Final Exam

Continuing Education Course #453 Reducing
Water Loss in Distribution Systems

1. Which is the main purpose of a water distribution system?
   ○ a. Fill water towers
   ○ b. Transfer raw water to a WTP
   ○ c. Transfer potable water to customers

2. Which is NOT a reason that water loss is a growing concern?
   ○ a. Use of bottled water
   ○ b. Aging infrastructure
   ○ c. Scarcity of water sources

3. Which is NOT a common approach for water loss control?
   ○ a. DMAs
   ○ b. Recirculation
   ○ c. Pressure management

4. Which is a definition of water loss?
   ○ a. Unbilled, unmetered water use
   ○ b. Unauthorized consumption
   ○ c. Supplied water that does not reach authorized users

5. Which is the most common cause of water loss?
   ○ a. Pipe leakage
   ○ b. Tank overflows
   ○ c. Meter inaccuracies

6. What is a water balance?
   ○ a. Raw water versus water supplied
   ○ b. Breakdown of authorized consumption
   ○ c. Breakdown of water consumption and loss

7. What units can be used for a water balance?
   ○ a. Mass or Volume
   ○ b. Volume or Flow
   ○ c. Pressure or Flow

8. Which is a correct equation for water loss?
   ○ a. Water Loss = Non-revenue Water - Unauthorized Consumption
   ○ b. Water Loss = Water Supplied – Billed Authorized – Unbilled Authorized
   ○ c. Water Loss = Leakage + Unbilled Authorized

9. What category is pipe flushing?
○ a. Apparent losses
○ b. Unauthorized
○ c. Authorized

10. What category is storage tank losses?
○ a. Real losses
○ b. Apparent Losses
○ c. Authorized

11. How does non-revenue water (NRW) compare to water losses?
○ a. NRW > Water Loss
○ b. NRW < Water Loss

12. What can cause diurnal water loss plots to be misleading?
○ a. Stormwater events
○ b. Billing frequency
○ c. Storage tanks

13. Which is NOT a purpose of a water audit?
○ a. Benchmarking
○ b. Set rates
○ c. Water balance

14. Which is the most common water audit software?
○ a. AWWA Free Water Audit Software
○ b. ASTM Audit Plus
○ c. NFPA Audorito

15. Which can affect the scoring of data validity?
○ a. Leak detection technique
○ b. System pressure
○ c. Meter calibration frequency

16. Which is an example of water loss control planning?
○ a. Target-setting
○ b. Target practice
○ c. Thermography

17. Which approach is the AWWA Free Water Audit Software?
○ a. Bottom-up
○ b. Top-down
○ c. Center

18. Which is an example of the bottom-up approach to auditing?
○ a. Desktop audit
○ b. Benchmarking
○ c. Accuracy tests for meters

19. Which is a basic performance indicator?
○ a. Percent water loss
○ b. ILI

○ c. CARL

20. Which is a key performance indicator?
○ a. Percent NRW
○ b. Percent billed
○ c. ILI

21. Which is a category of Apparent Losses?
○ a. Unbilled unmetered
○ b. Meter inaccuracies
○ c. Leakage on Mains

22. Which is a category of Real Losses?
○ a. Unbilled unmetered
○ b. Meter inaccuracies
○ c. Leakage on Mains

23. Which elevation is most likely to have high water pressure?
○ a. High elevation
○ b. Normal elevation
○ c. Low elevation

24. Which is required for creating DMAs?
○ a. Pressure sensors
○ b. Flow meters
○ c. Leak detectors

25. Which is the most common leak detection technique?
○ a. Acoustic
○ b. Tracer Gas
○ c. GPR