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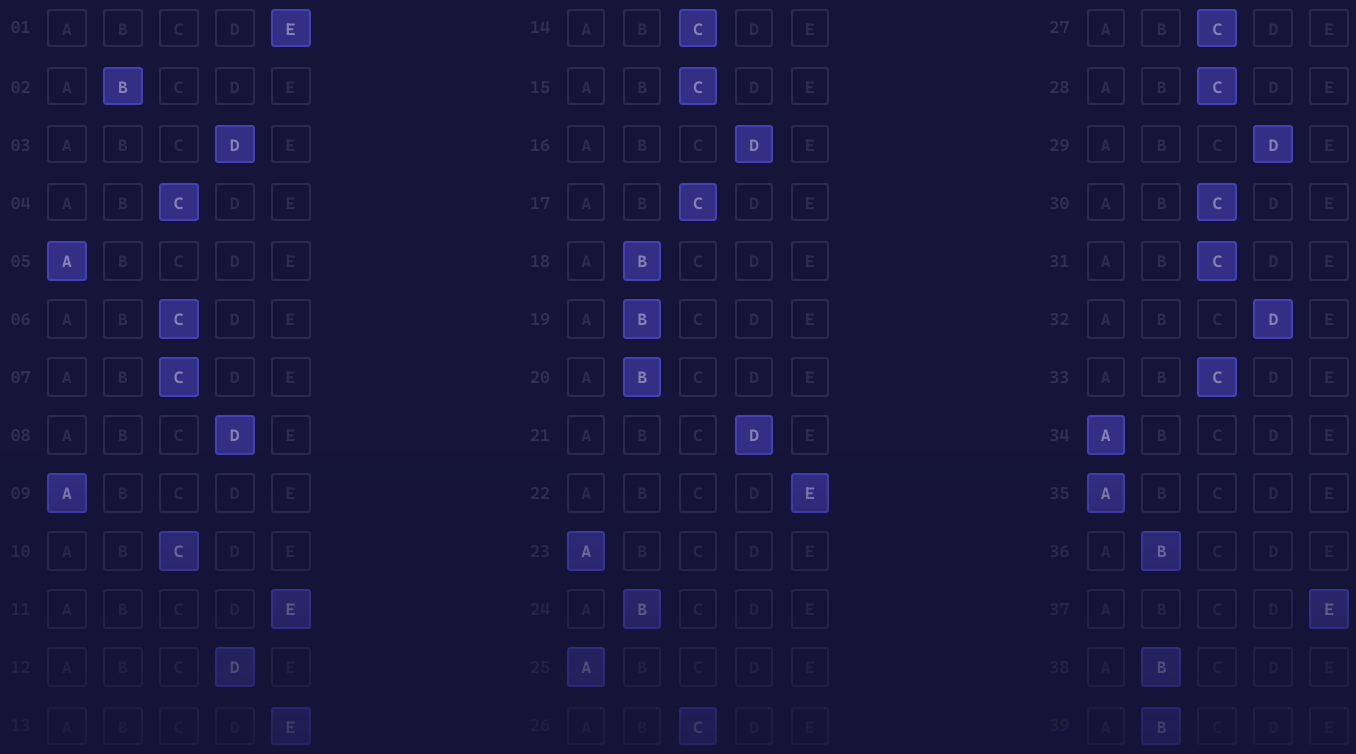

PRACTICE QUESTIONS

Certification Commission for Environmental Professionals

HRX6UUJV

C2EP Water Distribution Operator Class 4

EDITION	QUESTIONS	FORMAT
Demo	9	Limited Edition PDF

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Before you begin

What this is

9 practice questions for Certification Commission for Environmental Professionals `HRX6UUJV`, 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, `HRX6UUJV`
- the question number
- the email address on your order

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

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QUESTION 1 SINGLE CHOICE

When breakpoint chlorination is achieved in a water distribution system, what is the primary chemical significance of reaching the breakpoint?

A All chlorine residual has been reduced to chloride ion and no longer provides disinfection.

B **Free chlorine residual has been established and combined chlorine compounds have been oxidized.**

C The pH of the water has dropped below 7.0, requiring pH adjustment before distribution.

D Chlorine demand has reached a level where additional dosage is no longer measurable.

ANSWER **B**

WHY Breakpoint chlorination is the point at which combined chlorine compounds (chloramines) are fully oxidized and a free chlorine residual is established. Beyond this point, additional chlorine produces a measurable free chlorine residual that is more effective for disinfection than combined chlorine.

QUESTION 2 SINGLE CHOICE

Which hydraulic condition in a distribution main is most likely to cause the release of iron and manganese from tubercles into the bulk water, resulting in customer complaints of red or black water?

A Flow velocities consistently below 0.5 feet per second for extended periods.

B **Sudden flow reversals or surges caused by rapid valve operations and pump starts.**

C Sustained positive pressures above 100 psi throughout the service zone.

D Gradual diurnal demand changes during peak hour demand periods.

ANSWER **B**

WHY Tubercles in cast iron mains containing iron and manganese deposits are stable under steady flow. Sudden flow reversals, hydraulic surges, and rapid changes in flow direction can shear tubercles loose, releasing particulate iron and manganese and causing red or black water events at customer taps.

QUESTION 3 SINGLE CHOICE

An operator is preparing to conduct a hydrant flow test. Before opening the hydrant, the operator confirms that the gauge caps are in place, the outlet caps are slightly cracked open, and the static pressure reading has been recorded. What is the primary purpose of cracking the outlet caps open before opening the hydrant fully?

A To verify that the hydrant is properly lubricated before the flow test.

B **To allow air to vent from the hydrant barrel and prevent a sudden pressure surge.**

C To measure the static pressure of the distribution system accurately.

D To drain residual water from the hydrant barrel before testing.

ANSWER **B**

WHY Cracking the outlet caps before fully opening a hydrant releases trapped air from the barrel and prevents a sudden pressure surge and water hammer that could damage the hydrant or the main. This is a standard safety step prior to conducting a flow test.

QUESTION 4 SINGLE CHOICE

When performing a unidirectional flushing (UDF) program, what is the key operational difference between UDF and conventional flushing?

A UDF requires all hydrants in the zone to be opened simultaneously.

B **UDF uses higher velocities through systematically closing valves to isolate pipe segments and flushing from a single source.**

C UDF only applies to transmission mains and not to distribution mains.

D UDF does not require a flushing velocity of at least 2.5 feet per second.

ANSWER **B**

WHY Unidirectional flushing isolates pipe segments by closing valves, then systematically flushes each segment from a single upstream source. This achieves higher and more controlled velocities than conventional flushing, effectively removing sediment and biofilm with less water usage.

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QUESTION 5 SINGLE CHOICE

In a cross-connection control program, what is the primary health significance of a reduced pressure zone (RPZ) backflow preventer compared to a double check valve assembly?

A The RPZ has a lower head loss and is preferred for high flow applications.

B **The RPZ includes a relief valve that vents to atmosphere when pressure differentials are compromised, providing protection against backpressure and backsiphonage.**

C The RPZ does not require annual testing by a certified backflow tester.

D The RPZ is approved for residential service connections only.

ANSWER **B**

WHY An RPZ backflow preventer contains two check valves and a pressure-differential relief valve that vents to atmosphere when the pressure differential is compromised. This provides the highest level of protection against both backpressure and backsiphonage, making it suitable for high-hazard cross-connections.

QUESTION 6 SINGLE CHOICE

A distribution operator observes that a storage tank is experiencing turnover that exceeds the recommended range. What is the most common operational consequence of excessive water age in a finished water storage tank?

A Reduced formation of disinfection byproducts and improved disinfectant stability.

B **Loss of disinfectant residual, potential microbial regrowth, and degraded water quality at the tank outlet.**

C Increased dissolved oxygen and decreased pH throughout the distribution system.

D Decreased formation of biofilm within the distribution main.

ANSWER **B**

WHY Excessive water age in storage tanks results in loss of disinfectant residual, possible microbial regrowth including opportunistic pathogens such as Legionella, and degraded water quality that can propagate into the downstream distribution system.

QUESTION 7 SINGLE CHOICE

During routine inspection of a pump station, an operator measures the pump's suction and discharge pressures and calculates the differential. What does this differential measurement primarily represent?

A The static head of the distribution system at the point of connection.

B The total dynamic head being produced by the pump at the current operating point.

C The friction loss within the pump impeller only.

D The pressure required to fill the standpipe in the elevated storage tank.

ANSWER B

WHY The differential between pump discharge and suction pressure, adjusted for elevation, approximates the total dynamic head produced by the pump at its current operating point. Operators monitor this to confirm the pump is performing along its published curve.

QUESTION 8 SINGLE CHOICE

A main break results in a depressurization event in a portion of the distribution system. Before the segment is returned to service, what is the most appropriate sequence of steps for a Class 4 operator to direct?

A Restore pressure immediately, then collect a routine coliform sample within 24 hours.

B Isolate the break, repair the main, flush the affected segment, disinfect the segment, and obtain required negative bacteriological results before returning to service.

C Apply chlorine tablets to the excavation site and place the repaired main back in service.

D Close upstream valves only, repair the main, and reopen valves without flushing.

ANSWER B

WHY Standard practice after a main break requires isolating the segment, making the repair, thoroughly flushing the line, applying disinfection, and obtaining required negative bacteriological results before the main is returned to service. This sequence protects public health following any contamination or depressurization event.

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QUESTION 9 SINGLE CHOICE

In a chloraminated water distribution system, an operator measures a decreasing total chlorine residual at a distant monitoring point while free chlorine slowly rises above typical background levels. Which condition is the most likely cause of these residual trends?

A **Nitrification occurring in biofilm and sediment within the mains**

B Formation of trihalomethanes from reactions with natural organic matter

C Excessive orthophosphate corrosion inhibitor feed

D Calcium carbonate precipitation raising the Langelier Saturation Index

ANSWER **A**

WHY Nitrification — the biological oxidation of ammonia to nitrite and nitrate by nitrifying bacteria — consumes the ammonia portion of the chloramine residual, lowering total chlorine and allowing free chlorine to accumulate. The other options either describe different phenomena (THM formation does not selectively strip ammonia, and Langelier/orthophosphate chemistry does not produce this specific residual pattern).

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