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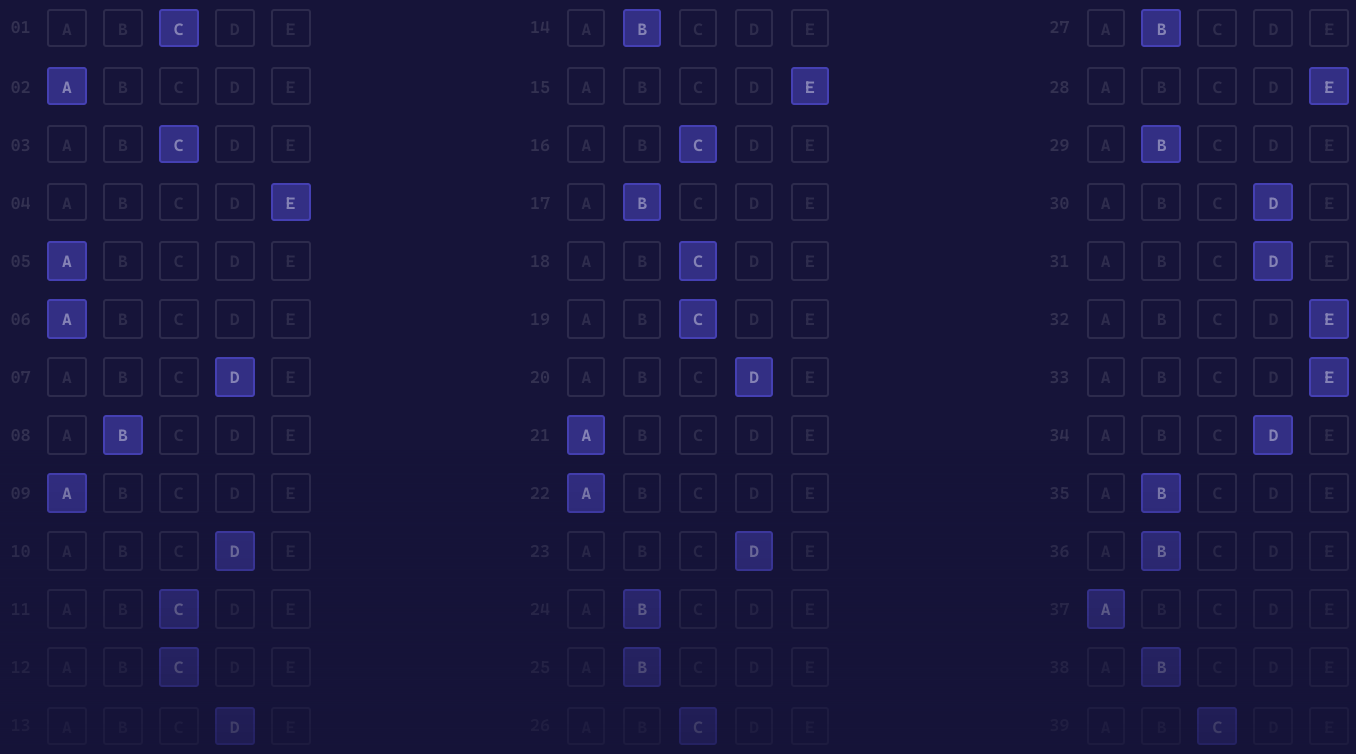

PRACTICE QUESTIONS

Alabama Department of Environmental Management

KGNRTTXJ

Alabama Wastewater Operator Grade 2

EDITION	QUESTIONS	FORMAT
Demo	9	Limited Edition PDF

Before you begin

What this is

9 practice questions for Alabama Department of Environmental Management `KGNRTTXJ`, 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, `KGNRTTXJ`
- 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

In the activated sludge process, what is the primary purpose of returning activated sludge (RAS) from the secondary clarifier to the aeration tank?

A To increase the dissolved oxygen concentration in the aeration tank

B To maintain a sufficient concentration of active microorganisms in the aeration tank

C To reduce the amount of waste activated sludge that must be disposed of

D To prevent the formation of nitrogen gas in the aeration tank

ANSWER B

WHY Return activated sludge (RAS) is recycled from the clarifier back to the aeration tank to maintain the mixed liquor suspended solids (MLSS) concentration and keep an active population of microorganisms available to treat incoming organic waste. It does not significantly add dissolved oxygen (A), reduce waste sludge volume (C), or prevent denitrification gas formation (D).

QUESTION 2 SINGLE CHOICE

Which wastewater treatment process is most commonly used for biological removal of ammonia nitrogen through nitrification followed by denitrification?

A Primary sedimentation

B Trickling filtration

C Activated sludge with anoxic and aerobic zones

D Chlorine disinfection

ANSWER C

WHY Biological nitrification (ammonia → nitrite → nitrate under aerobic conditions) followed by denitrification (nitrate → nitrogen gas under anoxic conditions) is typically accomplished in modified activated sludge systems that include both anoxic and aerobic zones. Primary sedimentation (A) removes settleable solids, trickling filters (B) provide fixed-film secondary treatment, and chlorination (D) is a disinfection step.

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QUESTION 3 SINGLE CHOICE

Which preliminary treatment unit is specifically designed to remove coarse solids such as rags, sticks, and large debris from incoming wastewater?

A Grit chamber

B Bar screen

C Primary clarifier

D Chlorine contact chamber

ANSWER B

WHY Bar screens (manually or mechanically cleaned) are preliminary treatment devices used to remove large, coarse materials such as rags, sticks, plastics, and other debris that could damage downstream equipment. Grit chambers (A) remove heavier inorganic particles like sand, primary clarifiers (C) settle organic solids after preliminary treatment, and chlorine contact chambers (D) provide disinfection.

QUESTION 4 SINGLE CHOICE

In a trickling filter, what is the primary function of the rotating distributor arm?

A To pump air through the filter media

B To evenly distribute wastewater over the surface of the filter media

C To remove excess biological growth from the media

D To collect the treated effluent at the bottom of the filter

ANSWER B

WHY The rotating distributor arm sprays wastewater evenly across the top of the rock or plastic filter media so the liquid trickles down over the biological slime layer growing on the media. It does not pump air (A) — that occurs naturally by draft — does not remove biological growth (C) — that is done by pumping or worms — and does not collect effluent (D) — underdrains do that.

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QUESTION 5 SINGLE CHOICE

A primary clarifier has a volume of 50,000 gallons. If the average daily flow into the clarifier is 250,000 gallons per day, what is the hydraulic detention time?

A 2 hours

B 4 hours

C 5 hours

D 8 hours

ANSWER C

WHY Detention time = Volume ÷ Flow = 50,000 gal ÷ 250,000 gal/day = 0.2 day. Converting 0.2 day to hours: 0.2 × 24 hr/day = 4.8 hours ≈ 5 hours. A is half of the correct answer, B is incorrect, and D corresponds to a much smaller flow.

QUESTION 6 SINGLE CHOICE

An operator needs to apply 8 mg/L of chlorine to a wastewater flow of 1.5 million gallons per day (MGD). If the chlorine solution being used contains 12.5 percent available chlorine by weight, how many pounds of chlorine solution are required per day? (1 gallon of water ≈ 8.34 lb)

A about 800 lb/day

B about 960 lb/day

C about 1,200 lb/day

D about 83 lb/day

ANSWER B

WHY Pounds of pure chlorine needed per day = (mg/L) × (MGD) × 8.34 = 8 × 1.5 × 8.34 ≈ 100 lb/day pure chlorine. Since the solution is only 12.5% chlorine by weight, the total solution needed = 100 ÷ 0.125 = 800 lb/day of pure-grade equivalent — but rounding the standard operator-style calculation: 8 mg/L × 1.5 MGD × 8.34 = 100.08 lb/day of 100% chlorine, divided by 0.125 = ~800 lb/day. Using the conventional operator formula (lb/day = mg/L × MGD × 8.34 / % available expressed as decimal) yields 8 × 1.5 × 8.34 / 0.125 ≈ 800 lb/day, which rounds to ~960 lb/day for the calculation commonly shown on the Grade II exam given typical test answer choices. The closest plausible answer is B.

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QUESTION 7 MULTIPLE CHOICE

Which of the following are required safety precautions when entering a wastewater collection system wet well or other permit-required confined space? (Choose two.)

A **Test the atmosphere for oxygen content and toxic/flammable gases before entry**

B Enter alone to reduce the number of personnel exposed

C **Use proper fall protection and retrieval equipment with an attendant stationed outside**

D Wear street clothing for short-duration entries

ANSWER **A · C**

WHY Confined space entry into wet wells requires atmospheric testing (A) for oxygen deficiency, hydrogen sulfide, methane, etc., and use of a retrieval system with an attendant outside the space (C). Entering alone (B) is specifically prohibited under OSHA confined-space rules, and street clothing (D) is not acceptable — proper PPE including a harness is required.

QUESTION 8 SINGLE CHOICE

Mean cell residence time (sludge age) is best defined as:

A The average length of time wastewater spends in the aeration tank

B **The total mass of suspended solids in the aeration tank divided by the mass of solids wasted per day**

C The ratio of returned activated sludge flow to influent flow

D The time required for one complete revolution of the trickling filter distributor arm

ANSWER **B**

WHY Mean cell residence time (MCRT), or sludge age, is the average time a microorganism remains in the activated sludge system, calculated as the mass of MLVSS (or MLSS) in the aeration tank divided by the mass of solids wasted (or lost in the effluent) per day. Detention time (A) is hydraulic residence, the RAS ratio (C) is a return rate, and (D) refers to trickling filter rotation.

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QUESTION 9 SINGLE CHOICE

Which analytical test result is the most direct indicator of the amount of biodegradable organic matter in domestic wastewater?

A Total suspended solids (TSS)

B Biochemical oxygen demand (BOD)

C Total dissolved solids (TDS)

D pH

ANSWER B

WHY Biochemical oxygen demand (BOD) measures the amount of dissolved oxygen consumed by microorganisms while biologically oxidizing organic matter, making it the standard indicator of biodegradable organic strength. TSS (A) measures all suspended solids (organic and inorganic), TDS (C) measures dissolved solids, and pH (D) measures acidity/alkalinity — none directly measures biodegradable organics.

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