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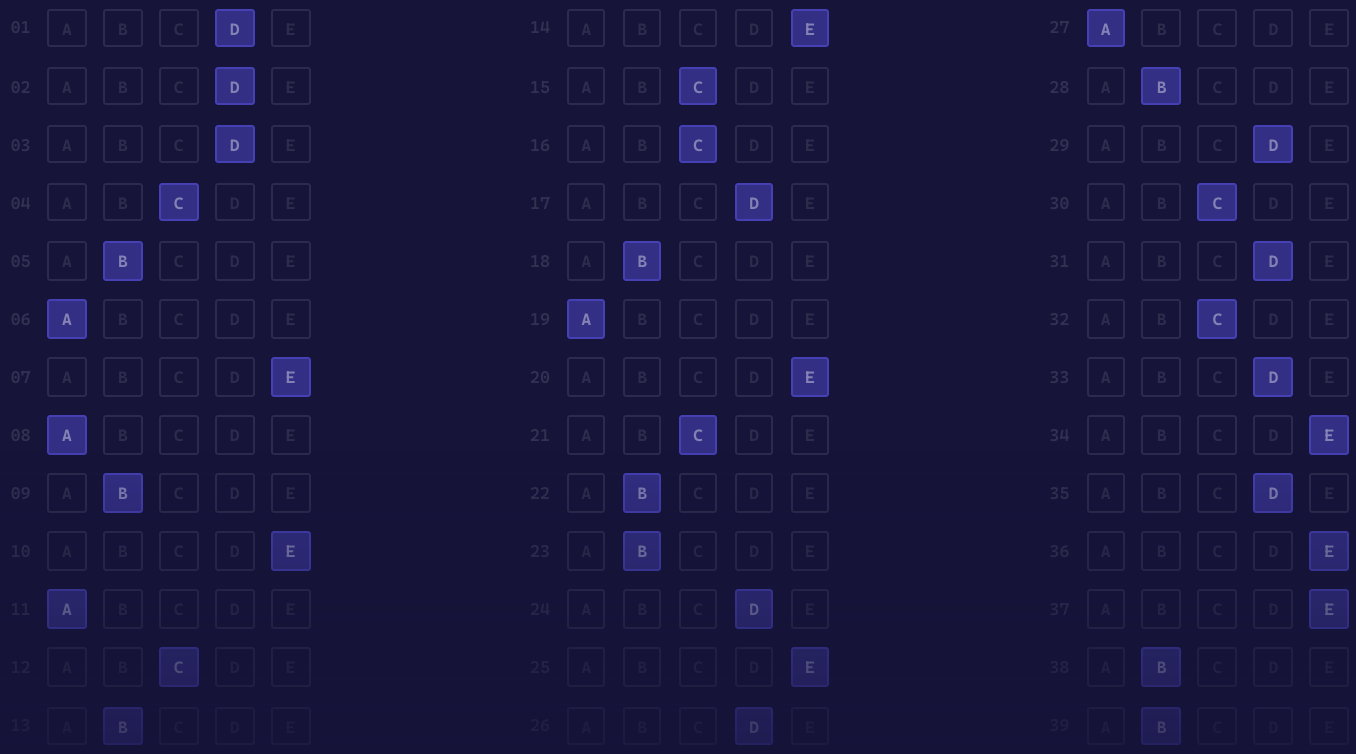


PRACTICE QUESTIONS

## Colorado Certified Water Professionals

# LA9QHJUR

Colorado Water Treatment Operator Class S

| EDITION | QUESTIONS | FORMAT |
|---|---|---|
| Demo | 9 | Limited Edition PDF |

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# Before you begin

### What this is

9 practice questions for Colorado Certified Water Professionals `LA9QHJUR`, 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, `LA9QHJUR`
- 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

What is the primary reason operators add chlorine to drinking water?

A To remove turbidity

B **To kill or inactivate pathogenic microorganisms**

C To soften the water

D To raise the pH

**ANSWER** **B**

**WHY** The primary purpose of chlorination (and other disinfection methods) is to kill or inactivate pathogenic microorganisms so the water is safe for human consumption. Removing turbidity is a coagulation/sedimentation/filtration task; softening and pH adjustment are separate treatment objectives.

**QUESTION 2** SINGLE CHOICE

Which chemical is most commonly used as a primary coagulant in conventional surface water treatment?

A Sodium hydroxide

B **Aluminum sulfate (alum)**

C Sodium chloride

D Calcium carbonate

**ANSWER** **B**

**WHY** Aluminum sulfate (alum) is the most widely used primary coagulant in conventional surface water treatment. When added to water it forms a gelatinous aluminum hydroxide floc that captures suspended particles, which are then removed in sedimentation basins and filters.

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**QUESTION 3** SINGLE CHOICE

What is the typical operational trigger for backwashing a rapid sand filter at a conventional water treatment plant?

A When the effluent turbidity rises above 0.5 NTU

B When the filter run reaches a predetermined time

C **When the head loss across the filter reaches a setpoint or effluent turbidity degrades**

D When the raw water pH changes by 0.2 units

**ANSWER C**

**WHY** Rapid sand filters are backwashed when one of two conditions is met: (1) the head loss (differential pressure) across the filter bed reaches a maximum design value, or (2) the filtrate (effluent) turbidity begins to rise, indicating the filter is no longer effectively removing particles. Filter run time is a secondary guideline, not the primary trigger.

**QUESTION 4** SINGLE CHOICE

Trihalomethanes (THMs) are formed when chlorine reacts with which water constituent?

A Total dissolved solids

B **Natural organic matter (humic and fulvic acids)**

C Hardness ions

D Dissolved oxygen

**ANSWER B**

**WHY** Trihalomethanes and haloacetic acids are disinfection byproducts formed when free chlorine reacts with natural organic matter (NOM) — primarily humic and fulvic acids from decaying vegetation — during the chlorination process. Controlling THM formation typically involves removing TOC before chlorination or using alternative disinfectants.

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**QUESTION 5** SINGLE CHOICE

Why do operators commonly add sodium hydroxide or lime to finished water?

A To disinfect the water

B To increase hardness

**C To raise the pH for corrosion control and stability**

D To remove iron and manganese

**ANSWER C**

**WHY** Sodium hydroxide (caustic soda) or lime (calcium hydroxide) is added to finished water to raise the pH and increase alkalinity, which reduces corrosion of metal pipes (lead, copper, iron) in the distribution system. The Lead and Copper Rule requires utilities to control corrosion through pH/alkalinity adjustment or other means.

**QUESTION 6** SINGLE CHOICE

A pump delivers 450 gallons per minute. How many gallons per day is this flow equivalent to?

A 27,000 gpd

B 64,800 gpd

C 450,000 gpd

**D 648,000 gpd**

**ANSWER D**

**WHY** Convert minutes to days: 1 day = 24 hours × 60 min/hr = 1,440 min/day. 450 gpm × 1,440 min/day = 648,000 gallons per day. Operators routinely perform these flow conversions for chemical dose calculations and reporting.

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**QUESTION 7** SINGLE CHOICE

The Surface Water Treatment Rule requires surface water systems to achieve at least what percentage reduction/inactivation of Giardia lamblia cysts through the treatment process?

A 50% (0.5 log)

B 90% (1.0 log)

**C 99.9% (3.0 log)**

D 99.99% (4.0 log)

**ANSWER C**

**WHY** The federal Surface Water Treatment Rule (SWTR) requires surface water systems to achieve at least 99.9% (3-log) removal/inactivation of Giardia lamblia cysts and 99.99% (4-log) removal/inactivation of viruses through the combined filtration and disinfection processes. Colorado adopts these federal requirements through its own drinking water regulations.

**QUESTION 8** TRUE FALSE

The breakpoint chlorination curve represents the point at which all ammonia and chloramine compounds have been oxidized, leaving only free chlorine residual in the water.

A True

**B False**

**ANSWER B**

**WHY** True. Breakpoint chlorination is the point on the chlorine residual curve where the chlorine dose is high enough that all ammonia nitrogen has been fully oxidized and only a free chlorine residual remains. Beyond the breakpoint, additional chlorine produces a proportional increase in free chlorine residual. Operating past the breakpoint is the standard practice for maintaining a free chlorine residual in the distribution system.

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**QUESTION 9** MULTIPLE CHOICE

When handling chlorine gas cylinders at a water treatment plant, which two of the following safety practices are required?

**A** **Store cylinders upright and chained/secured in a well-ventilated, locked room**

**B** **Keep an emergency repair kit (B-kit) available for leak response**

C Mix chlorine gas with ammonia intentionally to neutralize it

D Use chlorine gas in enclosed spaces without respiratory protection

E Allow cylinders to lay on their side during storage

**ANSWER** **A** · **B**

**WHY** The two correct safety practices are (A) storing cylinders upright, secured, and in a well-ventilated, locked room, and (B) keeping a chlorine emergency repair kit (B-kit) available for leaking cylinders. The other options are dangerous and incorrect: chlorine gas should NEVER be mixed with ammonia (which produces toxic chloramine gases), respiratory protection is required in any confined space, and cylinders must be stored upright to prevent liquid chlorine from escaping the valve area.

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