

## 2. Examination Questions

1. Gasoline or volatile organic solvents are objectionable when present in a sewer because *Basic*

- a. They tend to cause corrosion of the sewer.
- b. They increase the resistance to flow and therefore decrease the effective capacity of the sewer.
- c. They produce a serious explosion hazard.
- d. They tend to precipitate the wastewater solids, which causes stoppages in the sewer.

2. Manhole covers may be lifted with *Basic*

- a. Your fingers.
- b. Your back.
- c. A pole.
- d. A screw driver.
- e. A manhole hook.

3. The following gases may be found in sewers: *Basic*

- a. Flammable explosive gases.
- b. Hydrogen sulfide.
- c. Carbon monoxide.
- d. All of the above.

4. Any one of the following may be present in a manhole or similar structure. Which one is most toxic to humans when it is inhaled? *Basic*

- a. Carbon dioxide.
- b. Nitrogen.
- c. Hydrogen sulfide.
- d. Methane.

5. The primary purpose of forced draft ventilation in lift stations is to *Advanced*

- a. Prevent odors.
- b. Cool the pumps.
- c. Remove dangerous gases.
- d. Keep air pressure equalized.
- e. Lower the water level.

6. In repairing construction collection lines, which of the following safety equipment should be on hand? *Advanced*

- a. Safety (hard) hats.
- b. Safety-toed shoes with nonskid composition-type soles.
- c. Safety harness with a safety rope.
- d. Adequate bracing and shoring to prevent cave-ins and/or rock slides.
- e. All of these.

7. Dangerous gases are present in wastewater works operations. In the collection system, the most likely places of dangerous gas accumulation are in manholes and *Advanced*

- a. Lift stations.
- b. Service lines.
- c. Main sewers.
- d. Lateral sewers.
- e. Trunk lines.

8. Which of the following should be done before entering a manhole? *Advanced*

- a. Test for sufficient oxygen.
- b. Check for explosive gases.
- c. Provide a safety belt for use by at least two men remaining above ground.
- d. All of the above.

9. The main cause of water seepage into a sanitary sewer line is *Basic*

- a. Excessive depth of sewer lines.
- b. A too small digester.
- c. Diam of the sewer line too small.
- d. Poor construction of the collection line, mainly at pipe joints.

10. Infiltration, or the entrance of storm and groundwater into the collection system, causes the sizes of the collection systems and treatment plants to be increased. From which part of the collection system listed below does most of the infiltration come? *Advanced*

- a. Faulty joints in trunk sewers.
- b. Leaky manholes.
- c. Faulty house sewers.
- d. Crushed sections of sewer lines.
- e. Perforated manhole covers.

11. Clear water from foundation drains, cistern overflows, roof drains, and similar sources *Basic*

- a. Should be connected to sanitary sewers because it dilutes the wastewater and makes it easier to treat.
- b. Should not be connected to sanitary sewers because it tends to overload the sewer system and wastewater treatment plant.
- c. May be connected to either storm or sanitary sewers, whichever is most convenient.

12. Catch-basin inlets to stormwater sewers have been used principally to *Advanced*

- a. Settle out sand and grit from the stormwater flow.
- b. Prevent floating objects in the flow from obstructing the flow in the sewer.
- c. Prevent the dissemination in the air of odors from the sewer.
- d. Produce a head that would increase the velocity of flow in the sewer.
- e. Act as an equalizer of the flow to avoid overtaxing the capacity of the sewer.

13. Your municipality seeks your advice on an ordinance pertaining to the use of sewers. Which item would not be included as a provision in the ordinance? *Advanced*

- a. Control of amount of flow from domestic house connections.
- b. Discharge of inflammable chemicals.
- c. Connection of rain water downspouts into a "separate" system.
- d. Pretreatment of strong industrial wastes.

14. Industrial waste ordinances do not usually contain specific limits on *Advanced*

- a. SS.
- b. BOD.
- c. DO.
- d. pH values.
- e. Grease and oils.
- f. Flow rates.
- g. Toxic substances.

15. Which of the following materials is not commonly used in the construction of sewer lines? *Basic*

- a. Aluminum.
- b. Precast and monolithic concrete.
- c. Cast iron and steel.
- d. Asbestos-cement.
- e. Vitrified clay.

16. If a serious stoppage occurs in a sanitary collection line during the daytime, which of the following steps might properly be taken by the superintendent? *Advanced*

- a. Pump wastewater into an adjacent manhole below the stoppage.
- b. Notify all owners of premises connected with the sewer to discontinue the use of all waste fixtures until the stoppage is removed.
- c. Begin the construction of an emergency sewer to bypass the point of stoppage.
- d. Excavate a pit and pump the wastewater into a tank trunk.
- e. Notify all owners of the premises affected to dispose of their wastes privately.

17. Which of the following lines are not used in transporting wastewater from its source in the home to the treatment plant? *Basic*

- a. House sewers.
- b. Lateral sewers.
- c. Submain sewers.
- d. Trunk sewers.
- e. Storm sewers.

18. The main reason that fewer flush tanks on sewer lines are constructed now than were formerly is because *Basic*

- a. Sewer pipe manufacturers have so improved the smoothness of sewer inverts that flushing is not generally considered necessary.
- b. It has been found that flush tanks are ordinarily not well maintained, that they may waste water and may result in conditions favorable to back siphonage.
- c. Stoppages have been found to be caused by the flushing of sewers in spite of the fact that flush tanks were intended to keep the sewers clear.
- d. Inspection pipes permit flushing and may be installed at considerably less cost than flush tanks.
- e. Delivery of the special parts required for flush tanks often results in delay in completing the sewer system.

19. Laying sewer lines on proper grades is essential in order that the wastewater will flow fast enough to prevent solids from settling in the lines. When the grades are too flat the wastewater tends to become *Basic*

- a. Less septic.
- b. More septic.
- c. More easily treated.
- d. Less objectionable.
- e. Odorless.

20. Gross misuse of a wastewater collection system by the public is often the result of *Basic*

- a. The lack of an educational program informing the public as to the purpose of the sewer system.
- b. A destructive attitude on the part of the public.
- c. Inadequate design in some areas of the system for handling the kinds of wastes usually encountered.

21. Combined sewers that collect both stormwater and sanitary wastewater are *Basic*

- a. Recommended wherever possible because the added dilution is beneficial to the treatment process.
- b. Not considered good sanitary engineering practice.
- c. Always recommended when municipalities cannot afford adequate treatment facilities.

ANSWER KEY

SECTION 2 - Wastewater Collection System

1. c
  2. e
  3. b
  4. c
  5. c
  6. e
  7. a
  8. d
  9. d
  10. a
  11. b
  12. a
  13. a
  14. c
  15. a
  16. a
  17. e
  18. b
  19. b
  20. a
  21. b
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