

Final Exam
Continuing Education Course #489 Water
Treatment CIP Management

1. Which is NOT a contaminant category?
 - ☐ a. Chemical
 - ☐ b. Conical
 - ☐ c. Biological
2. Which does "CIP" normally stand for?
 - ☐ a. Consumer Improvement Program
 - ☐ b. Creative Improvement Project
 - ☐ c. Capital Improvement Program or Capital Improvement Plan
3. Which is NOT a common driver for improvements?
 - ☐ a. Climate change
 - ☐ b. Lottery
 - ☐ c. Water quality problems
4. Which is the main method for increasing redundancy?
 - ☐ a. Provide standby units
 - ☐ b. Add an overflow
 - ☐ c. Replace the system
5. Which is an example of a regulatory driver?
 - ☐ a. New state funding
 - ☐ b. Aged equipment
 - ☐ c. New PFAS limits
6. What is 40 CFR?
 - ☐ a. Title 40 of the Code of Federal Regulations
 - ☐ b. Minimum temperature for potable water supply
 - ☐ c. Maximum concentration of iron in ppm
7. What is the purpose of a CIP?
 - ☐ a. Spend capital
 - ☐ b. Employ staff
 - ☐ c. Carry out asset management objectives
8. Which is a term used for managing infrastructure to minimize cost while delivering desirable service levels?
 - ☐ a. Capital improvements
 - ☐ b. Asset management
 - ☐ c. O&M

9. For CIP planning, what two costs are balanced to minimize total costs?
- ☐ a. Project Costs and Emergency Repair Costs
 - ☐ b. Project Costs and Rework Costs
 - ☐ c. Operations Costs and Maintenance Costs
10. Which are the first two steps in the CIP planning process?
- ☐ a. Gather information and risk assessment
 - ☐ b. Condition assessment and performance assessment
 - ☐ c. Gather information and condition assessment
11. Which are three common assessments for CIP planning?
- ☐ a. Condition, performance, and risk
 - ☐ b. Condition, performance, and storm
 - ☐ c. Performance, risk, and HAZOP
12. Which assessment is best if water quality improvements are desired?
- ☐ a. Condition
 - ☐ b. Performance
 - ☐ c. Risk
13. Which makes inspection of water tanks and piping more difficult?
- ☐ a. No inspection techniques available
 - ☐ b. Following disinfection procedures
 - ☐ c. Toxic chemicals
14. Where may efflorescence buildup be seen?
- ☐ a. FRP tank leaks
 - ☐ b. Steel tank leaks
 - ☐ c. Concrete tank leaks
15. With which material can an acoustic impact echo be used?
- ☐ a. Steel
 - ☐ b. Concrete
 - ☐ c. PVC
16. What is a typical value for corrosion allowance?
- ☐ a. 1/32"
 - ☐ b. 1/16"
 - ☐ c. 1/4"
17. Which pipe material is considered to have the shortest lifespan?
- ☐ a. Galvanized steel
 - ☐ b. Ductile iron
 - ☐ c. HDPE
18. What is the remaining useful life for a 30 year old glass lined steel tank in average condition?
- ☐ a. 40 years
 - ☐ b. 60 years
 - ☐ c. 20 years
19. What is a purpose of a performance test?

- ☐ a. Identify redundancy
 - ☐ b. Calculate likelihood of failure
 - ☐ c. Evaluate treatment efficiency
20. What does COF stand for?
- ☐ a. Correction of failure
 - ☐ b. Consequence of failure
 - ☐ c. Common overflow
21. Which type of risk is commonly considered more important?
- ☐ a. COF
 - ☐ b. LOF
22. What is NOT a purpose of a master plan report?
- ☐ a. Summarize assessment results
 - ☐ b. Schedule projects
 - ☐ c. Identify improvements
23. What is the "cost per motivation"?
- ☐ a. Project cost divided by number of motivations
 - ☐ b. Repair cost divided by number of motivations
 - ☐ c. Total CIP cost for each motivation
24. What can be done with a project that has high costs that exceed the annual budget?
- ☐ a. Modify cost estimate to hide costs
 - ☐ b. Ignore budget
 - ☐ c. Split into multiple smaller projects
25. What is another word for projected spending?
- ☐ a. Cash flow projection
 - ☐ b. Budget
 - ☐ c. Construction cost estimate