

# Operator Quiz Test No. 109 – Primary/Preliminary Treatment

The following questions are designed for trainees as they prepare to take the ABC wastewater operator test. It is also designed for existing operators to test their knowledge. Each issue of *Clear Waters* will have more questions from a different section of wastewater treatment. Good Luck!

1. What would be considered a typical detention time in a properly designed primary clarifier?:
  - a. 4 hours
  - b. 30 minutes
  - c. 1.5 hours
  - d. 12 hours
2. What is the length required of a grit channel that is 5-feet wide with a 17-inch water depth and has a flow of 2 mgd to achieve a proper settling rate (0.075 ft/sec)?:
  - a. 12 inches
  - b. 10.5 feet
  - c. 6.7 feet
  - d. 8.2 feet
3. A properly designed primary clarifier will remove 90 percent of which of the following?:
  - a. Total Suspended Solids
  - b. Biochemical Oxygen Demand
  - c. Settleable Solids
  - d. Phosphorus
4. Applying ferrous chloride to primary clarifiers is most commonly used to treat for:
  - a. Fecal Coliform
  - b. Biochemical Oxygen Demand
  - c. Phosphorus
  - d. Total Suspended Solids
5. Which of the following would not be considered preliminary treatment?:
  - a. Screening
  - b. Grit Removal
  - c. Denitrification
  - d. Grease Removal
6. Grit is composed mainly of:
  - a. Plastic
  - b. Sand
  - c. Organic Material
  - d. Wood
7. What is the detention time of a rectangular primary sedimentation tank that is 50 ft. x 25 ft. x 10 ft. with an influent flow of 2.25 mgd?:
  - a. 2.0 hours
  - b. 1.0 hours
  - c. 0.5 hours
  - d. 1.67 hours
8. A plant is installing a circular primary sedimentation tank that has a diameter of 50 ft. and a depth of 15 ft. to treat peak flows of 2.5 mgd. Is this tank sized appropriately?:
  - a. Yes, detention time of 2.1 hours during peak flows will allow for proper settling of solids.
  - b. Yes, detention time of 1.68 hours during peak flows will allow for proper settling of solids.
  - c. No, detention time of 0.5 hours during peak flows will not allow for proper settling of solids.
  - d. No, detention time of 0.68 hours during peak flows will not allow for the proper settling of solids.
9. What is the surface loading rate of a rectangular primary sedimentation tank with the dimensions of 60 ft. long x 30 ft. wide x 15 ft. deep with an influent flow of 9.0 mgd?:
  - a. 2,000 gpd/sq. ft.
  - b. 3,000 gpd/sq. ft.
  - c. 4,000 gpd/sq. ft.
  - d. 5,000 gpd/sq. ft.
10. A plant has a primary sedimentation tank with a volume of 20,000 cu. ft. and is experiencing an increase in primary effluent total solids. The influent total solids to the clarifier are normal, the sludge pumping equipment is working correctly, and the influent flow is 6.0 mgd. What is the best explanation for the increase in primary effluent solids?:
  - a. Surface scum polluted the sample
  - b. Elevated flows increased tank solids resulting in high sludge blankets
  - c. Decreased detention time resulted in short circuiting
  - d. A malfunction in upstream grit collection equipment
11. What is the weir overflow rate of a primary clarifier that has a diameter of 60 ft., a depth of 15 ft., and an influent flow of 3.0 mgd?:
  - a. 15,924 gpd/ft of weir
  - b. 17,480 gpd/ft of weir
  - c. 13,887 gpd/ft of weir
  - d. 12,998 gpd/ft of weir
12. Why are Parshall flumes commonly used to measure wastewater flows?:
  - a. A V-notch weir allows flow to be easily measured
  - b. Pressure differences can be easily measured on both sides of a closed contracting pipe
  - c. Depth of flow in a narrow free flowing channel allows flow quantity to be measured
  - d. Parshall flumes are not used to measure flow

Answers: 1C, 2D, 3C, 4C, 5C, 6B, 7B, 8A, 9D, 10C, 11A, 12C

For those who have questions concerning operator certification requirements and scheduling, please contact Tanya May Jennings at 315-422-7811 ext. 4, [tmj@nywea.org](mailto:tmj@nywea.org), or visit [www.nywea.org/OpCert](http://www.nywea.org/OpCert).