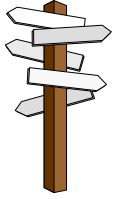# Certification Boulevard

Test Your Knowledge of Miscellaneous Topics

1. What typically happens to the ORP of final effluent when the ammonia concentration in the effluent increases?

   a. The ORP increases
   b. The ORP decreases
   c. The ORP remains the same
   d. Ammonia concentration has nothing to do with ORP values

2. Given the following data, what is the pressure equivalent expressed in psi delivered by this pump?

   - Pump discharges 432,000 gpd
   - Total dynamic head (TDH) of 185 feet

   a. 235 psi
   b. 185 psi
   c. 80 psi
   d. 550 psi

   185 feet TDH x 0.433 psi per foot of head = 80.1 psi OR
   185 feet TDH ÷ 2.31 feet of head per psi = 80.09 psi

3. What percentage of settleable is typically removed through primary clarification?

   a. 25%
   b. 100%
   c. 50%
   d. 85%

4. Which group of bacteria can be aerobic or anoxic and use carbon as their food source?

   a. Heterotrophic
   b. Anaerobic
   c. Autotrophic
   d. Facultative

5. What is the liquid effluent called in a dewatering centrifuge?

   a. Filtrate
   b. Centrate
   c. Supernatant
   d. Subnatant

6. Which factors affect the operation of an aerobic digester?

    a. Detention time
    b. Temperature
    c. Oxygen transfer efficiency
    d. Dissolved oxygen level
    e. <u>All of the above</u>

7. What are the two (2) major zones of a belt filter press called?

    a. Drainage and evaporation
    b. <u>Gravity drainage and pressure filtration</u>
    c. Pressure shearing and transpiration
    d. Liquefaction and expansion

8. Which factors generally affect the amount of sludge that can be applied to a land application site?

    a. <u>Nitrogen and heavy metals</u>
    b. Carbon and chlorides
    c. Phosphorus and alkalinity
    d. pH and $CBOD_5$

9. Given the following data, how many total gals/day of sludge are removed from a primary clarifier using a double piston pump?

    - Piston diameter is 10 inches
    - Piston length is 13 inches
    - Piston speed is 45 spm
    - Total run time is 358 mins/day

    a. 71,158 gpd
    b. 65,670 gpd
    c. 284,632 gpd
    d. <u>142,330 gpd</u>

    (10 in. ÷ 12 in./ft ÷ 2) x (10 in. ÷ 12 in./ft ÷ 2) x (13 in. ÷ 12 in.) x 3.14 x 7.48 gal/ft3 x 2 pistons x 45 spm x 358 mins/day = 142,330 gpd

10. Given the following data, how many gpd of WAS are removed from this activated sludge facility?

    - Aeration volume is 1.25 MG
    - MLVSS is 2,750 mg/L
    - Mixed liquor is 75% volatile
    - WAS TSS is 7,250 mg/L
    - Desired SRT is 8 days

    a. 0.125 mgd
    b. 59,267 gpd
    c. <u>79,023 gpd</u>
    d. 25,981 gpd

1.25 MG x (2,750 mg/L ÷ 0.75) x 8.34 lbs/gal = 35,836 lbs MLSS ÷ 8 day SRT = 4,778 lbs/day to waste ÷ (7,250 mg/L x 8.34) = 0.079023 mgd = 79,023 gpd