



**Final Exam**  
Continuing Education Course #387  
Clarifier Rehabilitation

1. A clarifier can also be called which of the following?
  - ☐ a. cyclone
  - ☐ b. sedimentation tank
  - ☐ c. aerator
2. Compared to other treatment technologies, clarifiers are \_\_\_\_\_.
  - ☐ a. simple
  - ☐ b. complex
3. Floating particles and objects are known as what?
  - ☐ a. sludge
  - ☐ b. scum
  - ☐ c. supernatant
4. Which of the following is not a common shape for a wastewater clarifiers?
  - ☐ a. circular
  - ☐ b. triangular
  - ☐ c. rectangular
5. What is the most common application for clarifiers for water treatment?
  - ☐ a. aeration
  - ☐ b. membranes
  - ☐ c. lime softening
6. Which is a good first step in clarifier rehabilitation?
  - ☐ a. identify motivations
  - ☐ b. design
  - ☐ c. identify alternatives
7. Which of the following is NOT a potential motivating factor for clarifier rehabilitation?
  - ☐ a. coating failure
  - ☐ b. disinfection requirements
  - ☐ c. process problems
8. A condition assessment is critical with which of the following motivating factors?
  - ☐ a. flow demand increase
  - ☐ b. process problems
  - ☐ c. equipment failure
9. Which of following is a main clarifier component?

- ☐ a. drive
  - ☐ b. anchorage
  - ☐ c. angles
10. What is the typical life span for a clarifier drive?
- ☐ a. 10 years
  - ☐ b. 20 years
  - ☐ c. 40 years
11. Which of the following is NOT a field test for a drive?
- ☐ a. factory
  - ☐ b. vibration
  - ☐ c. noise
12. Often submerged steel is designed with what minimum thickness?
- ☐ a. 3/16"
  - ☐ b. 1/4"
  - ☐ c. 3/8"
13. What is corrosion allowance?
- ☐ a. The allowed number of places corrosion is observed.
  - ☐ b. Funds set aside for correcting corrosion problems.
  - ☐ c. Additional thickness added for conservatism.
14. For a condition assessment, which thickness measurements are helpful?
- ☐ a. Steel and Coating Thicknesses
  - ☐ b. Rust and Solids Thicknesses
  - ☐ c. Surface and Internal Thicknesses
15. Efflorescence on a tank wall indicates what?
- ☐ a. Presence of algae blooms
  - ☐ b. There is a slow leak
  - ☐ c. Light radiation
16. Which of the following is a common non-destructive test for concrete?
- ☐ a. Rebound Hammer Test
  - ☐ b. Core Test
  - ☐ c. Magnet Test
17. What is a surface removal test for concrete?
- ☐ a. Non-destructive
  - ☐ b. Removing the concrete surface to view the steel
  - ☐ c. Half-cell corrosion mapping
18. What is the aim of a performance assessment?
- ☐ a. To determine the physical condition of the clarifier
  - ☐ b. To fully describe the clarifier
  - ☐ c. Evaluate treatment efficiency and identify modifications to improve the treatment
19. What insight does a mass balance provide?
- ☐ a. How flow and solids pass through the clarifier
  - ☐ b. The impact of the clarifier volume

- ☐ c. Surface overflow issues
20. Why is state point analysis used?
- ☐ a. To assess the condition of equipment
  - ☐ b. To understand the operating condition and determine corrective actions such as changing the RAS rate
  - ☐ c. To find the ideal mixing rate
21. Which of the following is NOT true regarding CFD modeling?
- ☐ a. Relatively expensive
  - ☐ b. A step in a condition assessment
  - ☐ c. Can help determine the peak flow rate and solids loading rate
22. Which of the following is NOT a field test for a clarifier performance assessment?
- ☐ a. Tracer Test
  - ☐ b. Settling Test
  - ☐ c. Skills Test
23. Which of the following are good first steps in an alternatives comparison?
- ☐ a. Identify Criteria and Brainstorm Alternatives
  - ☐ b. Cost Estimate and Design Report
  - ☐ c. Desktop study and Field Testing
24. Which of the following helps address differing conditions?
- ☐ a. Mass balance
  - ☐ b. Specify an allowance
  - ☐ c. Ask the Contractor to take photos
25. Which of the following is NOT a potential material for clarifier components?
- ☐ a. 316L stainless steel
  - ☐ b. Pressure treated lumber
  - ☐ c. 304L stainless steel
  - ☐ d. carbon steel
26. How much time should be allowed between sand blasting and prime coating?
- ☐ a. 24 hours
  - ☐ b. 1 week
  - ☐ c. 60 seconds
27. Which of the following help "hold the blast" for a successful prime coat?
- ☐ a. Remove all person from the blast area
  - ☐ b. Cover the tank
  - ☐ c. Check the coating thickness
28. Which of the following is NOT an option for a drive lubrication system cleaning?
- ☐ a. Double Oil Change
  - ☐ b. Advanced Power Flush
  - ☐ c. Chemical Power Flush
  - ☐ d. Water Flush
29. Which is typically the longest lead time item?
- ☐ a. Drive
  - ☐ b. Control Panel

☐ c. Weirs & Baffles

30. Which is NOT an option to address stainless steel contamination?

☐ a. Avoid field welding of stainless steel

☐ b. Field passivation

☐ c. Pressure washing