11. Examination Questions

1. Digested wastewater sludge is elutriated to
   a. Prevent excessive shrinkage.
   b. Control the flow on the beds.
   c. Lower the amount of chemical treatment necessary.
   d. Control bulking.
   e. Prevent clogging of pipes.

2. Digested sludge is sometimes elutriated before chemical addition and filtration. When this elutriated water (wash water) is recirculated to primary clarifiers, it
   a. Decreases the organic load to the aerobic biological system.
   b. Decreases the settleable solids to the primary tank.
   c. Increases the settleable solids to the primary tank.
   d. None of the above.

3. Which chemicals are usually applied to sludge that is to be dewatered by vacuum filtration?
   a. Sodium chloride and sulfur.
   b. Potassium permanganate.
   c. Ferric chloride and lime.
   d. Ferric chloride and alum.

4. Digested sludge may be placed on sand drying beds or
   a. Discharged to the river.
   b. Spread on land.
   c. Pumped to the settling tank.

5. The drying time of sludge is affected by
   a. The degree of digestion of the sludge.
   b. The pH of the supernatant.
   c. The relative stability of the sludge drying bed.
   d. The operating temperature in the digester.
   e. The BOD of the raw domestic wastewater.

6. Which of the following affects the drying of sludge?
   a. Climatic conditions.
   b. Sludge age.
   c. Sludge composition.
   d. Depth of sludge application.
   e. All of the above.

7. Which pair of factors affect the drying of digested sludge on sand beds?
   a. Drainage and evaporation.
   b. Drainage and sludge index.
   c. Sludge age and specific gravity.
   d. Sludge index and sludge age.
   e. Evaporation and sludge index.
   f. Temperature of digester and evaporation.
8. Which of the following insecticides is relatively safe and recommended for controlling flies in sludge drying beds or open primary digesters?  
   a. Malathion.  
   b. Parathion.  
   c. Endrin.  
   d. Diesel oil.  
   e. Toxaphene.  

9. From a practical standpoint, the process that produces sludge having the highest fertilizer value is the  
   a. Fine screen process.  
   b. Septic tank process.  
   c. Primary settling tank and separate sludge digestion process.  
   d. Activated sludge process.  
   e. Imhoff tank process.  

10. If objectionable odors are produced from the stack of a sludge incinerator, the most probable cause is  
    a. Too low a temperature.  
    b. Too septic a sludge.  
    c. The organic content of the sludge is too high.  

11. The purpose of a sludge drying bed is to  
    a. Convert digested sludge into a good fertilizer.  
    b. Provide for the digestion of sludge.  
    c. Provide storage space for digested sludge.  
    d. Provide for the separation of much of the water from digester sludge.  

12. Centrifuges are effective in  
    b. Dewatering sludges.  
    d. Nutrient removal.  
    e. Primary treatment.  

13. Vacuum filters are used to  
    a. Reduce the moisture in undigested sludge.  
    c. Prepare sludge for burial or use as fill.  
    d. All of the above.  
    e. None of the above.
SECTION 11 - Sludge Dewatering and Disposal

1. c
2. d
3. c
4. b
5. a
6. e
7. a
8. a
9. c
10. a
11. d
12. b
13. d