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37	A	B	C	D	E
38	A	B	C	D	E
39	A	B	C	D	E

PRACTICE QUESTIONS

Association of Boards of Certification

ERGLDDLM

WPI Water Distribution Operator Class 2

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for Association of Boards of Certification **ERGLDDLM**, 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, **ERGLDDLM**
- the question number
- the email address on your order

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

QUESTION 1

MULTIPLE CHOICE

Which of the following are common indicators used to assess the microbiological quality of drinking water in a distribution system? (Choose two.)

- ☒ **A** Total coliform bacteria
- ☐ **B** Hardness
- ☒ **C** Heterotrophic plate count (HPC)
- ☐ **D** Alkalinity

ANSWER A • C

WHY Total coliform bacteria are the standard regulatory indicator of microbiological contamination, and the heterotrophic plate count (HPC) is a secondary indicator used to monitor general microbial populations in the distribution system. Hardness and alkalinity are physical-chemical parameters related to water stability, not microbiological indicators.

QUESTION 2

MULTIPLE CHOICE

A cylindrical elevated storage tank has a diameter of 60 feet and the water level is being raised from 20 feet to 25 feet. Using 7.48 gallons per cubic foot, how many gallons of water must be added? (Choose two steps that together produce the correct answer.)

- ☒ **A** Calculate the volume change: $(\pi \times 30^2 \text{ ft}) \times 5 \text{ ft} = 14,137 \text{ cubic feet}$
- ☐ **B** Calculate the volume change using the tank diameter of 60 ft as the radius
- ☒ **C** Convert cubic feet to gallons: $14,137 \text{ ft}^3 \times 7.48 \text{ gal/ft}^3 \approx 105,745 \text{ gallons}$
- ☐ **D** Convert the level change from 20 ft to 25 ft by subtracting 5 inches

ANSWER A • C

WHY The radius is half the diameter (30 ft), and the change in depth is $25 - 20 = 5 \text{ ft}$. Volume change = $\pi \times r^2 \times h = \pi \times 900 \times 5 \approx 14,137 \text{ ft}^3$. Multiplying by 7.48 gal/ft³ yields approximately 105,745 gallons. Option B misuses the diameter as the radius, and option D confuses feet with inches.

QUESTION 3 SINGLE CHOICE

Which component of a water distribution system is specifically designed to release accumulated air from a pressurized pipeline and to admit air when the line drains to prevent a vacuum?

- ☐ A Blow-off valve
- ☒ B Air-vacuum (combination) valve
- ☐ C Pressure-reducing valve
- ☐ D Check valve

ANSWER B

WHY An air-vacuum (combination) valve performs two functions: it releases large volumes of air during pipeline filling and admits air when the line drains or a negative pressure occurs, preventing vacuum and potential pipe collapse. A blow-off is used to flush sediment, a PRV reduces pressure, and a check valve prevents backflow.

QUESTION 4 SINGLE CHOICE

What is the minimum recommended free chlorine residual that a water distribution operator should verify at the farthest points of the system to confirm adequate secondary disinfection?

- ☐ A 0.2 mg/L
- ☒ B 1.0 mg/L
- ☐ C 2.5 mg/L
- ☐ D 5.0 mg/L

ANSWER B

WHY Public water systems are generally required to maintain a detectable free chlorine residual throughout the distribution system, with a minimum target commonly cited at 1.0 mg/L at the most remote points to confirm ongoing disinfection. Lower values may not reliably inactivate microorganisms, while much higher values can cause taste/odor complaints.

QUESTION 5

SINGLE CHOICE

Before entering a confined space such as a valve vault or storage tank, an operator must first:

- ☐ A Open the hatch fully and enter immediately to minimize exposure time
- ☐ B Smell the air inside to detect hazardous gases
- ☒ C Test the atmosphere for oxygen content and toxic or flammable gases
- ☐ D Wait until another crew member is on-site and then enter together

ANSWER C

WHY Confined-space entry requires atmospheric testing for oxygen deficiency/enrichment and for toxic or flammable gases before entry; smelling the air is unreliable and dangerous. Opening hatches provides ventilation only after testing confirms it is safe, and a buddy system alone does not replace atmospheric monitoring.

QUESTION 6

SINGLE CHOICE

Friction loss in a water distribution main increases most directly with which of the following changes?

- ☐ A A decrease in flow velocity
- ☐ B An increase in pipe diameter
- ☒ C An increase in flow velocity
- ☐ D A decrease in the length of the pipe

ANSWER C

WHY Friction head loss increases rapidly as flow velocity increases (approximately with the square of velocity for turbulent flow in the Hazen-Williams and Darcy-Weisbach equations). Larger pipe diameter and shorter pipe length both reduce friction loss.

QUESTION 7 SINGLE CHOICE

A centrifugal pump is running but producing very little flow. Which condition is the most likely cause?

- ☐ A The discharge valve is fully closed
- ☒ B The suction line is plugged, restricted, or the pump is not primed
- ☐ C The electrical supply voltage is slightly above nominal
- ☐ D The pump is rotating in the reverse direction at full speed

ANSWER B

WHY A centrifugal pump cannot move water effectively if it is not primed or if the suction side is blocked or restricted, because it relies on atmospheric/source pressure to push water into the impeller. A closed discharge valve would cause high pressure but no flow with the pump still running normally; reverse rotation typically produces no flow at all and would be more obvious.

QUESTION 8 SINGLE CHOICE

Which backflow preventer is required for a service connection where the water is used to supply a chemical injection system on an irrigation line, representing a high health hazard?

- ☐ A Double check valve assembly (DCVA)
- ☐ B Pressure vacuum breaker (PVB)
- ☐ C Atmospheric vacuum breaker (AVB)
- ☒ D Reduced pressure principle (RP) backflow preventer

ANSWER D

WHY High-hazard connections, such as irrigation systems with chemical injection, require an RP backflow preventer because it provides the highest level of protection against both backpressure and back-siphonage. A DCVA is acceptable only for low hazard, while PVBs and AVBs protect against back-siphonage only and have application limitations.

QUESTION 9

SINGLE CHOICE

A main is flushed through a hydrant and the flow is measured with a pitot gauge. The operator reads 40 psi of velocity pressure on the pitot tube. What is the approximate discharge velocity through the hydrant orifice, in feet per second? (Use $V \approx 12.8 \times \sqrt{P}$ for P in psi.)

- ☐ A 51 ft/s
- ☒ B 81 ft/s
- ☐ C 128 ft/s
- ☐ D 512 ft/s

ANSWER B

WHY $V \approx 12.8 \times \sqrt{40} = 12.8 \times 6.32 \approx 80.9$ ft/s, or about 81 ft/s. Option A (51) corresponds to about 16 psi, option C (128) is 10× too high, and option D (512) is the value without the square root applied.