

Practice Exams Collection Grade I

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any answers provided herein.*

GENERAL

1. A separate sewer system is a system in which
 - A. Sewers are laid 10 or more feet from water mains
 - B. Storm water is carried in a system different than that carrying wastewater
 - C. The business section of the town has special type sewers
 - D. The industrial wastes are separated from the domestic wastes

2. Each 100 gallons of groundwater infiltration per day into a sanitary sewer system reduces the usable capacity of the system by about
 - A. 1 person
 - B. 3 persons
 - C. 5 persons
 - D. 10 persons
 - E. 15 persons

3. Bacteria that produce diseases are known as
 - A. Aerobic bacteria
 - B. Anaerobic bacteria
 - C. Larvae
 - D. Pathogens

4. One waterborne disease believed to be caused by a virus is
 - A. Cholera
 - B. Dysentery
 - C. Hepatitis
 - D. Tuberculosis
 - E. Typhoid fever

5. Which of the following chemical substances is most likely to cause corrosion or deterioration of metal and concrete surfaces?
 - A. Carbon dioxide
 - B. Ethanol
 - C. Hydrogen sulfide
 - D. Methane
 - E. Nitrogen gas

6. According to OSHA, which of the following oxygen-in-air concentration is the lowest safe concentration for humans to breathe in order to avoid the hazard of oxygen deficiency?
 - A. 7.5% oxygen
 - B. 19.5% oxygen
 - C. 21% oxygen
 - D. 33% oxygen
 - E. 55% oxygen

7. Which of the following is a group of hazardous gases or vapors that might be found in sewers?
- Ammonium sulfate, nitrogen and oxygen
 - Hydrogen sulfide, gasoline vapor and methane
 - Hydrogen sulfide, oxygen and nitrogen
 - Methane, sodium chloride and nitrate
 - Oxygen, nitrogen and carbon dioxide
8. Which of the following problems is/are caused by hydrogen sulfide gas?
- Corrosion of sewers, structures and equipment
 - High pH values
 - Killing algae
 - Killing bacteria
9. Methane gas in sewer systems is dangerous because it
- Can be explosive
 - Is corrosive
 - Is extremely irritating to the eyes
 - Is heavier than air
10. Any one of the following gases may be present in a manhole or similar structure. Which one is most toxic to humans when it is inhaled?
- Carbon dioxide
 - Hydrogen sulfide
 - Methane
 - Nitrogen
11. At the same barometric pressure, the dissolved oxygen in cold water tends to be _____ the dissolved oxygen in warm water.
- Less than
 - More than
 - The same as
12. Which of the following is an odorous gas produced by anaerobic decomposition?
- CO₂
 - H₂S *Hydrogen Sulfide*
 - NO₂
 - NO₃
 - SO₄
13. The BTU is a physical unit of measurement equal to
- A "Bacteria Turbidity Unit" or the amount of turbidity observed when a culture of E. Coli has a population of one million organisms per liter
 - The amount of energy necessary to raise the temperature of one kilogram of water by one degree Celsius
 - The amount of energy necessary to stop or 'brake' a ton unit moving 1.0 ft/sec in one foot of travel
 - The amount of heat necessary to convert (melt) one ton of ice at 32^oF to water at 32^oF
 - The amount of heat necessary to raise the temperature of one pound of water by one degree Fahrenheit

14. The pH of wastewater

- A. Increases as acid concentration increases
- ~~B. Is always increased when wastewater first becomes septic~~
- ~~C. Is measured on a scale of 0 to 14~~
- D. Is measured on a scale of 0 to 100 mg/l
- E. None of the above

15. Which of the following situations or conditions are likely to have been caused by biological activity that is prompted by long, sluggish flow in flat-grade sewer lines?

- A. Concrete and metal corrosion
- B. Oxygen deficiency in the air in manholes, sewers, or wet wells
- C. Septic wastewater odors
- D. Toxic gas production
- ~~E. All of the above~~

16. Which of the following is a major source for the formation of hydrogen sulfide?

- A. Carbonaceous material
- B. Nitrogenous matter
- ~~C. Sulfur compounds~~

17. One gallon of gasoline completely vaporized produces how many cubic feet of vapor at ordinary temperatures and pressures?

- A. 16 cubic feet
- B. 19 cubic feet
- C. 23 cubic feet
- ~~D. 32 cubic feet~~

18. Sand, silt and grit are mainly composed of _____ matter.

- A. Colloidal
- ~~B. Inorganic~~
- C. Organic
- D. Volatile

19. Organic solids in wastewater are

- ~~A. Generally of animal and vegetable origin~~
- B. Inert and not subject to decay
- C. Mostly dissolved solids
- D. Mostly settleable solids

20. "BOD" is a term that refers to the

- A. Oxygen demand in milliliters per hour per square meter of lagoon surface during the aerobic phase of metabolism
- B. Oxygen required to neutralize the effects of anaerobic organisms in wastewater effluents
- ~~C. Oxygen required to stabilize the decomposable organic matter in a wastewater sample by bacterial action~~
- D. Phase of the nitrogen cycle known as anabolism or synthesis

21. The major ingredient of domestic wastewater is

- ~~A. Dissolved solids~~
- B. Grease
- C. Suspended solids
- D. Water

22. Solids in wastewater have an average specific gravity of 1.20, which means they are

- A. 1.2% heavier than water
- B. 12% heavier than water
- C. 20% heavier than water
- D. 2% lighter than water
- E. 20% lighter than water

23. Which one of the following statements is not indicative of fresh wastewater?
Fresh wastewater

- A. Contains dissolved oxygen from the water supply
- B. Is being decomposed by facultative bacteria
- C. Is the first stage after waste solids have been added to water
- D. Is grayish in color and has a musty, rotten egg odor
- E. Is turbid with solids in suspension

24. All of the substances listed below may be found in wastewater. Which one of the following is not a gas?

- A. Carbon dioxide
- B. Chloride
- C. Hydrogen sulfide
- D. Methane
- E. Nitrogen

25. Wastewater in which the solids have been decomposed to relatively inert solids is called

- A. Fresh
- B. Inorganic
- C. Septic
- D. Stable
- E. Stale

26. Which of the following are factors that determine the amount of hydrogen sulfide produced in a sewer?

- A. Anaerobic conditions
- B. Flow velocity
- C. pH
- D. Temperature of wastewater
- E. All of the above

27. Which one of the following is not normally associated with wastewater?

- A. CH_4 , methane
- B. CO_2 , carbon dioxide
- C. H_2O , water
- D. H_2S , hydrogen sulfide
- E. Na_2SiF_6 , sodium silico fluoride

28. The most important reason for washing your hands thoroughly after taking a wastewater sample to be used in determining the BOD is to

- A. Avoid being infected by pathogenic bacteria
- B. Avoid contaminating the BOD bottles
- C. Avoid smudging the BOD bottles which could interfere with the light getting into the bottle, thereby inhibiting the algae from growing
- D. Get the slime off your hands so you won't accidentally drop any glassware
- E. Keep from transferring wastes on your hands to your clothes

29. A flow of 1400 gpm is approximately the same as

- A. 0.33 MGD
- B. 0.5 MGD
- C. 0.75 MGD
- D. 1 MGD
- E. 2 MGD

30. In order to rebuild a manhole, it will be necessary to remove the asphalt paving from a 35-foot diameter circle in a street. The pavement area involved is

- A. 208.2 square feet
- B. 240.5 square feet
- C. 962.1 square feet
- D. 1225 square feet
- E. 3142 square feet

31. A pump operating at the rated discharge of 120 gallons per minute will fill a 3600 gallon tank truck in

- A. 15 minutes
- B. 30 minutes
- C. 45 minutes
- D. 60 minutes
- E. 90 minutes

32. A slug of dye was dumped into a sewer manhole. At one minute and 15 seconds later, the dye showed up at a manhole 268 feet downstream along the sewer line. The approximate average wastewater velocity between these manholes is

- A. 0.28 feet/second
- B. 3.57 feet/second
- C. 28.0 feet/second
- D. 3.57 feet/second
- E. 357 feet/second

33. A 10-inch sewer line to a wastewater treatment plant is 4 miles long. If the wastewater is flowing at 2 fps, approximately how long will it take for the wastewater to reach the plant?
- A. 1 hour
 - B. 2 hours
 - C. 3 hours
 - D. 4 hours
 - E. 5 hours
34. Which one of the terms below is not in the metric system?
- A. Cubic centimeter
 - B. Grain
 - C. Kilowatt
 - D. Meter
 - E. Milliliter
35. A flow rate of 1200 gpm is equal to
- A. 0.65 cu. meters/day
 - B. 220 cu. meters/day
 - C. 2210 cu. meters/day
 - D. 6540 cu. meters/day
 - E. 14,400 cu. meters/day
36. A temperature reading of 35°C would be equal to _____ on the Fahrenheit scale
- A. 37.2°F
 - B. 56.6°F
 - C. 67°F
 - D. 95°F
 - E. 120.6°F
37. Five milligrams per liter equals _____ parts per million.
- A. 2.5
 - B. 5.0
 - C. 10
 - D. 50
38. A pH reading of 6.0 in raw wastewater indicates the sampling is
- A. Acid
 - B. Alkaline
 - C. Neutral
39. The letters or units "GPM" appearing on a flow rate indicator in a wastewater pumping station means
- A. Gallons per man
 - B. Gallons per manhour
 - C. Gallons per mile of sewer line
 - D. Gallons per minute

40. A conversion factor for power is

- A. 550 BTU/kilowatt
- B. 550 ft. lbs./horsepower-hour
- C. 746 horsepower/day
- D. 746 watts/horsepower
- E. 33,000 ft. lbs/horsepower-hour

41. The pressure in force mains is commonly measured in

- A. BTU
- B. MGD
- C. ml/l
- D. psi
- E. TDH

42. Velocity of flow in sewers is usually expressed in terms of

- A. Feet per second
- B. Gallons per minute
- C. Liters per foot
- D. Milligrams per liter
- E. Square feet

43. A 15-inch diameter sewer is flowing full and carrying a flow of 2.7 MGD. The wastewater velocity (average) should be

- A. 3.4 ft/sec.
- B. 5.5 ft/sec
- C. 13.6 ft/sec
- D. 25.4 ft/sec
- E. 54.4 ft/sec

44. A centrifugal pump is pumping 200 gpm against a 40-foot total pumping head. The output power of the pump is about

- A. 0.5 horsepower
- B. 2 horsepower
- C. 15 horsepower
- D. 121 horsepower
- E. 908 horsepower

45. A new manhole has been installed 320 feet from an existing manhole. How far would this new manhole be located from the old one on a map with a scale of 1 inch equals 50 feet?

- A. 3 1/8 inches
- B. 3.2 inches
- C. 6.4 inches
- D. 3 1/8 inches
- E. 6.4 feet

46. A grade which has a rise of 2 feet in 200 feet is a

- A. 0.01% grade
- ~~B. 0.1% grade~~
- C. 1.0% grade
- D. 2.0% grade
- E. 10.0% grade

47. A permanent point of known elevation is called a

- A. Backsight
- ~~B. Benchmark~~
- C. Foresight
- D. Hindsight
- E. Turning point

48. The invert elevation of a sewer refers to the elevation of the

- A. Center line of the sewer
- ~~B. Center of the bottom on the inside~~
- C. Center of the bottom on the outside
- D. Center of the top on the inside
- E. Center of the top on the outside

49. Which of the following are standard parts of a wastewater collection system?

- A. Lift stations
- B. Inverted siphons
- C. Manholes
- D. Sewers
- E. All of the above

50. Which of the following are sources for wastewater carried by collection systems?

- A. Homes
- B. Infiltration
- C. Inflow
- D. Industry
- E. All of the above

GENERAL - ANSWERS

1. B
2. A
3. D
4. C
5. C
6. B
7. B
8. A
9. A
10. B
11. B
12. B
13. E
14. C
15. E
16. C
17. D
18. B
19. A
20. C
21. E
22. C
23. D
24. B
25. D
26. E
27. E
28. A
29. E
30. C
31. B
32. B
33. C
34. B
35. D
36. D
37. B
38. A
39. D
40. D
41. D
42. A
43. A
44. B
45. C
46. C
47. B
48. B
49. E
50. E

15?

COLLECTION UNIT AND SYSTEM CONTROL

1. The term "drop manhole" refers to
 - A. A manhole that has settled after the influent and effluent sewer lines were installed and bedded
 - B. A manhole with a central floor depression to catch or trap rocks
 - C. A manhole with a drop forged manhole cover rather than of cast iron or aluminum alloy
 - D. A manhole with an inward-retracting manhole cover
 - E. A special manhole that provides for a sudden planned drop between the inlet sewer and outlet invert of the manhole

2. In all but very unusual conditions, the minimum velocity at average flow in a sanitary sewer should be about
 - A. 0.1 ft/sec
 - B. 0.75 ft/sec
 - C. 2.0 ft/sec
 - D. 12 ft/sec
 - E. 20 ft/sec

3. A long run of pressure sewer or force main must
 - A. Have air relief valves at high points
 - B. Have manholes every 300 feet
 - C. Have no bends
 - D. Not go downhill

4. The outfall sewer is
 - A. A sewer line which drops to a lower level in a manhole
 - B. A submain
 - C. The line leaving the plant
 - D. The main line which carries all the wastewater to the plant
 - E. The same as a lateral sewer

5. If a sewer is to have a slope of 0.004, it means there will be 0.4 feet of fall per _____ of sewer length.
 - A. 1 foot
 - B. 10 feet
 - C. 40 feet
 - D. 100 feet
 - E. 1000 feet

6. Which of the following is not a sewer flow regulator?
 - A. Leaping weir
 - B. Side or spillway weir
 - C. Tipping gate regulator
 - D. Water valve

7. Which one(s) of the following may be used to estimate the velocity of water flowing in a sewer?
- A. Driving between manholes and reading speedometer in pickup truck
 - B. Measuring the time it takes for dye to be carried by the wastewater between two manholes
 - C. Measuring the time it takes to run between two manholes
 - D. All of the above
 - E. None of the above
8. The condition of a wastewater collection system can be determined by which one(s) of the following?
- A. Looking in manholes
 - B. Televising the lines
 - C. Watching the flows
 - D. All of the above
9. A bulkhead used in sewer maintenance is a
- A. Temporary cover for an excavation
 - B. Temporary obstruction used to stop or divide the flow of wastewater
 - C. Wall to hold fill
10. Emergency stoppages may be cleared by use of which one(s) of the following?
- A. Hand rods
 - B. High velocity cleaners
 - C. Power rodders
 - D. All of the above
11. Which one(s) of the following can cause stoppages in sewers?
- A. Adverse hydraulic conditions
 - B. Grease
 - C. Roots
 - D. All of the above
12. What items should you consider when selecting a solution to clear a stoppage in a sewer?
- A. Identify cause of stoppage
 - B. Tools and equipment available
 - C. Urgency of clearing the stoppage
 - D. All of the above
13. Types of defects that cause problems in wastewater collection systems include
- A. Improper grade of sewers
 - B. Poorly constructed joints
 - C. Structural failure of manholes
 - D. All of the above
14. Check the condition(s) under which mainline sewer repairs should be made
- A. There are continuous stoppages
 - B. There is a permanent stoppage
 - C. There is considerable pipe deterioration
 - D. All of the above

- e(s)
16. Traffic can be routed around a work site by the use of which one(s) of the following
- A. Barricades
 - B. Hand signals
 - C. Traffic cones
 - D. Warning signs
 - E. All of the above
17. Which of the following is (are) correct statement(s) about plan/profile drawings for a gravity-sewer construction project?
- A. Each profile section should indicate direction of sewer alignment by a "North" arrow
 - B. Station numbering starts at the upstream end of a sewer and increases as you progress downstream
 - C. The actual location of each pipe joint is usually shown on the profile drawing and indicated by a station number of the plan drawing
 - D. The registered name of eligible bidding contractor firms is usually listed on each sheet of drawings but the mailing address is given on the cover sheet only
 - E. The vertical scale is usually different than the horizontal scale on plan/profile drawings
18. Which of the following is not a type of shore used in wastewater collection systems
- A. Air shore
 - B. Hydraulic shore
 - C. Screw jacks
 - D. Solid sheeting
 - E. Water shore
- in
19. Newly constructed collection systems must be inspected to accomplish which one(s) of the following points?
- A. Be sure agency receives a functioning system from the contractor
 - B. Determine if contractor has complied with plans and specifications
 - C. Insure the system will work properly before it conveys wastewater
 - D. Identify sources of infiltration
 - E. All of the above
- e

20. Which of the following are important components of good sewer construction?

- A. Alignment
- B. Fill material
- C. Grade or slope
- D. Trench compaction
- E. All of the above

21. What factors should be considered when providing trench shoring?

- A. Size and shape of trench
- B. Soil structure
- C. Structures or sources of vibration near trenches
- D. All of the above

22. Indicate the invert grade at station 0+50 for a sewer laid on a 0.5% grade with the following data:

<u>Station</u>	<u>Stake Elevation</u>	<u>Invert Grade</u>	<u>Cut</u>
0+00	105.60	100.00	5.60
0+50	106.12		

Indicate the invert grade at station

- A. 99.25
- B. 99.75
- C. 100.25
- D. 100.75
- E. 102.50

23. What is the main reason for preventing cave-ins?

- A. To meet government regulations
- B. To prevent costly delays in the project construction
- C. To prevent injury or loss of life

24. Which of the following describes pipe bedding?

- A. The contact between a pipe and the foundation on which it rests
- B. The cover over the pipe
- C. The deposits on the inside of the pipe
- D. The material flowing in the pipe
- E. The way the pipe is staked

25. For trenches deeper than 5 feet, the soil must be placed at least _____ feet from the edge of the trench.

- A. 2
- B. 4
- C. 6
- D. 8

26. A manhole bench is

- A. A place to sit
- B. The bottom of the manhole channel
- C. The nearly level area at the bottom of a manhole around the channel
- D. The upper lip of the manhole which supports the manhole cover and frame

27. A drop manhole is needed when

- A. Laterals join a deeper sewer
- B. Sub-mains change direction
- C. Wastewater flow might drop below 2 fps

28. Which of the following is not a section of a precast manhole?

- A. Base
- B. Cone
- C. Header
- D. Riser

29. The most effective means of reducing atmospheric hazards in a manhole is through the use of

- A. Enzymes
- B. Explosimeters
- C. Portable blowers

30. Manhole A is at station 3+75.5 and Manhole B is at station 6+21.7. If the upstream elevation at MH A is 423.21 feet and the sewer is to have a slope of 0.0036, then the downstream elevation of the invert at MH B should be

- A. 414.35 feet
- B. 422.32 feet
- C. 423.21 feet
- D. 424.10 feet
- E. 432.07 feet

31. Indicate the cut at station 0+50 for a sewer laid on a 0.5% grade with the following data:

<u>Station</u>	<u>Stake Elevation</u>	<u>Invert Grade</u>	<u>Cut</u>
0+00	105.60	100.00	5.60
0+50	106.12		

Indicate the cut at station

- A. 5.33
- B. 5.38
- C. 5.82
- D. 5.87
- E. 8.75

32. Which one of the following is the best way to minimize the amount of solids settling in the bottom of inverted siphons?
- A. Installation of a drop manhole on the discharge end of the siphon
 - B. Installation of a junction structure in the manhole immediately upstream of the siphon
 - C. Installation of a small portable water pump to keep adequate flow through the siphon during low-flow periods
 - D. Installation of several siphon pipes of different sizes which are selected based on the flow
 - E. Periodic rodding of the siphon line
33. The term "inverted siphon" refers to a
- A. Method to increase wastewater velocity by 35 percent
 - B. Section of corrugated rather than smooth pipe used to cause ripples in the wastewater flow
 - C. Section of special sewer to accommodate a short distance lowering of sewer elevation such as a river or freeway crossing
 - D. Siphon that goes uphill rather than downhill
 - E. Trestle-mounted sewer more than 4 feet above ground instead of the usual below ground location
34. A separate sewer system is a system in which
- A. Sewers are laid 10 or more feet from water mains
 - B. Storm water is carried in a system different than that carrying wastewater
 - C. The business section of the town has special type sewers
 - D. The industrial wastes are separated from the domestic wastes
35. Main line disconnects for underground lift stations should be located
- A. At a remote location for control by the supervisor
 - B. At the nearest home so it can easily be found
 - C. At the switchboard of the power company
 - D. Just inside the station entrance to reduce vandalism
 - E. Outside of the fence, but near the lift station
36. Which of the following is not a type or class of pump controls for wastewater lift stations?
- A. Bubbler tubes with back-pressure switches
 - B. Floats, counterweights, pulleys and mercury switches
 - C. Kennison Nozzles
 - D. Low voltage electrodes
 - E. Suspended tipping bulbs with internal mercury switches
37. Which one(s) of the following are factors that determine the location of a lift station?
- A. Access for maintenance
 - B. Depth of excavation
 - C. Costs
 - D. All of the above

38. When operating a wastewater pumping station which has two identical pumps, it is best to adjust the controls so that

- A. One pump stays in operation with the second held in reserve
- B. The pumps alternate in operation
- C. The pumps run on together

39. Which of the following tasks should be done or checked after correcting an alarm situation and before leaving the station?

- A. Be sure alarm condition is cleared from alarm panel
- B. Observe wet well and inflow
- C. Record problem and correction in station book
- D. Secure lift station
- E. All of the above

40. Which of the following chemicals are of benefit for odor control at lift stations?

- A. Hydrochloric acid
- B. Hydrogen peroxide
- C. Hydrogen sulfide
- D. Sulfuric acid

41. Below is a set of data or events, reflecting a problem at a pumping station.

Wet well inlet, dry weather flow
Wet well drops normally, rises faster than normal between pumping cycles
Lead pump cycles on and off at proper water levels faster than normal
Lead pump motor shaft turns backward between pumping cycles
Lead pump check valve lifting arm stays in raised position
Force main pressure bounces erratically between pumping cycles
Electrical controls on automatic

Study the data carefully. Which one of the following is the most probable cause of the problem?

- A. Check valve in lead pump stuck open
- B. Clogged check valve on follow (lag) pump
- C. Lead pump electrical system backwards
- D. Lead pump suction valve clogged

42. Which of the following items should be inspected before a new lift station is put into operation?

- A. Debris in wet well
- B. Valve positions (open or closed)
- C. Wet-well level controllers
- D. All of the above

43. The wet well of a pump station is 5 feet wide by 5 feet long. With only one pump running and discharging 280 gal/min, the wet well level was observed to rise 1 foot in 3 minutes-15 seconds. What was the rate of flow into the wet well?

- A. 69.0 gpm
- B. 211 gpm
- C. 224.8 gpm
- D. 289.2 gpm
- E. 349 gpm

44. The head on a weir should be measured at a distance behind the weir of not less than _____ times the head on the weir.
- A. 1.0
 - B. 1.5
 - C. 2.5
 - D. 3.5
45. Flow measurement charts are
- A. Only used for treatment facilities
 - B. Read immediately
 - C. Useful for comparison to detect inflow
 - D. Useful to detect improper preventive maintenance procedures
46. Which of the following items is/are used to measure flows over weirs?
- A. Staff gage
 - B. Float gage
 - C. Hook gage
 - D. All of the above
47. When measuring flow velocities between manholes using a floating object in a sewer flowing half full, the velocity of the float usually will be
- A. 50% slower than the average velocity of the wastewater
 - B. 10-15% slower than the average velocity of the wastewater
 - C. The average velocity of the wastewater
 - D. 10-15% faster than the average velocity of the wastewater
48. Which one(s) of the following are used to test sewers for leaks?
- A. Air
 - B. Smoke
 - C. Water
 - D. All of the above
49. Which of the following points should be observed during a smoke test?
- A. Building foundations
 - B. Rain gutters
 - C. Yard drains
 - D. All of the above
50. Which of the following would be a probable measure for reducing inflow into an existing sanitary wastewater collection system?
- A. Enforcing ordinances that require roof drains to be discharged into street gutters or to storm drains
 - B. Grouting cracks and joints in sewer lines
 - C. Inserting plastic liners into sewer pipes
 - D. Sewer balling during wet weather
 - E. Using higher pressures in force mains

51. Which one(s) of the following are causes of infiltration?

- A. Cracked pipes
- B. Improper taps
- C. Poor joints
- D. All of the above

52. In sampling for BOD analysis, which of the following would give the most representative results?

- A. A 24-hour composite sample
- B. A grab sample taken at time of high flow
- C. A grab sample taken at time of low flow
- D. A sample made up of three portions taken at 10 PM, 3 AM and 6 AM

53. Samples taken for routine analysis should be preserved by

- A. Boiling
- B. Filtering
- C. Refrigerating
- D. Sterilizing

54. To be most representative, a 24-hour composite sample should be collected in

- A. Equal volumes every 15 minutes
- B. Equal volumes every 2 hours
- C. Flow-proportioned volumes each hour
- D. Flow-proportioned volumes every 4 hours

55. Grab samples are considered to be representative of the

- A. Average daily conditions at the sample location
- B. Average daily conditions in the system
- C. System conditions for two hours before and after the sample was taken
- D. System conditions at the time the sample was taken

56. When evaluating the application of chemicals to a problem in a sewer, remember that the chemicals

- A. Are a permanent solution
- B. Correct the source
- C. Perform the same in the field as in the lab
- D. Require consideration of the safety of the workers and the public

57. Which one(s) of the following chemicals is/are frequently fed into sewers to control hydrogen sulfide problems?

- A. Cadaverine
- B. Hydrogen peroxide
- C. Sodium sulfate
- D. Trinitrotoluene

58. Proper selection and application of chemicals in a wastewater collection system can be helpful to control which one(s) of the following?
- A. Grease
 - B. Rodents
 - C. Roots
 - D. All of the above
59. Which of the following items is of least importance in evaluating the possible application of a chemical for sewer line maintenance problems?
- A. Chlorine demand
 - B. Possible methods of application
 - C. Time of contact required for effectiveness
 - D. Toxicity to bacteria and other aquatic microorganisms at the treatment plant
 - E. Toxicity to workers or to the public
60. Which of the following are used to control odors from sewers?
- A. Balling
 - B. Chlorine
 - C. High velocity cleaner
 - D. All of the above
61. Which of the following is a correct statement about chlorine?
- A. Chlorine gas is about 1/2 as heavy as air
 - B. Chlorine gas is colorless, odorless and nontoxic
 - C. Chlorine gas is heavier than air
 - D. Chlorine gas is insoluble in water
 - E. Chlorine gas will liquify if heated above the boiling point of water
62. How many pounds of gaseous chlorine can be removed from a 150-pound chlorine cylinder per day?
- A. 40 lbs
 - B. 60 lbs
 - C. 80 lbs
 - D. 100 lbs
63. Adding 10 mg/l of chlorine to wastewater at a pumping station is
- A. Likely to cause problems in the operation of the treatment plant
 - B. Not permitted
 - C. Only to be done during rainstorms
 - D. Used for odor control
64. Which of the following is a correct set of characteristics of chlorine as used in pollution control?
- A. Chlorine gas is colorless, flammable and heavier than air
 - B. Chlorine gas is colorless, flammable and lighter than air
 - C. Chlorine gas is greenish-yellow (amber) in color, lighter than air and insoluble in water
 - D. Chlorine gas is greenish-yellow (amber) in color, toxic, lighter than air and non-corrosive
 - E. Chlorine gas is toxic, corrosive and heavier than air

65. Below is a set of data or events, reflecting a problem with the gas chlorinator.

Feed rate low with control valve wide open

Injector vacuum low

Injector vacuum increases when control nearly closed

Which of the following is the most likely problem requiring immediate attention?

- A. Chlorine-pressure relief valve diaphragm ruptured
 - B. Injector clogged
 - C. Injector water supply pressure too low
 - D. Reducing valve clogged
66. If a 3.0 mgd flow of wastewater is to be dosed at a rate of 12 mg/l, what should the chlorinator feed setting be in pounds of chlorine per day?
- A. 15.02 pounds/day
 - B. 36 pounds/day
 - C. 43.2 pounds/day
 - D. 100 pounds/day
 - E. 300 pounds/day
67. A practical method of removing roots in a collection system is to
- A. Apply heavy doses of chemicals
 - B. Excavate
 - C. Use a flexible rod and cutter
 - D. Use an axe or chainsaw
68. Roots may be removed from sewers by use of
- A. Chemicals
 - B. Flushing
 - C. Power rodders
 - D. Pumping
 - E. TV cameras
69. Which of the following is not a true statement about root problems in wastewater collection systems?
- A. Chemical root control is a better long-term solution than power rodding
 - B. Each time a root is cut, it will add a new growth and increase in diameter
 - C. In time, serious root problems can damage pipes and joints
 - D. Power rodding is the best long-term solution for root control problems
70. A sewer is to be filled with a root control solution containing 250 mg/l of a specified chemical. How much of the chemical would be needed for a 265-foot long section of 8-inch diameter sewer?
- A. 0.17 pounds
 - B. 1.44 pounds
 - C. 1.99 pounds
 - D. 2.16 pounds
 - E. 62.4 pounds

71. Which one(s) of the following is/are mechanical means to clean material from sewers?
- A. Cutting
 - B. Pumping
 - C. Sucking
 - D. Sweeping
72. Which of the following are used to remove grease?
- A. Hydraulic agitation
 - B. Mechanical means
 - C. Chemicals
 - D. All of the above
73. Chemicals may be applied to sewers by which of the following techniques?
- A. Flooding
 - B. Foaming
 - C. Spraying
 - D. All of the above
74. Which one of the following is a method of sewer line cleaning using hydraulics?
- A. Chemical addition
 - B. High velocity cleaning machine
 - C. Power bucket machine
 - D. Power rodders
75. Hydraulic sewer-line cleaning methods include
- A. Balling
 - B. Kites
 - C. Poly pigs
 - D. All of the above
76. After a sewer blockage has been cleared by use of rodding, the cleared sewer should be
- A. Allowed to rest
 - B. Checked for proper exfiltration
 - C. Cleaned hydraulically to restore full capacity
 - D. Cleared with a bucket machine
77. In sewer maintenance, what is a pig?
- A. A ball forced through a sewer line
 - B. A power rod
 - C. Any foul smelling equipment
 - D. The hydraulic rodding truck
 - E. The plugs used to stop flows from services

78. You are cleaning a dead-end sewer with a high velocity jet cleaner. Why should you remove the end manhole or clean-out cover?
- A. So the hose can be seen, thus assuring that it has reached the end of the line
 - B. To allow enough air to enter the sewer line for proper ventilation, aeration and odor control
 - C. To gain access to the sewer line so the crew can do a better job
 - D. None of the above
79. One reason for always knowing the location of a cleaning tool as you clean a line is so
- A. The proper charges can be made to adjacent land owners
 - B. The slope of the sewer can be computed and recorded
 - C. The valves inside sewers can be reopened after the line is cleaned
 - D. You can record where line stoppages have occurred
 - E. You can easily resume work if interrupted during the job
80. Flushing is used primarily to remove
- A. Grease
 - B. Grit
 - C. Heavy debris
 - D. Light floatables
 - E. Roots
81. When using a hydraulic sewer-cleaning method, care should be taken
- A. Not to cause flooding in basements and homes
 - B. To always plug the downstream manhole
 - C. To prevent any air gap
 - D. To throttle flows from fire hydrants by using only the hydrant valve
82. The purpose of ribs on the outside of a Wayne Sewer Ball is to
- A. Allow the weight of the ball to be closer to the center of the ball
 - B. Avoid patent infringement that would apply if a non-ribbed ball was used
 - C. Cause jet action to aid in the hydraulic flushing of the sewer line
 - D. Reinforce (strengthen) the ball
 - E. Stabilize the trajectory of the ball on the return pull
83. How can the members of a balling crew effectively communicate with each other?
- A. Hand signals
 - B. Shouting down the sewer
 - C. Telegraph
 - D. Writing
84. All but one of the terms listed below are the common names of various tools used for sewer rodding. Find the one exception.
- A. Lag screw
 - B. Porcupine
 - C. Root saw
 - D. Sand corkscrew
 - E. Square bar corkscrew

85. Which one(s) of the following are basic tools used with power rodders?
- A. Augers
 - B. Corkscrews
 - C. Root saws
 - D. Spring blades
 - E. All of the above
86. When operating a power rodding machine, it is extremely important that you
- A. Avoid rodding in a sewer unless there is a full flow in the sewer line
 - B. Extend the rod to the next manhole before starting to rotate the tool
 - C. Have a district or maintenance supervisor present at all times
 - D. Have the rod moving in or out of the sewer whenever it is rotating
 - E. Never rotate the rod while it is traveling along the length of the sewer
87. If a choice is given to clean roots from an 8-inch sewer line with a rodder,
- A. Don't use the rodder, a high velocity jet machine will wash the roots out better
 - B. First flush the line and then use the rodder
 - C. Start from the upstream manhole with a full-sized root saw and trap the roots downstream
 - D. Use a 4-inch corkscrew going upstream so you don't jam the rodder
88. When a sewer is being rodded to open a stoppage caused by roots, the work is usually started from the
- A. Chimney between manholes
 - B. Dry manhole
 - C. Flooded manhole
89. When using a high velocity cleaning machine, which direction of travel does the nozzle usually go into the sewer?
- A. Does not matter
 - B. Downstream in the sewer
 - C. Upstream in the sewer
90. Which of the following items would be of least importance to record in an operation log for a high velocity hydraulic sewer-cleaning crew?
- A. Distance from manhole to any encountered obstructions
 - B. Number of sewer rods broken each day
 - C. Size and lengths of sewer cleaned each day
 - D. Specific identification of each line cleaned
 - E. Volume of water used
91. High velocity cleaning machines are used to do which of the following?
- A. Clean lines of debris
 - B. Open stoppages
 - C. Remove grease
 - D. Wash manholes
 - E. All of the above

92. When using a high velocity cleaning machine, which direction does the nozzle usually go into the sewer?
- A. Does not matter
 - B. Downstream in the sewer
 - C. Upstream in the sewer
93. Which of the following are appropriate uses of closed-circuit television by wastewater collection system workers?
- A. Correcting or verifying "As-Built" plans
 - B. Evaluating effectiveness of sewer cleaning and clearing techniques
 - C. Identifying causes of stoppages after they have been cleared
 - D. Identifying sources of infiltration
 - E. All of the above
94. Which of the following equipment is not used when grouting or chemically sealing sewers?
- A. Air compressor
 - B. Packer
 - C. Pump
 - D. Slip liner
95. The part of a pipe most vulnerable to corrosion from septic wastewater in a gravity system is the
- A. Bell
 - B. Crown
 - C. Flange bolts
 - D. Invert
96. Which of the following types of sewer pipe materials can be corroded by acids formed from gases found in sewers?
- A. Polyvinylchloride
 - B. Reinforced concrete pipe
 - C. Reinforced plastic mortar pipe
 - D. Vitrified clay pipe
97. When filling the water tank on a high velocity cleaner from a fire hydrant you should
- A. Be certain the fill hose extends well into the tank.
 - B. Be sure there is an air gap between the fill hose and the water level
 - C. Only fill the tank 3/4 full
 - D. Turn the fire hydrant valve half open so there will still be pressure in the main to fight a fire
98. When a water main must be laid under a sewer main, the sewer pipe
- A. Must be lined with epoxy
 - B. Should be cleaned carefully
 - C. Should be replaced with water pipe with pressure tight joints
 - D. Should be taken out while the water main is being installed

99. An air-gap device serves to

- A. Allow storm flows to bypass the sanitary sewers and enter storm water outfalls
- B. Eliminate the need for check valves on the discharge side of lift station pumps
- C. Prevent wastewater from contaminating potable water supplies
- D. Reduce corrosion in long steel sewer lines
- E. Reduce the fouling of floats and chains or electrodes by grease and rags

100. "Cross-connection" is a term used to describe a

- A. Device that connects three inlet lines with one outlet line
- B. Method of cross bracing a vertical rotating shaft
- C. Possible point of contamination of a potable water supply by nonpotable water or other substance
- D. Short between two phases of three-phase power lines

COLLECTION UNIT AND SYSTEM CONTROL ANSWERS

- 1. E
- 2. C
- 3. A
- 4. C
- 5. D
- 6. D
- 7. B
- 8. D
- 9. B
- 10. D
- 11. D
- 12. D
- 13. D
- 14. D

- 16. E
- 17. E
- 18. E
- 19. E
- 20. E
- 21. D
- 22. C
- 23. C
- 24. A
- 25. A
- 26. C
- 27. A
- 28. C
- 29. C
- 30. B
- 31. D
- 32. D
- 33. C
- 34. B
- 35. D
- 36. C
- 37. D
- 38. B
- 39. E
- 40. B
- 41. A
- 42. D
- 43. E
- 44. C
- 45. C
- 46. D
- 47. D
- 48. D
- 49. D
- 50. A

- 51. D
- 52. A
- 53. C
- 54. C
- 55. D
- 56. D
- 57. B
- 58. D
- 59. A
- 60. D
- 61. C
- 62. A
- 63. D
- 64. E
- 65. C
- 66. E
- 67. C
- 68. C
- 69. D
- 70. B
- 71. A
- 72. D
- 73. D
- 74. B
- 75. D
- 76. C
- 77. A
- 78. A
- 79. D
- 80. D
- 81. A
- 82. C
- 83. A
- 84. A
- 85. E
- 86. D
- 87. C
- 88. B
- 89. C
- 90. B
- 91. E
- 92. C
- 93. E
- 94. D
- 95. B
- 96. B
- 97. B
- 98. C
- 99. C
- 100. C

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~~COLLECTION SYSTEM QUIZ LEVEL I~~

1. HYDROGEN SULFIDE GAS SMELLS LIKE
A. DEAD FISH.
B. FLUE GAS.
C. ROTTEN CABBAGE.
D. ROTTEN EGGS.

DABCD S/COL 5-172 & W/COL 4-1

2. WHY ARE GASOLINE AND VOLATILE SOLVENTS OBJECTIONABLE WHEN PRESENT IN A SEWER?
A. THEY PRODUCE AN EXPLOSION HAZARD.
B. THEY TEND TO CAUSE THE SOLIDS TO VAPORIZE.
C. THEY COAGULATE FLOATABLES AND CAUSE STOPPAGES.
D. NONE OF THE ABOVE.

AABCD W/COL 4-2

3. THE FORMULA FOR CALCULATING THE VOLUME (V) OF A WET WELL IS
A. $V = \text{LENGTH} \times \text{WIDTH} \times \text{CROSS SECTION}$
B. $V = \text{WIDTH} \times \text{AREA} \times \text{PERIMETER}$
C. $V = \text{WIDTH} \times \text{HEIGHT} \times \text{DIAMETER}$
D. $V = \text{LENGTH} \times \text{WIDTH} \times \text{DEPTH}$

DABCD S/COL M-36

4. BIOLOGICAL ACTIVITY IN LONG, SLUGGISH FLOW, FLAT-GRADE SEWER LINES WILL LIKELY CAUSE
A. CONCRETE AND METAL CORROSION.
B. OXYGEN DEFICIENCY IN THE AIR IN MANHOLES, SEWERS OR WET WELLS.
C. TOXIC GAS PRODUCTION.
D. ALL OF THE ABOVE.

DABCD S/COL 3-58 TO 3-76

5. TASKS PERFORMED BY A COLLECTION SYSTEM OPERATOR INCLUDE
A. CLEANING LOCAL TREATMENT PLANTS.
B. MAINTAINING COLLECTION SYSTEM EQUIPMENT.
C. MAKING WATER CONNECTIONS.
D. NONE OF THE ABOVE.

BABCD S/COLLECTION CHAPTER 1 W/COL. 4-2

6. ONE CUBIC FOOT PER SECOND FLOW IS EQUAL TO _____ GALLONS PER HOUR.
A. 2794
B. 3600
C. 6000
D. 26,928

DABCD S/COL M-68 PAGE 1

7. ON FLOORS WHERE WATER OR CHEMICAL ARE COMMONLY SPILLED, COVER THE FLOOR WITH
- A. CATWALKS.
 - B. LINOLEUM.
 - C. TILE.
 - D. WOOD.

AABCD WPCF/MOP 8 CHAPTER 3

8. YOU SHOULD NEVER ATTEMPT TO INSTALL, TROUBLESHOOT, MAINTAIN, REPAIR OR REPLACE ELECTRICAL PANELS, CONTROLS, WIRING OR CIRCUITS UNLESS
- A. A MANHOLE IS OVERFLOWING.
 - B. A PUMP IS PLUGGED.
 - C. YOU RECEIVE ODOR COMPLAINTS.
 - D. YOU KNOW WHAT YOU ARE DOING, ARE QUALIFIED, AND ARE AUTHORIZED.

DABCD S/COL 8-VI

9. EMPLOYEE HAZARDS IN COLLECTION SYSTEM OPERATIONS INCLUDE
- A. NOXIOUS OR TOXIC GASES OR VAPORS.
 - B. OXYGEN DEFICIENCY.
 - C. PHYSICAL INJURIES.
 - D. ALL OF THE ABOVE.

DABCD S/COL 9-1 TO 9-6 & W/COL 4-2

10. GPM MEANS GALLONS PER
- A. MILE.
 - B. MILLILITER.
 - C. MINUTE.
 - D. MONTH.

CABCD S/COL M-68

11. LEAKAGE OF SEAL WATER AROUND THE PACKING ON A CENTRIFUGAL PUMP IS REQUIRED BECAUSE IT ACTS AS A(N)
- A. ADHESIVE.
 - B. COOLANT.
 - C. LUBRICANT.
 - D. VAPOR BARRIER.

CABCD S/COL 8-58 & W/PUMP 2-6

12. WHAT MUST BE CHECKED BEFORE ENTERING A MANHOLE?
- A. ATMOSPHERE IN MANHOLE.
 - B. EQUIPMENT.
 - C. PROPER BARRICADES OR WARNING DEVICES AROUND MANHOLE.
 - D. ALL OF THE ABOVE.

DABCD S/COL CHAPTER 9 & W/COL 4-3

13. IN SEWER MAINTENANCE, WHAT IS A PIG?

- A. A BALL FORCED THROUGH A SEWER LINE.
- B. A POWER ROD.
- C. ANY FOUL SMELLING EQUIPMENT.
- D. THE HYDRAULIC RODDING TRUCK.

AABCD S/COL 5-77

14. THE PURPOSE OF RIBS ON THE OUTSIDE OF A WAYNE SEWER BALL IS TO
A. ALLOW THE BALL'S WEIGHT TO BE CLOSER TO THE BALL'S CENTER.
B. AVOID PATENT INFRINGEMENT THAT WOULD APPLY IF A NON-RIBBED BALL WAS USED.

- C. CAUSE JET ACTION TO AID IN THE HYDRAULIC FLUSHING OF THE SEWER LINE.
- D. REINFORCE (STRENGTHEN) THE BALL.

CABCD S/COL 5-77 & W/COL 5-2

15. A PUMP IS DELIVERING AT LESS THAN THE EXPECTED RATE OF DISCHARGE. WHAT WILL NOT CAUSE THIS TO HAPPEN?

- A. CHECK VALVE STUCK OR CLOGGED.
- B. DISCHARGE HEAD TOO LOW.
- C. IMPELLER CLOGGED.
- D. PUMP NOT PRIMED.

BABCD S/COL CHAPTER 8 & W/PUMP 2-132

16. WEARING RINGS ARE INSTALLED IN A PUMP TO
A. CONCENTRATE WEAR ON AN ECONOMICALLY REPLACEABLE PART.
B. HOLD THE SHAFT IN POSITION.
C. KEEP THE IMPELLER IN PLACE.
D. WEAR OUT RINGS INSTEAD OF SLEEVES.

AABCD W/PUMP 2-21 & S/COL 8-87

17. A LANTERN RING IS A
A. METAL RING USED FOR LOWERING AN EXPLOSIVE-GAS DETECTOR CANDLE INTO MANHOLES AND WET WELLS.

- B. SHAFT COUPLING THAT HAS BEEN COMPLETELY WORN THROUGH IN SPOTS OR THAT HAS "DAYLIGHTED."
- C. SPACER RING IN A PUMP PACKING GLAND TO IMPROVE SEAL WATER DISTRIBUTION.
- D. TYPE OF COUPLING FOR JOINING PIPES.

CABCD S/COL CHAPTER 8

18. MECHANICAL VENTILATION OF A LIFT STATION IS REQUIRED TO
A. LOWER TEMPERATURES TO REDUCE PRODUCTION OF HYDROGEN SULFIDE.
B. REDUCE CHLORINE DEMAND.
C. REDUCE CORROSION.
D. INCREASE D.O. IN RAW WASTEWATER.

CABCD S/COL 7-36

19. TO PROPERLY OPERATE A POWER RODDER.
A. DO NOT JAM RODDING TOOL INTO AN OBSTRUCTION.
B. DO NOT ROTATE THE ROD IN ONE POSITION FOR EXTENDED PERIODS.
C. IF A ROD SHOULD BREAK, MAKE SURE THAT THE TORQUE IS OUT OF IT BEFORE HANDLING IT.
D. ALL OF THE ABOVE.

DABCD W/COL 5-11 & S/COL 5-101

20. CHECK VALVES ARE USED IN CONNECTION WITH CENTRIFUGAL PUMPS IN ORDER TO
A. EQUALIZE THE PRESSURE ON BOTH SIDES OF THE IMPELLER.
B. PREVENT WATER IN THE SUCTION LINE FROM FLOWING BACK INTO THE RESERVOIR.
C. PREVENT WATER IN THE DISCHARGE LINE FROM FLOWING BACK.
D. REGULATE THE RATE OF WATER FLOW THROUGH THE DISCHARGE PIPE.

CABCD S/COL 4-14

21. WHILE WORKING IN A MANHOLE OR A CONFINED AREA, AND YOU START FEELING SICK YOU SHOULD
A. GET OUT OF THE MANHOLE.
B. MEASURE THE OXYGEN LEVEL.
C. MEASURE THE LEVEL OF EXPLOSIVE GASES.
D. MEASURE LEVEL OF TOXIC GASES.

AABCD S/COL 9-1

22. WHAT INFORMATION MUST BE ON A WARNING TAG ATTACHED TO A SWITCH THAT HAS BEEN LOCKED OUT?
A. DIRECTIONS FOR REMOVING TAG.
B. NAME OF NEAREST PHYSICIAN TO CALL IN CASE OF AN EMERGENCY.
C. SIGNATURE OF PERSON WHO LOCKED OUT SWITCH AND WHO IS THE ONLY PERSON AUTHORIZED TO REMOVE TAG.
D. TIME TO UNLOCK THE SWITCH.

CABCD S/COL 9-51

23. ENCLOSED, OPEN AND SEMI-CLOSED ARE TERMS USED FOR DESIGNATION AND SELECTION OF
A. IMPELLERS.
B. LANTERN RINGS.
C. SLEEVES.
D. STUFFING BOXES.

AABCD W/PUMP 2-29 & S/COL 8-83

24. WHAT IS (ARE) USED TO REMOVE GREASE?
A. BAR SCREENS.
B. BIOLOGICAL TREATMENT.
C. CHEMICALS.
D. ALL OF THE ABOVE.

CABCD W/COL 5-15 PAGE 4

25. A PARSHALL FLUME IS A TYPE OF
A. ORIFICE.
B. SUBMERGED NOZZLE.
C. VENTURI.
D. WEIR REQUIRING FREE-FALL DISCHARGE.

CABCD WPCF/MOP 11 PAGE 387

26. WHICH OF THESE CHEMICALS SHOULD BE USED FOR ODOR CONTROL IN SEWERS?
A. CHLORINE.
B. MURIATIC ACID.
C. POTASSIUM CHLORIDE.
D. SODIUM CHLORIDE.

AABCD W/COL 5-15 & S/COL 5-167

27. WHICH OF THE FOLLOWING ARE TYPES OF SHORES?
A. BAR
B. HYDRAULIC.
C. TRUSS.
D. ALL OF THE ABOVE.

DABCD W/COL 7-4 & S/COL 6-11 AND 6-21

28. IMPORTANT TRAFFIC SAFETY CONSIDERATIONS INCLUDE
A. ROUTINE PEDESTRIANS AROUND JOB SITE.
B. ROUTING TRAFFIC AROUND JOB SITE.
C. WEARING OF HARD HATS AND SAFETY VESTS.
D. ALL OF THE ABOVE.

DABCD W/COL 4-8 & S/COL 4-2

29. WHICH OF THE FOLLOWING ACTIONS WOULD YOU PERFORM FIRST IN AN OPERATOR INHALES CHLORINE GAS?
A. IMMEDIATELY REMOVE PATIENT FROM CONTAMINATED AREA.
B. IMMEDIATELY SHUT OFF ALL SOURCES OF CHLORINE.
C. IMMEDIATELY BEGIN APPROPRIATE TREATMENT.
D. DO NOTHING, AS CHLORINE GAS IS NON-TOXIC.

AABCD W/CHLORINE 7-7

30. FLATTER SEWER LINE GRADES MAY CAUSE ADDED SEWER MAINTENANCE EXPENSE AND ODOR NUISANCE. THE PROBLEM MOST LIKELY IS CAUSED BY A DECREASE IN VELOCITY
A. ALLOWING GASES TO BE RELEASED FROM THE WASTEWATER.
B. ALLOWING ORGANIC AND INORGANIC SOLIDS TO SETTLE OUT IN THE LINES.
C. WHICH INCREASES THE TREATMENT TIME OF THE INORGANIC SOLIDS.

BABC S/COL CHAPTER 3

31. SOURCES OF EXCESSIVE CLEAR WATER IN A COLLECTION SYSTEM INCLUDE
- A. A PROBLEM AT THE WASTEWATER TREATMENT PLANT.
 - B. AN INTERCEPTOR SEWER LEAK.
 - C. EXFILTRATION FROM A HIGH WATER TABLE.
 - D. INFILTRATION FROM A HIGH WATER TABLE.

DABCD W/COL 2-1 & S/COL 4-39

32. WHAT ITEMS WOULD YOU CONSIDER WHEN SELECTING A SOLUTION TO CLEAR A STOPPAGE IN A SEWER?
- A. ADDING A SOLUTION TO THE UPSTREAM MANHOLE TO CLEAR THE STOPPAGE.
 - B. CAUSE OF STOPPAGE.
 - C. TIME OF DAY.
 - D. STAFFING REQUIREMENTS.

BABCD W/COL 5-1 & S/COL 5-4

33. WHICH OF THE FOLLOWING IS NOT NECESSARY TO BE DONE AT THE MANHOLE WITH THE COMPLETION OF A SEWER CLEANING JOB?
- A. LOAD THE DEBRIS ON THE TRUCK.
 - B. SWEEP THE DEBRIS AROUND THE MANHOLE
 - C. WASH DOWN STREET AROUND WORK AREA AND MACHINES, MAKING SURE THE WASH WATER IS BROOMED INTO THE MANHOLE.
 - D. WASH DOWN THE TRUCK.

DABCD W/COL 4-14 & S/COL CHAPTER 5

34. LIFT STATION FAILURES INCLUDE _____ FAILURE.
- A. DIP TUBE
 - B. ELECTRICAL CIRCUIT
 - C. INVERTED SIPHON
 - D. ALL OF THE ABOVE

BABCD W/PUMP 4-1 & S/COL 7-85

35. A PH OF 7.0 IS
- A. ACIDIC.
 - B. ALKALINE.
 - C. NEUTRAL.
 - D. NONE OF THE ABOVE.

CABCD W/LAB PAGE 1

36. THE INTERIOR OF 300 FEET OF 12-INCH PIPE IS UNIFORMLY COATED WITH ONE INCH OF GREASE. HOW MANY GALLONS WILL THIS PIPE HOLD WHEN FILLED WITH WATER?
- A. 1230 GALLONS.
 - B. 1360 GALLONS.
 - C. 1470 GALLONS.
 - D. 1630 GALLONS.

CABCD S/COL M-29

37. INFILTRATION IS CAUSED BY
A. CRACKED PIPES.
B. IMPROPER CLOSED CIRCUIT TELEVISION OPERATION.
C. POOR VENTILATION.
D. ALL OF THE ABOVE.

AABCD S/COL 4-41

38. THE MAIN REASON FOR CHLORINATING WASTEWATER IN SEWERS IS FOR _____ CONTROL.
A. BOD
B. ODOR
C. PATHOGEN
D. SUSPENDED SOLIDS

BABCD W/COL 5-15 & S/COL 5-182

39. THE MOST IMPORTANT REASON FOR WASHING HANDS THOROUGHLY AFTER TAKING A WASTE WATER SAMPLE IS TO
A. AVOID BEING INFECTED BY PATHOGENIC BACTERIA.
B. AVOID CONTAMINATING THE BOD BOTTLES
C. AVOID SMUDGING THE BOD BOTTLES.
D. GET THE SLIME OFF YOUR HANDS SO YOU WON'T ACCIDENTALLY DROP ANY GLASSWARE.

AABCD W/COL 4-2 & S/COL 9-8

40. ROOTS CAN ENTER COLLECTION SYSTEMS THROUGH
A. AIR GAPS.
B. MANHOLE COVERS.
C. PIPE CRACKS.
D. ALL OF THE ABOVE.

CABCD S/COL 5-157

41. WHICH OF THE FOLLOWING IS A PROPERTY OF CHLORINE GAS?
A. CAN BE COMPRESSED INTO LIQUID FORM.
B. HARMLESS TO HUMANS.
C. HIGHLY FLAMMABLE.
D. LIGHTER THAN AIR.

AABCD W/CHLORINE 1-7

42. FLUSHING SEWER LINES REMOVES
A. GREASE.
B. ROOTS.
C. HEAVY DEBRIS.
D. LIGHT FLOATABLES.

DABCD W/COL 5-5 & S/COL 5-57

43. THE PURPOSE OF A LIFT STATION SIGN-IN LOG IS TO
- A. BUDGET LIFT STATION VISITS.
 - B. IDENTIFY WHO MAKES CHANGES IN STATION OPERATION.
 - C. TRACK EMPLOYEE MOVEMENT FOR DISCIPLINARY ACTIONS.
 - D. ALL OF THE ABOVE.

BABCD S/COL 7-92

44. WHAT TOOLS ARE USED WITH A POWER RODDER?
- A. FINGER GRIPS.
 - B. PRUNING SHEARS.
 - C. SPRING BLADES.
 - D. VIDEOTAPE CAMERA.

CABCD W/COL 5-11 & S/COL 5-101

45. THE DIAMETER OF A WET WELL IS 10 FEET. IF FILLED TO A DEPTH OF 10 FEET, IT WILL CONTAIN APPROXIMATELY
- A. 2,987 GALLONS.
 - B. 5,875 GALLONS.
 - C. 6,024 GALLONS.
 - D. 10,602 GALLONS.

BABCD S/COL M 29

46. WHICH ONE(S) OF THE FOLLOWING ITEMS SHOULD BE INSPECTED WHEN RESPONDING TO A LIFT STATION ALARM AT NIGHT?
- A. AMOUNT OF SCREENINGS AND OTHER TRASH REMOVAL.
 - B. MOTOR CONTROL CENTER AND POWER PANEL.
 - C. OPERATION OF GAS MASKS.
 - D. ALL OF THE ABOVE.

BABCD W/PUMP 4-37 & S/COL 7-75

47. A SOLUTION WITH A PH OF 6.0 IS
- A. ACIDIC.
 - B. ALKALINE.
 - C. NEUTRAL.
 - D. NONE OF THE ABOVE.

AABCD W/LAB PAGE 1

48. AREAS SUBJECT TO HIGHER THAN NORMAL VANDALISM ARE USUALLY
- A. ALONG HEAVILY TRAVELED STREETS.
 - B. SECLUDED, OUT-OF-THE-WAY BUILDINGS.
 - C. WELL-LIGHTED, VISIBLE AREAS.
 - D. NONE OF THE ABOVE.

BABCD WPCF/MOP 11-483

49. TOOLS USED FOR SEWER RODDING INCLUDE ALL BUT THE
- A. LAG SCREW.
 - B. PORCUPINE.
 - C. ROOT SAW.
 - D. SQUARE BAR CORK SCREW.

AABCD W/COL 5-11 & S/COL 5-101

50. HOW DOES AN EMERGENCY SERVICE CREW TRY TO REMOVE STOPPAGE?
- A. BALLING.
 - B. FLUSHING.
 - C. HAND RODS.
 - D. PARACHUTES.

CABCD S/COL 5-83