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39	A	B	C	D	E

PRACTICE QUESTIONS

California - Nevada Section American Water Works Association

AAGYZZZW

CA-NV AWWA Water Distribution Grade 4

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for California - Nevada Section American Water Works Association AAGYZZZW, each with its answer key and an explanation. Answer a question before you read its key — the explanation is worth more once you have committed.

If something looks wrong

Send us three things and we will check it:

- the exam code, AAGYZZZW
- the question number
- the email address on your order

Write to **support@mometrix.net**. We reply within one business day.

QUESTION 1

MULTIPLE CHOICE

A Grade 4 distribution operator in California must comply with the federal Lead and Copper Rule Revisions (LCRR). Which of the following actions are required under LCRR for community water systems? (Choose two.)

- ☒ **A** Develop and maintain an initial Lead and Copper Rule Revisions service line inventory by the compliance deadline
- ☐ **B** Replace all lead service lines regardless of tap sampling results
- ☒ **C** Conduct additional tap sampling at sites served by lead service lines as part of the inventory
- ☐ **D** Discontinue all corrosion control treatment once an inventory is filed

ANSWER A - C

WHY LCRR requires community water systems to develop and maintain an initial service line inventory and to identify the materials of service lines. Systems served by lead service lines are subject to additional tap sampling and other requirements. Replacing every lead service line unconditionally (B) and discontinuing corrosion control treatment (D) are not correct — replacement is driven by tap results and corrosion control must continue.

QUESTION 2

MULTIPLE CHOICE

A distribution operator is maintaining a free chlorine residual in the distribution system. Which of the following operational changes will typically INCREASE chlorine demand and may reduce residual in the system? (Choose two.)

- ☒ **A** Raising the water temperature entering the distribution system
- ☐ **B** Lowering the water temperature entering the distribution system
- ☒ **C** Increasing the amount of organic matter entering the system
- ☐ **D** Decreasing the amount of organic matter entering the system

ANSWER A - C

WHY Higher water temperature increases the rate of chlorine reactions with organics and other constituents, raising demand. Increased organic matter in the water also consumes more chlorine. Lower temperature (B) and lower organic loading (D) generally reduce chlorine demand.

QUESTION 3

SINGLE CHOICE

Using the Hazen-Williams formula, which of the following changes will REDUCE friction head loss in a given pipe carrying water at a steady flow rate?

- ☐ A Decreasing the Hazen-Williams C-value of the pipe
- ☒ B Increasing the Hazen-Williams C-value of the pipe
- ☐ C Reducing the pipe diameter
- ☐ D Increasing the flow velocity

ANSWER B

WHY In the Hazen-Williams equation, head loss is inversely related to the C-value (roughness coefficient). A higher C-value represents a smoother pipe (less roughness) and therefore less friction loss for the same flow rate. Decreasing C (A) increases loss; reducing diameter (C) and increasing velocity (D) both increase head loss.

QUESTION 4

SINGLE CHOICE

A centrifugal pump is operating at a higher rate of flow than its best efficiency point (BEP) on its pump curve. Which of the following conditions is most likely to occur?

- ☐ A The motor will draw less current due to lower required brake horsepower
- ☒ B The pump will operate farther out on its curve, increasing the risk of cavitation and recirculation damage
- ☐ C The net positive suction head required (NPSHr) will decrease significantly
- ☐ D The pump will automatically shut down on overload protection

ANSWER B

WHY Operating a centrifugal pump far to the right of BEP (over-feeding) places the impeller in regions of high turbulence and recirculation, which can cause cavitation, vibration, and bearing/seal damage. Moving right of BEP generally increases required brake horsepower (not decreases), NPSHr typically does not decrease significantly, and overload trips are not automatic safeguards for this condition.

QUESTION 5

SINGLE CHOICE

A welded steel ground storage tank is taken out of service for routine inspection. After draining and ventilating, the operator must follow confined-space entry procedures. Which of the following hazards is MOST important to test for immediately before and during entry into the tank interior?

- ☐ A Elevated chlorine residual in the atmosphere
- ☒ B Oxygen-deficient or oxygen-enriched atmosphere and presence of toxic or flammable gases
- ☐ C Excessive noise from ventilation equipment
- ☐ D High humidity that could affect test instruments

ANSWER B

WHY Confined-space entry into a drained, ventilated storage tank requires atmospheric testing for oxygen deficiency/ enrichment and for toxic or flammable gases (e.g., methane from corrosion, residual chlorine fumes). Oxygen-deficient atmospheres are a leading cause of confined-space fatalities. Noise and humidity, while real concerns, are not the primary atmospheric hazards tested before entry.

QUESTION 6

SINGLE CHOICE

A distribution operator is performing routine inspection of a dry-barrel fire hydrant. Which of the following conditions should be recorded as needing corrective maintenance?

- ☐ A The hydrant is painted and the caps are in place
- ☐ B The hydrant drains completely when shut down after a flow test
- ☒ C The hydrant is leaking from the barrel and does not drain, leaving water above the main valve
- ☐ D The hydrant is located at the proper height above the curb

ANSWER C

WHY A dry-barrel hydrant must drain completely when shut down so that standing water does not freeze and damage the barrel. A barrel leak or failure to drain leaves water in the hydrant, which can lead to freezing damage and reduced reliability. Proper paint, in-place caps, and proper height are all desirable conditions, not defects.

QUESTION 7

SINGLE CHOICE

A customer wants to install a dedicated irrigation tap with a chemical fertilizer injection system. Which type of backflow preventer is generally REQUIRED at the service connection to protect the distribution system?

- ☐ A A dual check valve assembly
- ☐ B A pressure vacuum breaker
- ☐ C An atmospheric vacuum breaker
- ☒ D A reduced pressure principle (RP) backflow preventer

ANSWER D

WHY An irrigation system with chemical injection (a high-hazard cross-connection) requires an air-gap or a reduced pressure principle (RP) backflow preventer at the service connection. Dual checks, pressure vacuum breakers, and atmospheric vacuum breakers are not appropriate for high-hazard applications with chemical injection at the service line.

QUESTION 8

SINGLE CHOICE

A SCADA system is reporting that a storage tank level transmitter reads 10 feet lower than a manual gauge reading taken at the same time. Which of the following is the MOST likely cause?

- ☒ A The level transmitter has lost its calibration or its sensing element is drifting
- ☐ B The pump station is operating on VFD bypass
- ☐ C The chlorine residual analyzer requires recalibration
- ☐ D The radio telemetry antenna is misaligned and affecting tank level signals only

ANSWER A

WHY A consistent 10-foot discrepancy between a tank level transmitter and a manual gauge is most often caused by loss of calibration or drift in the level sensor/transmitter. VFD bypass (B) affects pump operation, not level readings. A chlorine analyzer (C) and antenna misalignment (D) would not produce a consistent level offset on a tank level channel.

QUESTION 9

SINGLE CHOICE

A cast iron water main installed in the 1940s in a corrosive soil area shows repeated circumferential breaks with heavy tuberculation inside the pipe. Which of the following long-term measures is MOST appropriate to reduce future failures on this main?

- ☐ **A** Continue making point repairs on each break as it occurs
- ☒ **B** Replace the main with modern materials and consider cathodic protection for adjacent metallic mains
- ☐ **C** Increase system operating pressure to flush out tuberculation
- ☐ **D** Reduce chlorine residual in the main to eliminate corrosion

ANSWER B

WHY Aged cast iron with repeated breaks and heavy tuberculation in corrosive soils is a strong indicator that the main has reached the end of its useful life. Long-term, replacing it (often with PVC or ductile iron) and adding cathodic protection to remaining metallic infrastructure is the most effective approach. Continuing point repairs (A) is short-term only; raising pressure (C) increases main stress and break risk; reducing disinfectant residual (D) can worsen internal corrosion and tuberculation and is not an approved corrosion control strategy by itself.