

01	☐ A	☐ B	☐ C	☐ D	☐ E
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35	☐ A	☐ B	☐ C	☐ D	☒ E
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37	☐ A	☐ B	☐ C	☒ D	☐ E
38	☐ A	☐ B	☒ C	☐ D	☐ E
39	☒ A	☐ B	☐ C	☐ D	☐ E

PRACTICE QUESTIONS

California - Nevada Section American Water Works Association

UKNE222F

CA-NV AWWA Water Quality Laboratory Analysts Grade 3

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for California - Nevada Section American Water Works Association UKNE222F, 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, UKNE222F
- the question number
- the email address on your order

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

QUESTION 1

MULTIPLE CHOICE

When preparing a calibration curve for spectrophotometric determination of manganese by the PAN method, which of the following must be included in each analytical run? (Choose two.)

- ☒ **A** A reagent blank carried through the entire preparation procedure
- ☐ **B** A check standard at a concentration near the upper end of the calibration range
- ☐ **C** A duplicate of every field sample at the same dilution
- ☒ **D** A calibration blank (zero standard) and at least one mid-range check standard

ANSWER A - D

WHY Standard Methods and AWWA laboratory practice require a reagent blank (carried through all reagents and digestion steps) plus a zero and at least one mid-range check standard to verify the calibration curve during each run. A high-end check standard alone is insufficient, and duplicating every field sample is not a calibration requirement (duplicates are a separate precision QC tool).

QUESTION 2

MULTIPLE CHOICE

For the membrane filter (MF) procedure for total coliforms, which two of the following statements are correct? (Choose two.)

- ☒ **A** The filter funnel and base must be sterilized between samples
- ☐ **B** Volumes of 100 mL are always filtered regardless of expected density
- ☒ **C** Colonies counted are reported as CFU/100 mL after applying the volume filtered
- ☐ **D** Incubation temperature and time depend on the target organism group

ANSWER A - C

WHY Between samples, the MF apparatus funnel and base must be sterilized (typically by UV or flame/ethanol rinse) to prevent carryover contamination. Results are reported as colony-forming units per 100 mL, calculated by applying the appropriate volume factor. Volumes filtered are NOT always 100 mL (smaller aliquots are used for high-density waters), and incubation conditions vary by organism (e.g., 35 °C for total coliforms vs. different conditions for fecal coliforms or E. coli).

QUESTION 3 SINGLE CHOICE

A sample is reported by the laboratory as having a turbidity of 0.15 NTU. Which statement best characterizes this value?

- ☒ **A** It is well below typical drinking-water treatment goals and indicates very low particulate content
- ☐ **B** It indicates the sample is too turbid for reliable nephelometric measurement
- ☐ **C** It suggests the presence of a colored dissolved substance rather than particles
- ☐ **D** It is at the upper regulatory limit and would require reprocessing

ANSWER A

WHY Modern nephelometric turbidimeters routinely measure well below 0.10 NTU, and 0.15 NTU is considered very low particulate content — typical finished-water goals are at or below 0.3 NTU (and many utilities target 0.1 NTU). Option B is incorrect because nephelometers perform best at low turbidity; option C confuses turbidity with true color; option D misstates the regulatory threshold.

QUESTION 4 SINGLE CHOICE

A laboratory analyst notices that the most recent check standard result on a spectrophotometer calibration is approximately 12% lower than its known value. What is the MOST appropriate first action?

- ☒ **A** Stop analysis, recalibrate the instrument using fresh standards, and rerun the affected samples
- ☐ **B** Continue running samples but multiply results by a correction factor
- ☐ **C** Discard the check standard data and report results based on the original calibration only
- ☐ **D** Report the results with a footnote indicating the calibration deviation

ANSWER A

WHY When a check standard fails by a meaningful percentage (commonly a 10% or greater deviation triggers corrective action), the analyst must stop, investigate, recalibrate with freshly prepared standards, and re-analyze any samples run since the last acceptable check standard. Applying a post-hoc correction factor, ignoring the failure, or merely footnoting the deviation are not acceptable laboratory QC practice.

QUESTION 5

SINGLE CHOICE

Which of the following is the correct procedure for diluting a concentrated acid in the laboratory?

- ☐ A Add water slowly to the acid while stirring
- ☒ B Add the acid slowly to water while stirring
- ☐ C Mix equal volumes of acid and water simultaneously in a beaker
- ☐ D Add acid to water only when both are at room temperature and ice-cooled

ANSWER B

WHY The long-standing safety rule is 'Add acid to water' (often stated as 'AAA' — Always Add Acid to water). Adding water to concentrated acid is highly exothermic and can cause localized boiling and splattering. Ice cooling and simultaneous mixing are not standard practice; the key is slow addition of acid to water with continuous stirring.

QUESTION 6

SINGLE CHOICE

In the determination of total hardness by EDTA titration, what is the function of the ammonia-ammonium chloride buffer (pH 10.0 ± 0.1)?

- ☒ A It provides the proper pH for the indicator color change and for complexation of calcium and magnesium by EDTA
- ☐ B It prevents precipitation of iron and manganese that would otherwise interfere
- ☐ C It acts as the titrant itself, binding calcium and magnesium directly
- ☐ D It oxidizes organic matter that could interfere with the endpoint

ANSWER A

WHY EDTA forms stable 1:1 complexes with Ca^{2+} and Mg^{2+} only at the proper pH; the ammonia-ammonium chloride buffer maintains the required pH near 10 so the Eriochrome Black T (or equivalent) indicator produces a sharp, reliable endpoint. Iron and manganese interference is typically controlled with cyanide or other masking agents, not the buffer; the buffer is not the titrant; and oxidation of organics is not its role.

QUESTION 7

SINGLE CHOICE

Which statement correctly distinguishes free chlorine from total chlorine in the DPD (N,N-diethyl-p-phenylenediamine) method?

- ☐ A Free chlorine is measured after adding KI; total chlorine is measured without KI
- ☒ B Free chlorine is measured without KI; total chlorine is measured after adding KI which reacts with combined chlorine
- ☐ C Both free and total chlorine are measured simultaneously in a single reading
- ☐ D Total chlorine requires ferrous sulfate; free chlorine requires potassium iodide

ANSWER B

WHY In the standard DPD method, free chlorine reacts directly with DPD to produce a magenta color measured immediately. Adding potassium iodide (KI) converts combined chlorine (chloramines) to free chlorine, which then also reacts with DPD; the difference (or the separate 'total' reading after KI addition) yields the combined chlorine concentration. Adding KI to read 'free' reverses the logic in option A.

QUESTION 8

SINGLE CHOICE

A laboratory analyst accidentally splashes a chemical into the eye. According to standard laboratory safety practice, the FIRST response should be:

- ☒ A Rinse the eye at the eyewash station for at least 15 minutes and seek medical attention
- ☐ B Apply a sterile pad to the eye and continue working until the end of the shift
- ☐ C Neutralize the chemical in the eye with the appropriate weak acid or base
- ☐ D Cover the eye with a clean cloth and report the incident at the end of the day

ANSWER A

WHY ANSI Z358.1 and standard lab safety guidance call for immediate flushing at an eyewash station for a minimum of 15 minutes, with medical follow-up. Attempting to neutralize a chemical in the eye is dangerous and is never taught practice; delaying treatment or merely reporting later can result in permanent damage.

QUESTION 9

SINGLE CHOICE

What is the primary purpose of analyzing a method blank in each analytical batch?

- ☐ A To confirm that the analytical instrumentation is properly calibrated
- ☒ B To detect contamination introduced by reagents, glassware, or the procedure itself
- ☐ C To determine the detection limit of the method
- ☐ D To serve as a substitute for duplicate sample analysis

ANSWER B

WHY A method (reagent) blank is carried through every step of the preparation and analysis using the same reagents, glassware, and procedures as samples, but with analyte-free water in place of sample. Its purpose is to detect contamination (positive bias) from reagents, glassware, digestion, or instrumentation. Calibration is verified by check standards; detection limits are established separately; and method blanks are not a substitute for duplicate precision checks.