



# Certification Boulevard

## *Test Your Knowledge of Wastewater Treatment Topics*

1. Given the following data, what is the solids loading rate on the secondary clarifiers?
  - Plant Influent Flow is 23.75 mgd
  - The RAS Rate is 70% of Q
  - There are six (6) 100 ft Diameter Secondary Clarifiers
  - The Aeration MLSS is 2,250 mg/L
  - a. 21.5 lbs/day/ft<sup>2</sup>
  - b. 16.1 lbs/day/ft<sup>2</sup>
  - c. 2.8 lbs/day/ft<sup>2</sup>
  - d. 96.5 lbs/day/ft<sup>2</sup>
  
2. Given the following Ortho P data for inlet and outlet of a BNR fermentation tank, does this appear to be a problem?
  - Fermentation Inlet Ortho P is 7.0 mg/L
  - Fermentation Outlet Ortho P is 4.0 mg/L
  - a. Yes, the Ortho P is too low in the fermentation tank outlet
  - b. Yes, the fermentation outlet Ortho P should be 2 to 3 times the concentration of the inlet
  - c. No, the fermentation tank is designed to remove phosphorus directly
  - d. Both "a & b"
  
3. Given the following data, and using the data provided in question 1, what is the F/M ratio of this activated sludge process?
  - Influent CBOD<sub>5</sub> is 220 mg/L
  - Primary Clarifier Removes 26% of the Influent CBOD<sub>5</sub>
  - MLVSS is 75% of MLSS
  - Eight (8) Aeration Tanks Each 220 Feet Long, 45 Feet Wide and 15 Feet Deep
  - a. 0.42
  - b. 0.13
  - c. 0.26
  - d. 0.11
  
4. What is the best adjustment (from the list of possible answers) to make if solids are rising in the secondary clarifier accompanied by large gas bubbles and strong odors?
  - a. Increase aeration D.O.
  - b. Decrease the RAS rate
  - c. Decrease the WAS rate
  - d. Decrease aeration D.O.

5. What is a typical RAS to Q ratio for a contact stabilization activated sludge process?
- 50% to 75%
  - 20% to 50%
  - 1% to 2%
  - 75% to 150%
6. Given the following data, calculate the Respiration Rate (RR)?
- Beginning OUR Test D.O. is 7.8 mg/L
  - Ending OUR Test D.O. is 2.2 mg/L
  - Test Time is 10 Minutes
  - MLVSS is 1,688 mg/L
- 0.019 mg/hr/gm
  - 19.9 mg/hr/gm
  - 33.6 mg/hr/gm
  - 56.7 mg/hr/gm
7. Given the following data, calculate the daily volume of WAS to be removed from this activated sludge process.
- Aeration Volume 2.25 mg
  - MLSS 2,750 mg/L
  - MLVSS 2,100 mg/L
  - Desired SRT 7 days
  - WAS Concentration 6,500 mg/L
- 13,600 gpd
  - 1.36 mgd
  - 0.104 mgd
  - 0.136 mgd
8. Which process adjustment typically increases the contact time in the aeration tank?
- Lower the weir
  - Increasing the air supply rate
  - Decreasing the RAS rate
  - Decreasing the WAS rate
9. What problems can grit cause in downstream treatment processes if it is not removed from the influent flow?
- Erode valve seats
  - Take up valuable space in tanks
  - Erode pipes and elbows
  - Damage pump impellers
  - All of the above

10. Which adjustment will typically improve denitrification in an aeration tank?

- a. Increase the air supply
- b. Increase the D.O.
- c. Decrease the D.O.
- d. Shut off the RAS

*Please forward your comments and sample questions for publication to:*

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