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| 01 | A | B | C | D | E |
| 02 | A | B | C | D | E |
| 03 | A | B | C | D | E |
| 04 | A | B | C | D | E |
| 05 | A | B | C | D | E |
| 06 | A | B | C | D | E |
| 07 | A | B | C | D | E |
| 08 | A | B | C | D | E |
| 09 | A | B | C | D | E |
| 10 | A | B | C | D | E |
| 11 | A | B | C | D | E |
| 12 | A | B | C | D | E |
| 13 | A | B | C | D | E |

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| 14 | A | B | C | D | E |
| 15 | A | B | C | D | E |
| 16 | A | B | C | D | E |
| 17 | A | B | C | D | E |
| 18 | A | B | C | D | E |
| 19 | A | B | C | D | E |
| 20 | A | B | C | D | E |
| 21 | A | B | C | D | E |
| 22 | A | B | C | D | E |
| 23 | A | B | C | D | E |
| 24 | A | B | C | D | E |
| 25 | A | B | C | D | E |
| 26 | A | B | C | D | E |

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|----|---|---|---|---|---|
| 27 | A | B | C | D | E |
| 28 | A | B | C | D | E |
| 29 | A | B | C | D | E |
| 30 | A | B | C | D | E |
| 31 | A | B | C | D | E |
| 32 | A | B | C | D | E |
| 33 | A | B | C | D | E |
| 34 | A | B | C | D | E |
| 35 | A | B | C | D | E |
| 36 | A | B | C | D | E |
| 37 | A | B | C | D | E |
| 38 | A | B | C | D | E |
| 39 | A | B | C | D | E |

PRACTICE QUESTIONS

California - Nevada Section American Water Works Association

**HRX6UUU9**

CA-NV AWWA Water Distribution Grade 3

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

# Before you begin

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## What this is

9 practice questions for California - Nevada Section American Water Works Association HRX6UUU9, 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, HRX6UUU9
- the question number
- the email address on your order

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

**QUESTION 1**

SINGLE CHOICE

Which physical characteristic of drinking water is most directly affected by the presence of dissolved inorganic salts such as calcium and magnesium?

- ☐ A Turbidity
- ☐ B Color
- ☒ C Hardness
- ☐ D Temperature

**ANSWER C**

**WHY** Water hardness is defined by the concentration of dissolved calcium and magnesium salts. Turbidity relates to suspended particles, color relates to dissolved or colloidal organic matter, and temperature is an independent physical parameter.

**QUESTION 2**

SINGLE CHOICE

A cylindrical storage tank has a diameter of 40 feet and a water depth of 15 feet. Approximately how many gallons of water are in the tank? (Use 7.48 gallons per cubic foot.)

- ☐ A 94,200 gallons
- ☒ B 140,800 gallons
- ☐ C 188,400 gallons
- ☐ D 235,600 gallons

**ANSWER B**

**WHY**  $\text{Volume} = \pi \times r^2 \times h = 3.1416 \times (20)^2 \times 15 = 3.1416 \times 400 \times 15 = 18,849.6$  cubic feet. Multiplying by 7.48 gal/ft<sup>3</sup> gives approximately 140,800 gallons.

**QUESTION 3** SINGLE CHOICE

In a water distribution system, which component is primarily installed to absorb expansion or contraction of a pipeline caused by temperature changes?

- ☐ A Blow-off valve
- ☒ B Expansion joint
- ☐ C Air-vacuum valve
- ☐ D Pressure-reducing valve

**ANSWER B**

**WHY** Expansion joints are designed to absorb movement in a pipeline caused by thermal expansion and contraction. Blow-offs are used to flush sediment, air-vacuum valves release trapped air, and pressure-reducing valves lower downstream pressure.

**QUESTION 4** SINGLE CHOICE

Under the U.S. Safe Drinking Water Act, which federal agency is responsible for establishing primary drinking water standards and administering the public water system supervision program?

- ☐ A U.S. Department of Agriculture (USDA)
- ☐ B Occupational Safety and Health Administration (OSHA)
- ☒ C U.S. Environmental Protection Agency (EPA)
- ☐ D Federal Emergency Management Agency (FEMA)

**ANSWER C**

**WHY** The U.S. Environmental Protection Agency (EPA) is the federal agency empowered under the Safe Drinking Water Act to set primary drinking water standards and oversee the public water system supervision program.

**QUESTION 5**

SINGLE CHOICE

A free chlorine residual of 0.5 mg/L is measured in a remote section of the distribution system. Which condition does this measurement most directly indicate?

- ☐ A The presence of coliform bacteria
- ☒ B Disinfectant is still present to protect the water from microbial regrowth
- ☐ C The water has reached its breakpoint chlorination point
- ☐ D The system has a cross-connection with a non-potable source

**ANSWER B**

**WHY** A detectable free chlorine residual indicates that an active disinfectant remains in the water to control microbial regrowth as it travels through the distribution system. It does not directly indicate coliform presence, the breakpoint, or a cross-connection.

**QUESTION 6**

SINGLE CHOICE

Which operational practice is most effective at minimizing water hammer in a distribution main when a large hydrant flow is suddenly shut down?

- ☐ A Closing the hydrant valve as quickly as possible
- ☒ B Closing the hydrant valve slowly to reduce the rate of flow change
- ☐ C Increasing system pressure before shutdown
- ☐ D Opening additional hydrants upstream before shutdown

**ANSWER B**

**WHY** Water hammer pressure surges are proportional to the rate at which fluid velocity changes. Closing the valve slowly reduces the rate of velocity change and therefore the magnitude of the surge pressure. Quick closure, higher starting pressure, and opening more hydrants do not mitigate the surge at shutdown.

**QUESTION 7**

SINGLE CHOICE

Which type of pipe is most susceptible to corrosion of its interior wall when used to convey soft, low-pH water with low alkalinity?

- ☐ A Ductile iron pipe with cement-mortar lining
- ☐ B Polyvinyl chloride (PVC) pipe
- ☒ C Unlined cast iron pipe
- ☐ D High-density polyethylene (HDPE) pipe

**ANSWER C**

**WHY** Unlined cast (and ductile) iron is subject to tuberculated interior corrosion, which is accelerated by soft, low-pH, low-alkalinity water. Cement-mortar lining protects iron pipe, while PVC and HDPE are not subject to this metallic corrosion.

**QUESTION 8**

SINGLE CHOICE

A reduced-pressure-principle (RP) backflow preventer is being installed on a service line to a commercial irrigation system. The primary purpose of this device is to:

- ☐ A Reduce pressure in the irrigation system during peak demand
- ☒ B Prevent reverse flow of contaminated water into the potable distribution system
- ☐ C Measure the customer's water usage for billing
- ☐ D Reduce water hammer in the service line

**ANSWER B**

**WHY** An RP backflow preventer is a cross-connection control device specifically designed to protect the potable water supply by preventing backflow of non-potable or contaminated water under both back-pressure and back-siphonage conditions.

**QUESTION 9**

MULTIPLE CHOICE

Which of the following factors will increase the head loss due to friction in a pressurized water main? (Choose two.)

- ☒ **A** Increasing the flow velocity through the pipe
- ☐ **B** Increasing the inside diameter of the pipe
- ☒ **C** Increasing the roughness of the pipe interior
- ☐ **D** Decreasing the length of the pipe

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**ANSWER** A • C

**WHY** Friction head loss increases with the square of flow velocity and with pipe wall roughness. Larger inside diameters reduce head loss, and shorter pipe runs reduce head loss proportionally, so B and D are incorrect.