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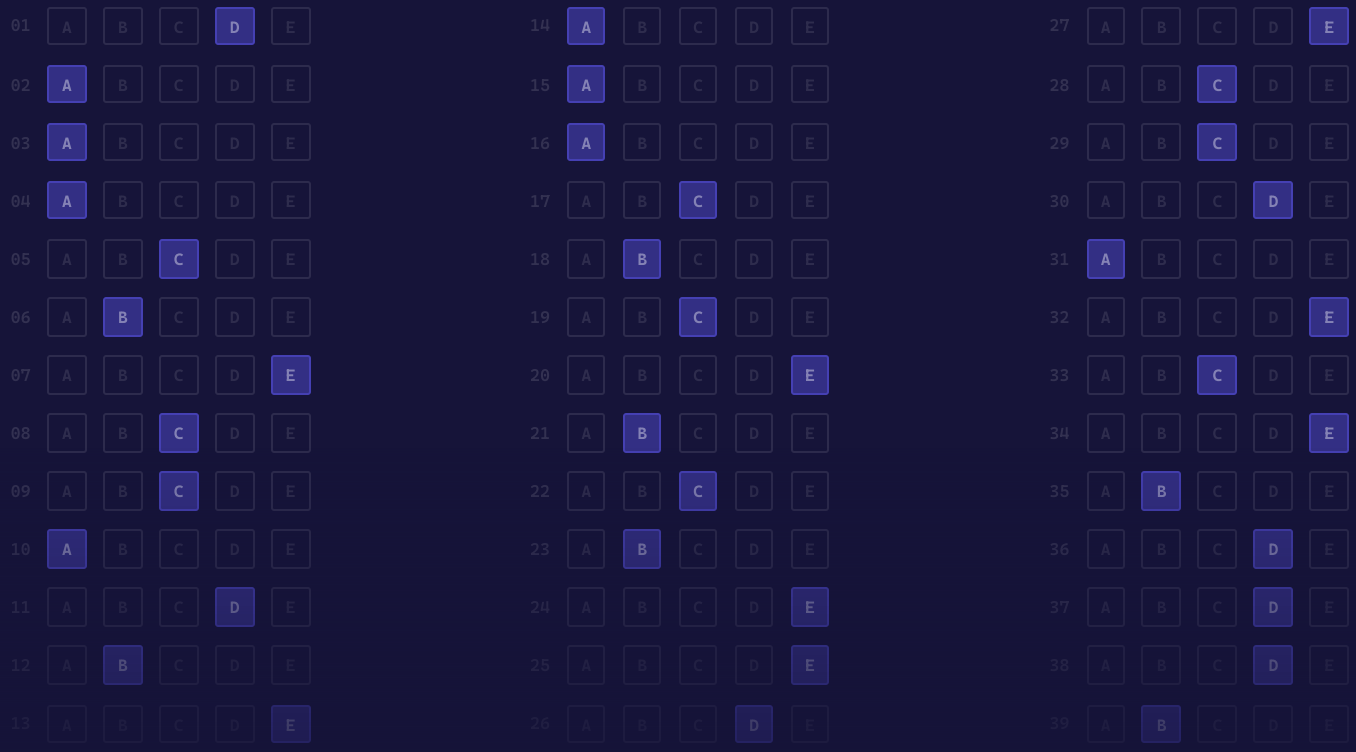

PRACTICE QUESTIONS

ABC-MO: Missouri Department of Natural Resources

VFWGBGWK

Drinking Water Treatment Level C (DW-C)

EDITION	QUESTIONS	FORMAT
Demo	9	Limited Edition PDF

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Before you begin

What this is

9 practice questions for ABC-MO: Missouri Department of Natural Resources `VFWGBGWK`, 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, `VFWGBGWK`
- the question number
- the email address on your order

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

QUESTION 1 SINGLE CHOICE

Under Missouri's operating permit requirements for a community water supply, who is designated as the person responsible for the operation of the treatment facility?

A The mayor of the municipality served by the system

B The Missouri Department of Natural Resources regional engineer

C **The certified operator in responsible charge (or designated operator in charge) of record for the treatment facility**

D The chair of the local water and sewer commission only when the system exceeds 5,000 service connections

ANSWER C

WHY Missouri rules require that each community drinking water treatment facility have a certified operator in responsible charge (or operator in charge of record) who is accountable for day-to-day treatment operations. Elected officials, DNR engineers, and commission chairs do not fulfill that defined regulatory role.

QUESTION 2 SINGLE CHOICE

A surface water source routinely exhibits high color and moderate turbidity following rainfall. Which source water characteristic is the color most directly associated with?

A Inorganic mineral content such as iron and manganese

B **Naturally occurring organic matter, typically from decaying vegetation and humic substances**

C Dissolved gases such as carbon dioxide and hydrogen sulfide

D Suspended silt and clay particles carried by runoff

ANSWER B

WHY Color in surface water sources is most commonly caused by dissolved organic matter (humic and fulvic acids) from decaying vegetation in the watershed, not by minerals or silt. Turbidity is associated with suspended particulates such as silt and clay. This distinction matters because organic color drives coagulant demand and disinfection byproduct formation.

QUESTION 3 SINGLE CHOICE

An operator needs to apply 12 mg/L of alum to a flow of 2.5 MGD. How many pounds of dry alum (100% active) are required per day?

A **250 lb/day**

B 208 lb/day

C 125 lb/day

D 300 lb/day

ANSWER **A**

WHY Pounds per day = (dose in mg/L) × (flow in MGD) × 8.34 lb/gal. So 12 × 2.5 × 8.34 = 250.2 lb/day. The other options use incorrect constants or arithmetic errors (208 omits the 8.34 constant incorrectly; 125 is half the dose; 300 overestimates the flow).

QUESTION 4 SINGLE CHOICE

Which condition most likely indicates that a conventional sedimentation basin needs to be taken out of service for cleaning?

A Settled water turbidity is consistently below 1 NTU

B The surface overflow rate is well below the design value

C **A visible blanket of accumulated sludge with a significant increase in settled water turbidity and shortened filter run times**

D Influent pH is slightly below the optimum coagulation range

ANSWER **C**

WHY Accumulated sludge in a sedimentation basin reduces effective volume, increases short-circuiting, raises settled water turbidity, and often causes carryover that shortens filter runs. These are the operational signals that cleaning is needed. Low effluent turbidity and low overflow rate are desirable, not reasons to take a basin offline.

QUESTION 5 SINGLE CHOICE

A dual-media anthracite/sand filter has been in service for an unusually long run with no increase in head loss and no reduction in filtrate quality. Which condition does this most likely indicate?

A Filter aid polymer overdosing

B Filter underrunning (insufficient floc load) leading to mudball formation and possible media compaction

C Excessive backwash rate causing media loss

D Optimal performance with no action required

ANSWER B

WHY A long filter run with no head loss buildup and no improvement (or degradation) in effluent quality typically indicates filter underrunning — floc is not being deposited effectively, which can allow fine particles to penetrate and lead to mudball formation and eventual media fouling. Polymer overdose would more likely shorten runs or cause breakthrough; excessive backwash causes turbidity spikes and media loss, not low head loss.

QUESTION 6 SINGLE CHOICE

During a free chlorination CT calculation for Giardia inactivation at a pH and temperature within the tables, the operator uses the free chlorine residual measured at which point in the contact basin?

A The residual at the basin inlet only

B The peak residual observed anywhere in the basin

C The residual at the point of peak flow in the basin

D The residual at the effluent end of the contact time (T10) period

ANSWER D

WHY CT calculations under the Surface Water Treatment Rule use the free chlorine (or other disinfectant) residual measured at the end of the contact chamber — combined with T10 detention time — to ensure required log inactivation is achieved. Using inlet-only or peak residuals overstates the credit and is not the regulatory approach.

QUESTION 7 SINGLE CHOICE

Customers report an earthy-musty taste and odor in finished water during late summer. Which treatment action is most appropriate?

A Increase free chlorine residual to breakpoint chlorination

B Switch to sequestering only and raise finished water pH

C **Apply powdered activated carbon (PAC) ahead of coagulation and optimize removal of the source organisms**

D Reduce coagulant dose to lower sludge production

ANSWER **C**

WHY Earthy-musty odors in late summer are typically caused by geosmin and 2-MIB produced by actinomycetes and cyanobacteria in the source. Powdered activated carbon dosed early in treatment is the standard control. Breakpoint chlorination can worsen odor complaints; reducing coagulant worsens removal of source organisms and their metabolites.

QUESTION 8 SINGLE CHOICE

Which operational change is most consistent with optimizing corrosion control to minimize lead and copper release in a distribution system?

A Increasing free chlorine residual to the maximum practical level at all times

B **Raising pH (and, where appropriate, alkalinity) to reduce plumbosolvency while maintaining disinfectant efficacy and minimizing DBP formation**

C Lowering finished water pH below 6.5 to keep carbonate scale from forming

D Eliminating orthophosphate inhibitor feed during summer demand peaks

ANSWER **B**

WHY Lead and copper corrosion control is primarily a function of pH, alkalinity, and (often) orthophosphate inhibitor. Raising pH within a range that still allows effective disinfection and limits DBP formation reduces lead solubility. Maximizing chlorine does not reduce corrosion; very low pH increases lead and copper leaching; removing orthophosphate is contrary to corrosion control practice.

QUESTION 9 MULTIPLE CHOICE

A conventional treatment plant experiences a sudden drop in raw water pH following a heavy storm. Which two operational responses are most appropriate for the treatment operator to initiate? (Choose two.)

A Increase coagulant dose only if jar tests confirm improved turbidity removal at the lower pH

B Re-evaluate coagulant type and dose using jar tests, since low pH alters alum/polymer performance

C Immediately shut down the filters until pH returns to normal

D Reduce or adjust post-treatment pH/alkalinity control to protect the distribution system from corrosive water

E Stop disinfection because chlorine demand always rises at low pH

ANSWER B · D

WHY Acid storm events depress raw water pH, which changes optimum coagulation chemistry and can push finished water into a corrosive range. Operators should jar-test for new coagulant selection and dose, and adjust finished water pH/alkalinity to protect the distribution system. Increasing coagulant dose without jar testing is guesswork; shutting down filters is an overreaction; and stopping disinfection is unsafe and contrary to requirements.