



# Certification Boulevard

## *Test Your Knowledge of Miscellaneous Technical Topics*

1. What does the "M" represent in the process parameter F/M ratio?
  - a. lbs volatile microorganisms in aeration
  - b. gpd plant flow
  - c. lbs/day influent CBOD<sub>5</sub> entering aeration
  - d. gpd waste sludge leaving aeration
  
2. What may be the cause if CBOD<sub>5</sub> removal in a primary clarifier is less than 15%?
  - a. The plant is underloaded
  - b. The detention time is too short
  - c. The detention time is too long
  - d. 15% CBOD<sub>5</sub> removal from a primary clarifier is greater than expected
  
3. What is a typical range for gas production in a properly operated anaerobic digestion process?
  - a. 1 to 2 ft<sup>3</sup> per lb VS reduced
  - b. 5 to 7 ft<sup>3</sup> per lb VS reduced
  - c. 11 to 20 ft<sup>3</sup> per lb VS reduced
  - d. 40 to 60 ft<sup>3</sup> per lb VS reduced
  
4. What is created when chlorine reacts with ammonia in the effluent stream?
  - a. Chloramines
  - b. Free residual
  - c. Mono residual
  - d. Combined residual
  - e. Both "a & d"
  
5. Which group of bacteria are responsible for converting NO<sub>2</sub> to NO<sub>3</sub>?
  - a. Heterotrophic
  - b. Nitrosomonas
  - c. Nitrobacter
  - d. Fermenters
  
6. Given the following data, what is the sludge blanket detention time in a secondary clarifier?
  - 50 Foot Diameter
  - 3 Foot Sludge Blanket Depth
  - 2:12 Floor Slope
  - 0.5 mgd RAS Rate
  - a. 2.6 days
  - b. 3.1 hours
  - c. 2.1 hours
  - d. 1.3 days

7. Given the following data, what is the cost of polymer used, in dollars per dry ton of sludge processed, by a Belt Filter Press?
- Total sludge feed is 144,250 gpd
  - Feed sludge concentration is 2.75%
  - Solids capture efficiency is 99%
  - Total neat polymer used is 35 gpd
  - Polymer specific gravity is 1.03
  - Polymer cost is \$0.69 per pound
- a. \$45.24 / dt  
b. \$12.54 / dt  
c. \$37.64 / dt  
d. \$12.18 / dt
8. Given the following data, what is the Specific Oxygen Utilization Rate (SOUR) in an aerobic digester?
- OUR test starting D.O. is 7.2 mg/l
  - OUR test ending D.O. is 4.0 mg/l
  - OUR test time is 10 minutes
  - Digested sludge VSS concentration is 14,500 mg/l
  - Digested sludge volatile fraction is 70%
- a. 1.32 mg/hr/gm  
b. 0.78 mg/hr/gm  
c. 1.6 mg/hr/gm  
d. 0.93 mg/hr/gm
9. Which effluent quality condition may cause the most efficiency problems with a UV disinfection process?
- a. High  $\text{NH}_3$   
b. High  $\text{NO}_3$   
c. High  $\text{NO}_2$   
d. High TSS
10. What is the term when  $\text{NH}_3\text{-N}$  and Org-N are added together?
- a. TN  
b. SON  
c.  $\text{NO}_3$   
d. TKN  
e.  $\text{NO}_2$   
f.  $\text{NO}_x$   
g. None of the above

*Please forward your comments and sample questions for publication to Roy Pelletier.*