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39	A	B	C	D	E

PRACTICE QUESTIONS

Colorado Certified Water Professionals

DLPT26Y6

Colorado Water Treatment Operator Class D

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for Colorado Certified Water Professionals **DLPT26Y6**, 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, **DLPT26Y6**
- 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 primary purposes of disinfection in a potable water treatment plant? (Choose two.)

- ☒ **A** Inactivation or destruction of pathogenic microorganisms
- ☐ **B** Reduction of total dissolved solids (TDS) in the finished water
- ☒ **C** Prevention of bacterial regrowth in the distribution system
- ☐ **D** Removal of taste- and odor-causing compounds such as geosmin

ANSWER A • C

WHY The primary purpose of disinfection is to inactivate or destroy pathogenic microorganisms (A) so the water is safe for consumption. A secondary but still important purpose is maintaining a disinfectant residual to prevent bacterial regrowth throughout the distribution system (C). Disinfection does not significantly reduce TDS (B), which is addressed by membrane or ion-exchange processes, and removing geosmin and similar compounds (D) is typically a goal of oxidation/adsorption (e.g., powdered activated carbon or ozone for taste and odor control), not standard disinfection.

QUESTION 2

MULTIPLE CHOICE

Which of the following conditions typically increase the chlorine demand of a source water? (Choose two.)

- ☒ **A** High concentration of ammonia (nitrogen) in the raw water
- ☐ **B** Low water temperature
- ☒ **C** Elevated levels of organic matter and iron/manganese
- ☐ **D** Very low turbidity

ANSWER A • C

WHY Ammonia (A) reacts with free chlorine to form chloramines (combined chlorine), consuming free chlorine residual. Organic matter, iron, and manganese (C) also react with chlorine and increase demand. Lower water temperature (B) generally slows reactions and reduces demand, and lower turbidity (D) means fewer particulates to oxidize, also reducing demand. Therefore A and C are the conditions that increase chlorine demand.

QUESTION 3

TRUE FALSE

A combined chlorine residual is formed when free chlorine reacts with ammonia or organic nitrogen compounds in the water.

☒ **A** True☐ B False**ANSWER A**

WHY True. When free chlorine (HOCl/OCl^-) reacts with ammonia or certain organic nitrogen compounds, it forms chloramines (such as monochloramine, dichloramine, and nitrogen trichloride), which together make up the combined chlorine residual. This is the basis for the breakpoint chlorination curve and for chloramine disinfection practices.

QUESTION 4

SINGLE CHOICE

At which finished-water pH range does free chlorine disinfection (in the form of HOCl) typically perform best?

☐ A pH 2.0 to 4.0☒ **B** pH 6.0 to 7.5☐ C pH 8.5 to 9.5☐ D pH 11.0 to 12.0**ANSWER B**

WHY Free chlorine exists as hypochlorous acid (HOCl) at lower pH and as the hypochlorite ion (OCl^-) at higher pH. HOCl is a far more effective disinfectant than OCl^- , so optimum disinfection occurs in the slightly acidic to near-neutral range, roughly pH 6.0 to 7.5. At higher pH values, disinfection efficiency drops sharply.

QUESTION 5

SINGLE CHOICE

Under the U.S. Surface Water Treatment Rule, the minimum free chlorine residual that a public water system must maintain in the water entering the distribution system is:

- ☐ A 0.1 mg/L
- ☒ B 0.2 mg/L
- ☐ C 0.5 mg/L
- ☐ D 1.0 mg/L

ANSWER B

WHY The Surface Water Treatment Rule (SWTR) requires systems using surface water or groundwater under the direct influence of surface water to maintain a minimum disinfectant residual of 0.2 mg/L free chlorine (or an equivalent residual for other approved disinfectants) entering the distribution system, in addition to meeting required contact-time (CT) values. 0.5 mg/L is commonly cited as a target for combined chlorine, and 1.0 mg/L is not the SWTR minimum.

QUESTION 6

SINGLE CHOICE

In surface water treatment, the term 'CT' used for disinfection credit is defined as the:

- ☒ A Concentration of chlorine (mg/L) multiplied by the contact time (minutes)
- ☐ B Cumulative throughput of water through the contact basin (gallons)
- ☐ C Concentration of turbidity remaining after filtration (NTU)
- ☐ D Critical temperature above which chlorine degrades rapidly (°C)

ANSWER A

WHY CT is the disinfection effectiveness parameter: the residual disinfectant concentration C (mg/L) multiplied by the contact time T (minutes) that the water is in the disinfection basin. Operators must demonstrate that the actual CT achieved meets or exceeds the required CT for the target pathogen at the given pH and temperature.

QUESTION 7

SINGLE CHOICE

In conventional surface water treatment, the primary purpose of adding a coagulant such as alum (aluminum sulfate) is to:

- ☐ A Disinfect the water by killing bacteria and viruses
- ☐ B Adjust the pH of the water to a slightly alkaline range
- ☒ C Destabilize colloidal particles so they can aggregate and be removed by sedimentation and filtration
- ☐ D Add hardness to the water to prevent corrosion of mains

ANSWER C

WHY Coagulation with chemicals such as alum, ferric chloride, or polymer is used to neutralize the surface charges on colloidal suspended particles, allowing them to come together (flocculate) into larger, settleable flocs that can be removed in sedimentation basins and filters. While alum does produce a slight pH change, that is a side effect, not the purpose. It is not a disinfectant and it does not add hardness.

QUESTION 8

SINGLE CHOICE

A rapid sand filter is producing water with a sudden increase in effluent turbidity shortly after backwashing. The most likely cause is:

- ☐ A The filter media is being properly re-stratified
- ☒ B The backwash rate was too low, leaving mud balls in the media
- ☐ C Filter influent has dropped below freezing temperature
- ☐ D The filter has not yet reached the terminal head loss

ANSWER B

WHY If the backwash rate is too low, solids and biological growth are not adequately flushed out and 'mud balls' can form in the filter media, creating channels that allow untreated water to pass and causing turbidity breakthrough. Proper backwash should fully fluidize the media and remove accumulated solids without losing filter media.

QUESTION 9

SINGLE CHOICE

Which treatment approach is most commonly used by water utilities to help control corrosion of distribution-system pipes (such as lead and copper)?

- ☐ A Superchlorination followed by dechlorination
- ☐ B Lime softening to very low hardness
- ☒ C pH and alkalinity adjustment, often with corrosion-inhibitor addition such as orthophosphate
- ☐ D Increasing the free chlorine residual to 5.0 mg/L

ANSWER C

WHY The Lead and Copper Rule requires utilities to optimize corrosion control, typically by adjusting pH upward (e.g., with lime, sodium hydroxide, or sodium carbonate) and increasing alkalinity, frequently with the addition of a corrosion inhibitor such as orthophosphate or a blend of ortho- and polyphosphates. Superchlorination, lime softening to very low hardness, and excessive free chlorine are not recognized optimal corrosion-control practices and can worsen corrosion in some cases.