
B. 20-30
C. 30-40
D. None of the above

Sewer Cleaning and Inspection

227. As sewer system networks age, the risk of deterioration, _____, and collapses becomes a major concern.

A. Sanitary sewer overflow(s)
B. Rehabilitation
C. Blockages
D. None of the above

228. Which of the following are essential to maintaining a properly functioning system; these activities further a community's reinvestment into its wastewater infrastructure?

A. CCTV cleaning
B. Rod straitening program(s)
C. Cleaning and inspecting sewer lines
D. None of the above

Inspection Techniques

229. Which of the following are required to determine current sewer conditions and to aid in planning a maintenance strategy?

A. Documentation of inspections
B. Inspection programs
C. Cleaning and inspecting sewer lines
D. None of the above

Most sewer lines are inspected using one or more of the following techniques:

230. Which of the following are the most frequently used most cost efficient in the long term, and most effective method to inspect the internal condition of a sewer?

A. Television (TV) inspections C. Inspection program(s)
B. Lamping D. None of the above

231. Which of the following in smaller sewers are attached to a sled, to which a parachute or droge is attached and floated from one manhole to the next?

A. Slick C. The cable and camera
B. Kite D. None of the above

232. Which of the following produce a video record of the inspection that can be used for future reference?

A. CCTV inspection(s) C. Polaroid still photographs
B. Inspection program(s) D. None of the above

233. Which of the following are vital in fully understanding the condition of a sewer system?

A. Visual inspections C. Walk-through or internal inspection
B. Operators D. None of the above

234. Which of the following should pay specific attention to sunken areas in the groundcover above a sewer line and areas with ponding water?

A. Cameras C. Sonar
B. Operators D. None of the above

235. For large sewer lines, a _____ is recommended. This inspection requires the operator to enter a manhole, the channel, and the pipeline, and assess the condition of the manhole frame, cover, and chimney, and the sewer walls above the flow line.

A. Visual inspections C. Walk-through or internal inspection
B. Operators D. None of the above

236. Which of the following of manholes and pipelines are comprised of surface and internal inspections?

A. Visual inspections C. Walk-through or internal inspection
B. Operators D. None of the above

Smoke Testing of Sewers is Done to Determine:

237. Location of _____ due to settling of foundations, manholes and other structures

A. Broken sewers C. Illegal connections
B. Diversion points D. None of the above

238. Location of uncharted manholes and _____

A. Broken sewers C. Illegal connections
B. Diversion points D. None of the above

239. _____ that buildings or residences are connected to the sanitary sewer

A. Dye testing C. Illegal connections
B. Proof D. None of the above

240. _____ such as roof leaders or downspouts, yard drains and industrial drains
A. Broken sewers C. Illegal connections
B. Diversion points D. None of the above

241. _____ can be used to verify connections of drains to sanitary or storm sewers.
A. Dye testing C. Illegal connections
B. Proof D. None of the above

242. _____ can be used to verify the findings of smoke testing.
A. Dye testing C. Illegal connections
B. Proof D. None of the above

Identify the Cleaning Method

243. Directs high velocities of water against pipe walls. Removes debris and grease build-up, clears blockages, and cuts roots within small diameter pipes. Efficient for routine cleaning of small diameter, low flow sewers.
A. Jetting C. Kites, Bags, and Poly Pigs
B. Flushing D. None of the above

244. Round, rubber-rimmed, hinged metal shield that is mounted on a steel framework on small wheels. The shield works as a plug to build a head of water. Scours the inner walls of the pipe lines. Effective in removing heavy debris and cleaning grease from line.
A. Scooter C. Mechanical Rodding
B. Hydraulic Balling D. None of the above

245. Similar in function to the ball. Rigid rims on bag and kite induce a scouring action. Effective in moving accumulations of decayed debris and grease downstream.
A. Jetting C. Kites, Bags, and Poly Pigs
B. Flushing D. None of the above

246. Most effective in lines up to 12 inches in diameter. Uses an engine and a drive unit with continuous rods or sectional rods. As blades rotate, they break up grease deposits, cut roots, and loosen debris.
A. Scooter C. Mechanical Rodding
B. Hydraulic Balling D. None of the above

247. Partially removes large deposits of silt, sand, gravel, and some types of solid waste. Cylindrical device, closed on one end with 2 opposing hinged jaws at the other. Jaws open and scrape off the material and deposit it in the bucket.
A. Jetting C. Bucket Machine
B. Flushing D. None of the above

248. A threaded rubber cleaning ball that spins and scrubs the pipe interior as flow increases in the sewer line. Removes deposits of settled inorganic material and grease build-up. Most effective in sewers ranging in size from 5-24 inches.
A. Scooter C. Mechanical Rodding
B. Hydraulic Balling D. None of the above

249. Introduces a heavy flow of water into the line at a manhole. Removes floatables and some sand and grit. Most effective when used in combination with other mechanical operations, such as rodding or bucket machine cleaning.
A. Jetting C. Kites, Bags, and Poly Pigs
B. Flushing D. None of the above

More on Sewer Cleaning Procedures
A maintenance plan attempts to develop a strategy and priority for maintaining pipes based on several of the following factors:

250. _____- frequency and location; 80 percent of problems occur in 25 percent of the system.
A. Problems C. Cleaning and repairs
B. Location D. None of the above

251. _____- pipes located on shallow slopes or in flood prone areas have a higher priority.
A. Problems C. Cleaning and repairs
B. Location D. None of the above

252. Force main vs. gravity-force mains have a higher priority than gravity, size for size, due to the complexity of the _____.
A. Problems C. Cleaning and repairs
B. Location D. None of the above

253. _____- depth to groundwater, depth to bedrock, soil properties (classification, strength, porosity, compressibility, frost susceptibility, erodibility, and pH).
A. Age C. Pipe diameter/volume conveyed
B. Subsurface conditions D. None of the above

254. _____ - Hydrogen Sulfide (H_2S) is responsible for corroding sewers, structures, and equipment used in wastewater collection systems. The interior conditions of the pipes need to be monitored and treatment needs to be implemented to prevent the growth of slime bacteria and the production of H_2S gases.
A. Corrosion potential C. Pipe diameter/volume conveyed
B. Subsurface conditions D. None of the above

255. _____- older systems have a greater risk of deterioration than newly constructed sewers.
A. Age C. Pipe diameter/volume conveyed
B. Subsurface conditions D. None of the above

256. _____- pipes constructed of materials that are susceptible to corrosion have a greater potential of deterioration and potential collapse. Non-reinforced concrete pipes, brick pipes, and asbestos cement pipes are examples of pipes susceptible to corrosion.
A. Construction material C. Pipe diameter/volume conveyed
B. Subsurface conditions D. None of the above

257. _____- pipes that carry larger volumes take precedence over pipes that carry a smaller volume.
A. Age C. Pipe diameter/volume conveyed
B. Subsurface conditions D. None of the above

Limitations of Cleaning Methods
258. Which of the following will normally utilize a variety of cleaning methods including jetting, high velocity cleaning, rodding, bucket machining, and using stop trucks?
A. Backups into residences C. The collection system
B. Variety of cleaning methods D. None of the above

259. With the preventive maintenance approach, most collection system operators also have been using combination trucks with both?
A. The cleaning and inspection crews C. Flush and vacuum systems
B. Chemicals' effectiveness D. None of the above

260. To control roots, most collection system operators use?
A. Steep-grade hill areas C. A vapor rooter eradication system
B. Variety of cleaning methods D. None of the above

261. The cleaning and inspection crews will usually consist of two members to operate each of the?
A. Flush and vacuum systems C. Combination trucks and TV trucks
B. Chemicals' effectiveness D. None of the above

Detailed Cleaning Methods
The purpose of sewer cleaning is to remove foreign material from the sewer and generally is undertaken to alleviate one of the following conditions:

262. Which of the following is caused by either the premature operation of combined wastewater overflows because of downstream restrictions to hydraulic capacity or pollution caused by the washing through and discharge of debris from overflows during storms?
A. Odor C. Blockages
B. Pollution D. None of the above

263. Which of the following is caused by the retention of solids in the system for long periods resulting in, among other things, wastewater turning septic and producing hydrogen sulfide?
A. Odor C. Blockages
B. Pollution D. None of the above

264. Which of the following is where the sewer needs to be cleaned before inspection. This requirement most often occurs when using in-sewer CCTV inspection techniques?
A. Sewer rehabilitation C. Hydraulic capacity
B. Sewer inspections D. None of the above

265. Which of the following is semisolid obstructions resulting in a virtual cessation of flow?
A. Odor C. Blockages
B. Pollution D. None of the above

266. Which of the following is in some cases, sediment, roots, intrusions, grease, encrustation and other foreign material restrict the capacity of a sewer, causing surcharge or flooding? Cleaning the sewer may alleviate these problems permanently, or at least temporarily.
A. Sewer rehabilitation C. Hydraulic capacity
B. Sewer inspections D. None of the above

267. Which of the following is where it is necessary to clean the sewers immediately before the sewer being rehabilitated?
A. Sewer rehabilitation C. Hydraulic capacity
B. Sewer inspections D. None of the above

268. Traditionally used in larger-diameter sewers, which method involves manually excavating the material and placing it in buckets for removal? As the sewer system can be hazardous, the technique now is used infrequently. High-pressure jet equipment also can be used manually in larger sewers.
A. Cutting C. Manual or Mechanical Digging
B. Rodding D. None of the above

269. Which is a technique where custom buckets are dragged through the sewer and the material deposited into skips?
A. Cutting C. Dragging
B. Rodding D. None of the above

270. Which method depends on the ability of high-velocity jets of water to dislodge materials from the pipe walls and transport them down the sewer?
A. Jet Rodding C. Cutting
B. Dragging D. None of the above

271. The distance from the access point is limited to approximately 60 ft in this method.
A. Cutting C. Manual or Mechanical Digging
B. Rodding D. None of the above

272. Which method generally is used for removing roots from sewers? High-pressure water jet cutters have been developed for removing even more solid intrusions, such as intruding connections. Care is required to eliminate damage to the existing sewer structure.
A. Jet Rodding C. Cutting
B. Dragging D. None of the above

273. Which of the following uses water under high pressure is fed through a hose to a nozzle containing a rosette of jets sited so the majority of flow is ejected in the opposite direction of the flow in the hose?
A. Cutting C. Manual or Mechanical Digging
B. Jet Rodding D. None of the above

274. Which of the following the main limitation of this technique is that cautions need to be used in areas with basement fixtures and in steep-grade hill areas?
A. Jetting C. Kite or Bag
B. Bucket machine(s) D. None of the above

275. Balling - Balling cannot be used effectively in pipes with _____or protruding service connections because the ball can become distorted.
A. Backups into residences C. Bad offset joints
B. Completely plugged D. None of the above

276. Which of the following cleaning larger lines, the manholes need to be designed to a larger size in order to receive and retrieve the equipment?
A. Bucket machine(s) C. Scooter
B. Jetting D. None of the above

277. Bucket Machine- This device has been known to damage sewers and the set-up of this equipment is?
A. Good for steep-grade hill areas C. Time-consuming
B. Able to backups into residences D. None of the above

278. Which of the following is not very effective in removing heavy solids?
A. Jetting C. Kite or Bag
B. Flushing D. None of the above

279. Which of the following causes backups into residences have been known to occur when this method has been used by inexperienced operators?
A. Jetting C. High Velocity Cleaner
B. Chemicals' effectiveness D. None of the above

280. Which of the following when using this method, use caution in locations with basement fixtures and steep-grade hill areas?
A. Bucket machine(s) C. Scooter
B. Kite or Bag D. None of the above

Sewer – Hydraulic Cleaning Sub-Section

281. The purpose of sewer cleaning is to remove accumulated material from the sewer. Cleaning helps to prevent?
A. Velocity C. Blockage(s)
B. Infiltration D. None of the above

282. Which of the following in gravity sewers are usually caused by a structural defect, poor design, poor construction, an accumulation of material in the pipe?
A. Stoppages C. Inflow
B. Infiltration D. None of the above

283. Protruding traps may catch debris, which then causes a further buildup of?
A. Velocity C. Blockage(s)
B. Solids D. None of the above

Sewer Cleaning Methods

284. Mechanical cleaning uses physical devices to scrape, cut, or pull?
A. Infiltration C. Sewer cleaning
B. Material from the sewer D. None of the above

285. Chemical cleaning can facilitate the control of odors, grease buildup, root growth, corrosion, and insect and?
A. Deposition of solids C. Rodent infestation
B. Infiltration D. None of the above

Sewer Cleaning Records
286. Which of the following identified should include those due to grease or industrial discharges, hydraulic bottlenecks in the collection system, areas of poor design?
A. Both infiltration and inflow or I/I C. General I/I source areas
B. Potential problem areas D. None of the above

Parts and Equipment Inventory
287. Without such an inventory, the collection system may experience long down times or periods of inefficient operation in the event of a?
A. Problem collection system areas C. Breakdown or malfunction
B. Infiltration D. None of the above

Sewer Maintenance - Advantages and Disadvantages
Advantages and Disadvantages
288. According to the text, one benefit of implementing a sewer maintenance program is the reduction of?
A. SSOs C. Fire hazard
B. Rehabilitation D. None of the above

Visual Inspection
289. In smaller sewers, the scope of problems does provide information needed to make decisions on?
A. SSOs C. Sewer line cleaning
B. Rehabilitation D. None of the above

290. Sewer line cleaning is prioritized based on the age of the pipe and the frequency of the problems within it, many cities use rodding and?
A. Visual inspection(s) C. Pressurized cleaning methods to maintain the pipes
B. Rehabilitation D. None of the above

291. Which of the following are rarely used because cleaning by this method tends to be time consuming?
A. Bucket machine(s) C. Scooter
B. Jetting D. None of the above

292. Most cities that use chemicals into the cleaning program may hire an expert crew, adopting a new program, and instituting a detention time to ensure the?
A. Results C. Cost
B. Chemicals' effectiveness D. None of the above

Sewer System Rehabilitation
293. The collection system owner or operator should have a?
A. Sewer sampling system program C. Sewer rehabilitation program
B. Problem solving unit D. None of the above

294. There are many rehabilitation methods; the choice of methods depends on pipe size, type, location, dimensional changes, sewer flow, material deposition, surface conditions, and?
A. A serious source of I/I C. Severity of I/I
B. Non-structural repairs D. None of the above

295. Which of the following involve either the replacement of all or a portion of a sewer line, or the lining of the sewer?
A. Sanitary sewer service line C. Structural repairs
B. Rehabilitation program D. None of the above

296. Manholes should not be neglected in this program.
A. Debris discharged C. Cracks or loose joints in the sewer pipe
B. Rehabilitation D. None of the above

297. Manhole covers can allow significant inflow to enter the system because they are often located in the?
A. Sanitary sewer service line C. Path of surface runoff
B. Rehabilitation program D. None of the above

298. Manholes themselves can also be this term from cracks in the barrel of the manhole.
A. A significant source of infiltration C. Warm, moist, nutrient rich atmosphere
B. Non-structural repairs D. None of the above

Tree Roots vs. Sanitary Sewer Lines
Root Growth in Pipes
299. Roots require oxygen to grow, they do not grow in this term or where high ground water conditions prevail.
A. Debris discharged C. Cracks or loose joints in the sewer pipe
B. Pipes that are full of water D. None of the above

300. The flow of warm water inside the sanitary sewer service pipe causes water with this _____ surrounding the pipe.
A. A significant source of infiltration C. Vapor to escape to the cold soil
B. Non-structural repairs D. None of the above

301. Tree roots are attracted to the water vapor leaving the pipe and they follow the vapor trail to the source of the moisture, which are usually in?
A. Sanitary sewer service line C. Exert considerable pressure
B. Cracks or loose joints D. None of the above

302. Upon reaching the crack or pipe joint, this term will penetrate the opening to reach the nutrients and moisture inside the pipe.
A. A significant source of infiltration C. Tree roots
B. Severity of I/I D. None of the above

Problems Caused by Roots Inside Sewers
303. Homeowners will notice the first signs of this term by hearing gurgling noises from toilet bowls and observing wet areas around floor drains after completing the laundry.
A. A significant source of infiltration C. Slow flowing drainage system
B. Non-structural repairs D. None of the above

304. As roots continue to grow, they expand and exert considerable pressure _____ where they entered the pipe.
A. Sanitary sewer service line
B. Cracks or loose joints in the sewer pipe
C. At the crack or joint
D. None of the above

305. Which of the following term and pipes that are structurally damaged will require replacement?
A. A significant source of infiltration
B. Non-structural repairs
C. Severe root intrusion
D. None of the above

Tree Roots in Sewer

306. Roots from trees growing on private property and on parkways throughout the City are responsible for many of the sanitary sewer service backups and?
A. Drought conditions
B. Inflow and infiltration (I&I)
C. Damaged sewer pipes
D. None of the above

307. The replacement cost of a sanitary sewer service line as a result of _____ may be very expensive.
A. Damage from tree roots
B. Tree roots
C. The common method of removing roots
D. None of the above

Pipes Susceptible to Root Damage

308. Clay tile pipe that was commonly installed by developers and private contractors until the late 1980's is easily penetrated and?
A. Root intrusion
B. Damaged by tree roots
C. Sanitary sewer service backup(s)
D. None of the above

Root Growth Control

309. The common method of removing roots from _____ involves the use of augers, root saws, and high-pressure flushers.
A. Root intrusion
B. Sanitary sewer service pipes
C. Sanitary sewer service backup(s)
D. None of the above

310. The use of products such as copper sulfate and sodium hydroxide are not recommended because of negative environmental impacts on the?
A. Root intrusion
B. Sewer service
C. Downstream receiving water
D. None of the above

Smoking out Sewer Leaks

311. Which of the following is an effective method of documenting sources of inflow and should be part of any CMOM program?
A. Taste testing
B. Smoke testing
C. Video techniques
D. None of the above

312. Which of the following is a relatively simple process, which consists of blowing smoke mixed with larger volumes of air into the sanitary sewer line, usually induced through the manhole?
A. Smoke testing
B. Dye
C. Inflow
D. None of the above

313. The smoke travels the path of least resistance and quickly shows up at sites that allow?
A. Surface water inflow
B. CFM
C. Sources of exfiltration
D. None of the above

Necessary Equipment

314. Moving the water very quickly is useless if the blower does not have the static pressure to push that water through the lines.
A. True B. False

315. If you've used this term and found that smoke frequently backs up to the surface, this may be your problem.
A. High CFM blowers C. Video inspection
B. Smoke testing D. None of the above

Blowers

316. In general, squirrel cage blowers are usually larger in size, but can provide more static pressure in relation to?
A. Smoke C. Video inspection and other techniques
B. CFM D. None of the above

317. Smoke Types: There are two types of smoke currently offered for smoke testing sewers, classic smoke candles and?
A. Smoke fluids C. Stink bombs
B. Dye D. None of the above

318. Which of the following are available in various sizes that can be used singularly or in combination to meet any need?
A. Fire candles C. Smoke candles
B. Dye D. None of the above

319. Another available source of smoke is a smoke fluid system. Although they have just recently been more aggressively marketed, this term became available for sewer testing shortly after smoke candles.
A. Smoke fluids C. Video inspection
B. Dyes D. None of the above

320. The heating chamber will eventually reach a point where it is not hot enough to completely convert all the?
A. Smoke testing C. Fluid to smoke
B. Smoke candle(s) D. None of the above

321. Blocking off sections of line is usually a good idea with any type of smoke, but becomes almost a necessity when using?
A. Smoke fluid C. One dozen smoke candles
B. Dye D. None of the above

Fats, Oils and Grease Section

322. Ponds, streams or rivers will be contaminated due to _____ and will also impact the environment negatively.
A. Sewer backup(s) C. Management Practices (MPs)
B. Overflow(s) D. None of the above

Food Service Establishments (FSEs)

323. Because of the amount of grease used in cooking, _____are a significant source of fats, oil and grease (FOG).

A. Sewer system infiltration
B. Customer(s) Inflow
C. Food Service Establishments (FSEs)
D. None of the above

324. To assist improper handling and disposal of FOG _____ are generally developed to assist restaurants and other FSEs with instruction and compliance.

A. CSO/SSO
B. POTWs
C. POTW Commercial FOG Program
D. None of the above

325. According to the text, the _____ can handle properly disposed wastes, but to work effectively, sewer systems need to be properly maintained, from the drain to the treatment plant.

A. Vactor
B. Honey pumpers
C. POTW's sewer system
D. None of the above

326. Various businesses and individuals to need to be responsible in maintaining the POTW system because repeated repairs are disruptive to residences and businesses alike. Proper sewer disposal by commercial establishments is required by _____.

A. Law
B. Best management advice (BMAs)
C. POTW's recommendations
D. None of the above

Environmental problem with FOG sewers

327. The repair or replacement of their damaged property caused by FOG creating _____ can also cost customers thousands of dollars for the repair or replacement of their damaged property.

A. Infiltration
B. Sewer backup(s)
C. Exfiltration
D. None of the above

Controlling FOG discharges

328. According to the text, FOG wastes are generated at _____ as byproducts from food preparation activities.

A. FSEs
B. POTWs
C. Customer service
D. None of the above

329. There are generally two FOG captured on-site broad categories:

A. Yellow grease and grease trap waste
B. White grease and grease waste
C. Soft and Hard
D. None of the above

330. Food service establishments can adopt a variety of _____or install interceptor/collector devices to control and capture the FOG material before discharge to the collection system.

A. Customer service
B. POTWs Rules
C. Best management practices
D. None of the above

Keeping Fats, Oils, and Grease out of the Sewer System

331. Manholes can overflow into parks, yards, streets, and storm drains, allowing FOG to contaminate local waters, including drinking water. Exposure to untreated wastewater is a public-health hazard and is an_____. FOG discharged into septic systems and drain fields can cause malfunctions, resulting in more frequent tank pump-outs and other expenses.

A. EPA violation C. EPA NOV recommendation
B. OSHA violation D. None of the above

332. When FOG is poured down kitchen drains accumulating inside sewer pipes. As the FOG builds up, it restricts the flow in the pipe and can cause_____.

A. Infiltration C. Exfiltration
B. Overflow and clogging D. None of the above

Residential and Commercial Guidelines

333. _____into homes create a health hazard as well as an unpleasant mess that can cost hundreds and sometimes thousands of dollars to clean up.

A. Sewage backflow C. Sewer backups
B. Trash and debris D. None of the above

334. According to the text, serious environmental and health conditions are created and can enter certain parts of the POTW, _____can enter storm drains and flow directly into water bodies and onto beaches creating problems.

A. Sewage backups C. FOG
B. Trash and debris D. None of the above

335. Storm sewers need to be kept clean and car washing can often results in _____ entering the storm sewers.

A. Sewage backups C. Soap and oil residue(s)
B. Health hazard(s) D. None of the above

336. _____ enters into storm sewers from run-off from your sprinkler, watering hose, or from the rain can carry yard waste.

A. Fertilizer C. Petroleum-based oil(s)
B. Negligence D. None of the above

337. Littering can cause _____ to clog catch basins and storm drains.

A. Sewage backups C. Trash and debris
B. Health hazard(s)) D. None of the above

338. One million gallons of water can be easily contaminated by simply poring _____ down a storm drain could contaminate up to

A. A gallon of oil C. Dye
B. FOG D. None of the above

Using best management practices can:

339. _____ is the primary cause of sewer problems; this in turn causes the likelihood of lawsuits by nearby businesses over sewer problems.

A. Backup C. FOG Violation(s)
B. Negligence D. None of the above

340. Workers or the public can be exposed to _____during a problem, it is best to reduce exposure, thus limiting some lawsuits.
A. Backup C. Raw sewage
B. FOG buildup D. None of the above

341. In order to lessen the likelihood of surcharges from the sewer authority or chargebacks for repairs to sewer pipes are most likely attributable to customer's _____.
A. Health hazard(s) C. FOG
B. Soap and oil residue(s D. None of the above

Industrial Uses (Fats, Oils, and Grease)
Proper Disposal Methods:
Ways in which a customer can reduce the amounts of FOG that enters the sewer system is by doing the following:

342. Properly maintained and regularly cleaned_____, on a regular basis. (Usually every 6 months they should be pumped out).
A. Grease interceptors or traps C. Tallow bins
B. Infiltration row D. None of the above

Inspection Checklists
343. _____who adopt FOG reduction activities, as part of their CMOM program activities are likely to reduce the occurrence of sewer overflows and improve their operations and customer service.
A. Customer service C. Collection system owners or operators
B. EPA D. None of the above

344. EPA identified typical numeric local limits controlling oil and grease in the range of _____mg/L to _____ mg/L with 100 mg/L as the most common reported numeric pretreatment limit.
A. 500 to 750 C. 50 to 450
B. 10 to 100 D. None of the above

345. Controlling FOG discharges will help _____ prevent blockages that affect CSOs and SSOs, which cause public health and water quality problems.
A. POTWs C. Pretreatment Program regulations
B. FSEs D. None of the above

346. Controlling FOG discharges from FSEs is an essential element in controlling CSOs and SSOs and ensuring the proper operations for many _____.
A. POTWs C. Pretreatment Program regulations
B. FSEs D. None of the above

347. _____provides regulatory tools and authority to state and local POTW pretreatment programs for eliminating pollutant discharges that cause interference at POTWs, including interference caused by the discharge of Fats, Oils, and Grease (FOG) from food service establishments (FSE).
A. POTWs C. The National Pretreatment Program
B. FSEs D. None of the above

pH Section

348. Pure water has a pH very close to?
A. 7 C. 7.7
B. 7.5 D. None of the Above

349. _____ are determined using a concentration cell with transference, by measuring the potential difference between a hydrogen electrode and a standard electrode such as the silver chloride electrode.
A. Primary pH standard values C. pH measurement(s)
B. Alkalinity D. None of the Above

350. Mathematically, pH is the negative logarithm of the activity of the (solvated) hydronium ion, more often expressed as the measure of the?
A. Electron concentration C. Hydronium ion concentration
B. Alkalinity concentration D. None of the Above

Pumps and Lift Stations Section 50-60 QUESTIONS

351. Pumping Station is a relatively large sewage pumping installation designed not only to lift sewage to a higher elevation, but also to convey it through force mains to gravity flow points located relatively long distances from the?
A. Submersible pump(s) C. Pumping Station
B. Dry well D. None of the above

Lift Stations

352. Which of the following are designed to operate continuously to keep sewerage from backing up through the system?
A. Lift Station C. Submersible pump(s)
B. Dry well D. None of the above

353. Which of the following identifies potential problems instantaneously and take the proper steps to rectify the situation before it becomes a public health risk?
A. Telemetry E. Pumping valve
B. Checker D. None of the above

A Lift Station contains 4 main Components:

354. A wet well - usually _____+ ft. in depth and _____ ft. in diameter - that houses two submersible pumps of varying horsepower, discharging piping and floats that operate the pumps and keep a set level in the well.
A. 8 & 15 C. 4 & 15
B. 15 & 8 D. None of the above

355. Which of the following houses the piping and valves that prevent backflow in the station, and can lock connection used to bypass the submersibles in an emergency situation?
A. Pumping station panel C. Supervisory panel
B. Dry well D. None of the above

356. A “Log Book” or “Station Book” which contains the records and maps of the?
A. Lift Station’s area C. Pumping Station location
B. Dry well area D. None of the above

Collection Systems, Lift Stations

357. Which of the following are often installed in an enclosed structure?
A. Lift station equipment and systems C. Submersible station(s)
B. Key elements of dry well D. None of the above

358. Centrifugal pumps are commonly used in?
A. Wet-well C. Pump station control
B. Lift station(s) D. None of the above

359. A more sophisticated control operation involves the use of?
A. Squirrel motors C. Variable speed drives
B. Non-adjustable speed drives D. None of the above

360. Which of the following houses pumps and valves are housed in a pump room (dry pit or dry-well), that are easily accessible?
A. Dry-well lift stations C. Trapped air column, or bubbler system
B. Submersible lift station(s) D. None of the above

Advantages

361. Which of the following are used to reduce the capital cost of sewer system construction?
A. Wet-well C. Pump station control
B. Lift station(s) D. None of the above

362. Which of the following size is dependent on the minimum pipe slope and flow?
A. Lift station configuration C. Wet-well maximum detention time
B. Gravity sewer lines D. None of the above

Disadvantages

363. Which of the following also require a significant amount of power, are sometimes expensive to upgrade, and may create public concerns and negative public reaction?
A. Gravity wastewater conveyance C. Dry well
B. Lift station(s) D. None of the above

364. Which of the following can be eliminated or reduced by selecting alternative sewer routes or extending a gravity sewer using direction drilling or other state-of-the-art deep excavation methods?
A. Gravity sewer C. Gravity wastewater conveyance
B. Wastewater pumping D. None of the above

Wet-Well

365. Which of the following depends on the type of lift station configuration and the type of pump controls?
A. Lift station configuration C. Wet-well maximum detention time
B. Wet-well design D. None of the above

366. Wet-wells are typically designed large enough to prevent rapid pump cycling but small enough to prevent a long detention time and associated?
A. Wastewater quality C. Drainage
B. Odor release D. None of the above

367. Which of the following maximum detention time in constant speed pumps is typically 20 to 30 minutes?
A. Lift station pump C. Wet-well
B. Dry well D. None of the above

Wastewater Pumps
368. Large lift stations, the size and number of pumps should be selected so that the range of this _____ can be met without starting and stopping pumps too frequently and without excessive wet-well storage.
A. Head-losses C. Influent flow rates
B. Head capacity D. None of the above

Confined Space Section

Definitions
Confined space:
369. A confined space is large enough or so configured that an employee can _____.
A. Have sufficient oxygen C. Recognize serious safety or health hazards
B. Bodily enter and perform work D. None of the above

370. A confined space has limited or restricted means for _____.
A. An internal configuration C. Hazardous atmosphere
B. Entry or exit D. None of the above

371. 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 which slopes downward and tapers to a smaller cross-section.
A. An entrant C. An internal configuration
B. Hazardous atmosphere D. None of the above

372. A permit required confined space (permit space) contains any other recognized serious safety or _____.
A. Engulfing problems C. Health hazard
B. Strange atmospheres D. None of the above

373. Each _____ must be marked "Confined Space - Entry Permit Required".
A. Permit-Required Confined Space C. Entry or exit
B. Hazardous atmosphere D. None of the above

Confined Space Hazards
374. Fatalities and injuries constantly occur among construction workers who are required to enter _____.
A. An internal configuration C. Confined spaces
B. Hazardous atmosphere D. None of the above

375. Workers encounter both inherent and _____ within confined workspaces.
A. An internal configuration C. Hazardous atmosphere
B. Induced hazards D. None of the above

Inherent Hazards

376. _____ 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. Hazardous atmospheres
C. Recognized serious safety or health hazards
D. None of the above

Induced Hazards

377. _____ 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

378. Confined workspaces in construction contain _____.

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

Vaults

379. 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

380. 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

381. _____ 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

Unusual Conditions

Confined Space within a Confined Space

382. 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

383. 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

Entry Attendants

384. A responsibility of the entry attendant is to be aware of _____ of hazard exposure on entrants.

A. The attendants' primary duty
B. Worker training
C. Possible behavioral effects
D. None of the above

385. A responsibility of the entry attendant is to continuously maintain an accurate count of entrants in the permit space and ensure a means to _____.

A. Timely complete the work
B. Add workers when needed
C. Accurately identify authorized entrants
D. None of the above

Special Considerations During A Permit Required Entry

386. If the _____ leave the confined space for any significant period of time, the atmosphere of the confined space must be retested before the workers are allowed to reenter the confined space.

A. Workers
B. Attendants
C. Unauthorized persons
D. None of the above

Unauthorized Persons

387. Actions must be taken when _____ approach or enter a permit space while entry is under way.

A. Authorized workers
B. Rescue Workers
C. Unauthorized persons
D. None of the above

388. _____ must be warned to stay away from the permit space,

A. Authorized workers
B. Unauthorized persons
C. Entrants
D. None of the above

389. If _____ have entered the space, they must be advised to exit immediately.

A. Authorized workers
B. Entrants
C. Unauthorized persons
D. None of the above

Entrants

390. According to the text, all _____ must be authorized by the entry supervisor to enter permit spaces, have received the required training, have used the proper equipment, and observed the entry procedures and permit requirements

A. Workers
B. Entrants
C. Unauthorized persons
D. None of the above

Excavation and Trenching Section

391. According to the text, the _____ was revised because excavating is the most dangerous of all construction operations.

A. Competent rule
B. OSHA excavation standard
C. Emergency rule
D. None of the above

392. OSHA also revised the _____ to clarify the requirements.

A. Competent rule
B. Existing standard
C. Protective equipment standard
D. None of the above

393. The performance criteria in the new standard provides employers with options when classifying soil and when selecting methods to protect the _____ from cave-ins.
A. Competent person C. Construction equipment
B. Employee D. None of the above

394. Although employers have options when meeting some of the requirements, _____ must realize that the employee must be protected at all times.
A. Competent persons C. Contractors
B. Employers D. None of the above

Competent Person
395. Competent person means one who is capable of identifying existing hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees. The _____ has authorization to take prompt corrective measures to eliminate identified hazards.
A. Competent person C. Watchman
B. Contractor D. None of the above

396. A _____ must have specific training in and be knowledgeable about soils analysis, the use of protective systems and the requirements of 29 CFR Part 1926.650-652 Subpart P.
A. Competent person C. Watchman
B. Contractor D. None of the above

Competent Person Duties
397. The competent person performs daily inspections of the protective equipment, _____, safety equipment, and adjacent areas.
A. Work progress C. Trench conditions
B. Construction Crew D. None of the above

398. The competent person shall make _____ prior to the start of work and as needed throughout the shift.
A. Personnel assignments C. Inspections
B. Training available D. None of the above

399. The competent person shall make _____ after every rainstorm or other hazard occurrence.
A. Inspections C. Protective equipment available
B. Training available D. None of the above

400. The air shall be tested in excavations where _____ exist, or could be reasonably expected to exist.
A. Limited visibilities C. Oxygen deficiency or gaseous conditions
B. Employees D. None of the above