

Final Exam
Continuing Education Course #444 Industrial
Pretreatment Design

1. Which discharge method sends wastewater to a POTW collection system?
 - ☐ a. Direct discharge
 - ☐ b. Indirect discharge
 - ☐ c. Reuse
2. Which discharge method often has a pretreatment system?
 - ☐ a. Direct
 - ☐ b. Indirect
 - ☐ c. Reuse
3. What is an Industrial User?
 - ☐ a. Industrial or commercial facility with indirect discharge
 - ☐ b. Facility with direct discharge
 - ☐ c. Facility with zero liquid discharge
4. What is a primary purpose of a pretreatment system?
 - ☐ a. Prevent overflows and bypasses
 - ☐ b. Make corrections after a violation
 - ☐ c. Modify the wastewater to meet permit conditions
5. Which POTW problems can occur without industrial pretreatment systems?
 - ☐ a. Sizing of collection systems
 - ☐ b. Interference and pass through
 - ☐ c. Reduced reporting
6. Which is NOT a type of pollutant normally found in IU permits?
 - ☐ a. Priority pollutants
 - ☐ b. Conventional pollutants
 - ☐ c. Non-priority pollutants
7. Where are the Industrial Categories defined?
 - ☐ a. 40 CFR 405 to 471
 - ☐ b. 1972 CWA
 - ☐ c. Sewer Use Ordinances
8. What is the goal of a wastewater assessment?
 - ☐ a. Value engineering
 - ☐ b. Gather information for compliance reporting
 - ☐ c. Gather information for design decisions

9. Which standards apply for a new facility?

- ☐ a. PSNS
- ☐ b. PSES
- ☐ c. PSSS

10. Which is the loading rate formula?

- ☐ a. $\text{Load (lb/d)} = \text{conc (mg/L)} * \text{flow (gpm)} * 8.34$
- ☐ b. $\text{Load (lb/d)} = \text{conc (mg/L)} * \text{flow (MGD)} * 8.34$
- ☐ c. $\text{Load (lb/d)} = \text{conc (mg/L)} * \text{flow (MGD)} * 7.48$

11. Which limits are more stringent?

- ☐ a. Categorical limits
- ☐ b. Local Limits
- ☐ c. Depends on each application and pollutant

12. Which flows are most important to define?

- ☐ a. Minimum and Maximum
- ☐ b. Average and Peak
- ☐ c. Minimum and Ultimate

13. Which is NOT a flow monitoring technique?

- ☐ a. CFD model
- ☐ b. Bucket and stopwatch
- ☐ c. Flow meter

14. What is a diagram showing the flow streams in a facility?

- ☐ a. Waste Network Diagram
- ☐ b. Flow stream legend
- ☐ c. Water Balance Diagram

15. What should be done with two incompatible waste streams?

- ☐ a. Mix slowly
- ☐ b. Treat before combining
- ☐ c. Discharge both to the sample manhole

16. Which is NOT a benefit to equalization?

- ☐ a. Consistent loads
- ☐ b. Odor reduction
- ☐ c. Consistent flows

17. What is diurnal flow?

- ☐ a. Flow rates for each hour of the day
- ☐ b. Flow rates from urinals
- ☐ c. Average daily flow

18. What type of process is flotation?

- ☐ a. Physical
- ☐ b. Chemical
- ☐ c. Biological

19. What type of process is a lagoon?

- ☐ a. Physical
 - ☐ b. Chemical
 - ☐ c. Biological
20. What type of process is coagulation?
- ☐ a. Physical
 - ☐ b. Chemical
 - ☐ c. Biological
21. Which method can efficiently remove BOD?
- ☐ a. Screening
 - ☐ b. Ion exchange
 - ☐ c. Activated sludge
22. Which method can efficiently remove heavy metals?
- ☐ a. Flotation
 - ☐ b. Air stripping
 - ☐ c. Electrodialysis
23. Which method can efficiently remove TSS?
- ☐ a. Sedimentation
 - ☐ b. Ion Exchange
 - ☐ c. Oxidation-Reduction
24. Anion and cation media are part of what treatment method?
- ☐ a. Attached growth
 - ☐ b. Oil-water separator
 - ☐ c. Ion exchange
25. What type of membrane is common for a membrane bioreactor?
- ☐ a. Ultrafiltration
 - ☐ b. Nanofiltration
 - ☐ c. Reverse Osmosis
26. What treatment method is a tricking filter?
- ☐ a. Membrane filtration
 - ☐ b. Air stripping
 - ☐ c. Attached growth
27. What is a treatment train?
- ☐ a. Solids removed by treatment
 - ☐ b. Series of treatment processes
 - ☐ c. Main path of wastewater through a tank
28. How are processes shown in a block flow diagram?
- ☐ a. Triangles
 - ☐ b. Flow arrows
 - ☐ c. Rectangles
29. In a process flow diagram, what are items in grey?
- ☐ a. Existing items
 - ☐ b. New items

☐ c. Future items

30. Which direction is shown to scale in a hydraulic profile?

☐ a. Horizontal

☐ b. Vertical

☐ c. Both