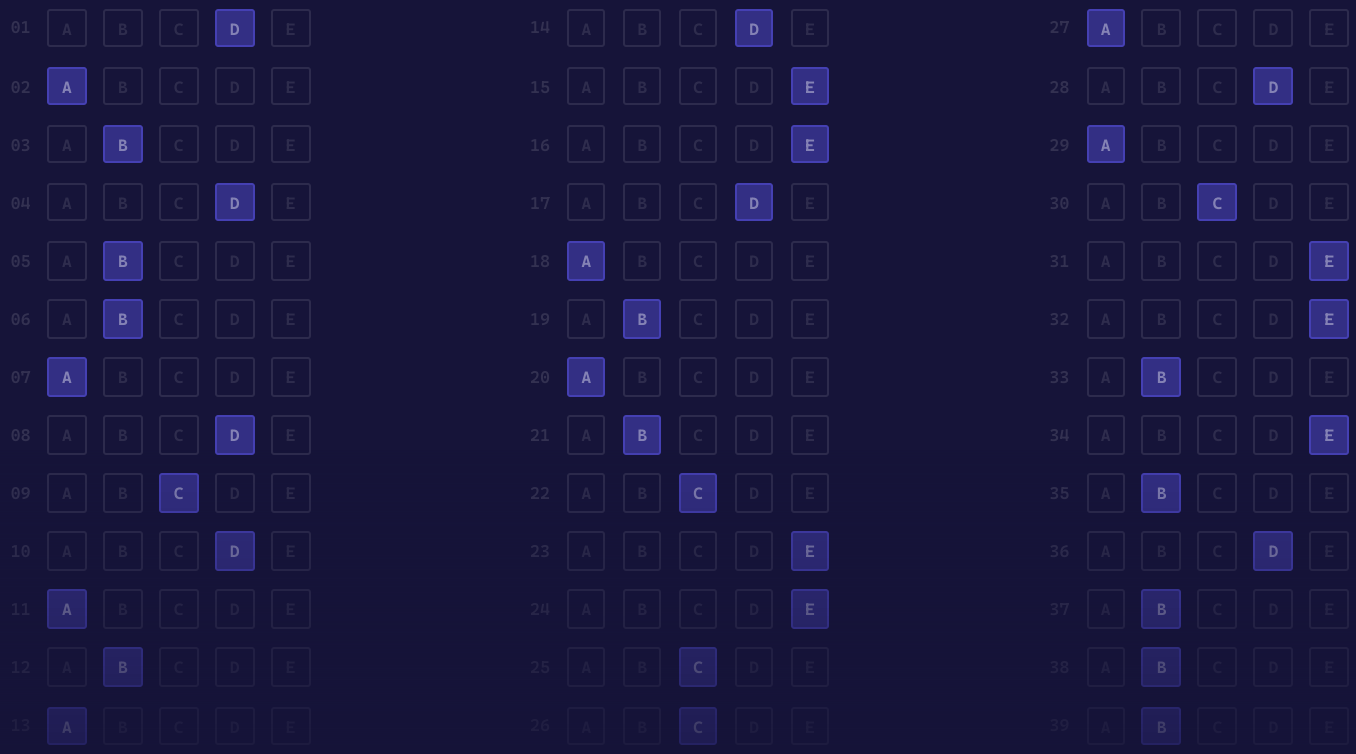
MOMETRIX
SMARTER PREP. BETTER RESULTS.



PRACTICE QUESTIONS

Association of Boards of Certification

BMY5N32S

WPI Biological Industrial Waste Operator Class 1-OIT

EDITION	QUESTIONS	FORMAT
Demo	9	Limited Edition PDF

WEB www.mometrix.net

SUPPORT support@mometrix.net

Before you begin

What this is

9 practice questions for Association of Boards of Certification `BMY5N32S`, 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, `BMY5N32S`
- the question number
- the email address on your order

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

QUESTION 1 MULTIPLE CHOICE

A biological treatment operator observes that the mixed liquor suspended solids (MLSS) concentration in an aeration basin has increased from 2,500 mg/L to 4,200 mg/L over several days while the food-to-microorganism ratio (F/M) has decreased from 0.4 to 0.22. Which two operational adjustments should be considered first to restore process balance? (Choose two.)

A **Increase the waste activated sludge (WAS) pumping rate**

B Decrease the return activated sludge (RAS) flow rate

C **Reduce the influent organic loading**

D Decrease the dissolved oxygen setpoint in the aeration basin

E Increase the aeration basin hydraulic retention time by lowering the effluent weir

ANSWER **A · C**

WHY A high MLSS with a falling F/M ratio indicates biomass is accumulating faster than substrate is being supplied. Increasing WAS wasting (A) removes excess biomass from the system, and reducing the influent organic load (C) restores the balance between food and microorganisms. Lowering RAS (B) would worsen solids accumulation. Lowering DO (D) can harm biological activity. Lowering the effluent weir (E) changes hydraulic retention but does not address the biomass imbalance.

QUESTION 2 MULTIPLE CHOICE

During routine inspection of an industrial aeration basin, the operator must verify proper operation of the diffused aeration system. Which two conditions confirm that the air diffusion system is functioning correctly? (Choose two.)

A **Uniform bubble pattern observed across the basin surface when air is on**

B Air header pressure reading within the manufacturer's specified range

C Dissolved oxygen readings consistently above 8.0 mg/L at the basin outlet

D **Diffusers submerged at the design depth with no visible fouling or scaling**

E Air flow meter reading set to maximum to ensure complete mixing

ANSWER **A · D**

WHY Uniform bubble distribution (A) and properly submerged, unfouled diffusers at design depth (D) are direct indicators that the diffused aeration system is functioning correctly. Header pressure (B) is relevant but the question targets visual/physical confirmation. Dissolved oxygen above 8.0 mg/L (C) can indicate over-aeration, not proper diffusion. Setting airflow to maximum (E) is not a verification of correct operation and can waste energy and damage diffusers.

QUESTION 3 SINGLE CHOICE

An aeration basin holds 120,000 gallons. The mixed liquor volatile suspended solids (MLVSS) concentration is measured at 2,400 mg/L, and the operator needs to determine the total pounds of volatile solids in the basin. Using 8.34 lb/gal as the conversion factor, what is the approximate pounds of MLVSS in the basin?

A **2,403 lb**

B 2,883 lb

C 24,026 lb

D 28,800 lb

ANSWER A

WHY The standard formula is: pounds = volume (MG) × concentration (mg/L) × 8.34 lb/gal. Volume = 120,000 gal = 0.12 MG. Pounds = 0.12 × 2,400 × 8.34 = 2,402.88 lb ≈ 2,403 lb. The other values result from using incorrect conversions.

QUESTION 4 SINGLE CHOICE

In an activated sludge system, the operator notices significant foaming on the aeration basin surface. A microscopic exam reveals filamentous organisms with attached growth at the ends of long filaments. Which condition is most likely causing this observation?

A Low F/M ratio and young sludge

B High F/M ratio and young sludge

C High F/M ratio and old sludge

D **Low dissolved oxygen combined with septic influent**

ANSWER D

WHY Foaming caused by filamentous organisms such as Nocardia or Microthrix is commonly associated with low dissolved oxygen, high sludge age combined with certain fats/oils/greases, or septic conditions. Low DO with septic influent (D) is the classic cause. Low F/M with young sludge (A) and high F/M conditions (B, C) are typically associated with different bulking or pinpoint floc issues, not foaming filaments.

QUESTION 5 SINGLE CHOICE

A primary clarifier influent contains 350 mg/L suspended solids. The clarifier effluent is sampled and found to contain 140 mg/L suspended solids. What is the removal efficiency of the primary clarifier for suspended solids?

A 30 percent

B 40 percent

C 60 percent

D 75 percent

ANSWER C

WHY Removal efficiency = (Influent − Effluent) / Influent × 100 = (350 − 140) / 350 × 100 = 210 / 350 × 100 = 60 percent.

QUESTION 6 SINGLE CHOICE

When starting a centrifugal pump for the first time after installation, which of the following checks must be performed before energizing the motor?

A Confirm the pump is primed and the rotation arrow on the casing matches the motor's intended rotation direction

B Open the discharge valve fully and leave the suction valve closed until flow is observed

C Ensure the pump packing is tightened until the leakage stops completely

D Set the discharge throttling valve to mid-position before starting

ANSWER A

WHY Before starting a centrifugal pump, the operator must confirm the pump is primed (filled with liquid to prevent dry running) and verify rotation direction matches the arrow on the casing to prevent damage from reverse rotation. Suction valves should be open and discharge throttling should typically be closed during start (rules out B and D). Packing must allow some leakage for lubrication (rules out C).

QUESTION 7 SINGLE CHOICE

During a routine walk-around, an operator detects a rotten egg odor near a covered anaerobic basin. Which gas is most likely being released, and what is the appropriate immediate response?

A **Hydrogen sulfide; evacuate non-essential personnel, increase ventilation, and test the atmosphere before re-entry**

B Methane; shut down aeration blowers and discontinue plant power

C Carbon dioxide; activate fire suppression and notify the fire department

D Chlorine; don Level A PPE and seal the basin with a tarp

ANSWER A

WHY A rotten egg odor is characteristic of hydrogen sulfide (H2S), a toxic gas commonly generated in anaerobic biological processes. The correct response is to evacuate non-essential personnel, increase ventilation, and use calibrated atmospheric monitoring before allowing re-entry. Methane is odorless and explosive (not rotten egg). CO2 is odorless. Chlorine is a yellowish-green gas with a pungent odor, not rotten egg.

QUESTION 8 SINGLE CHOICE

The mean cell residence time (MCRT), also called sludge age, is calculated for an activated sludge system. The operator has collected the following data: aeration basin volume = 50,000 gal; effluent flow = 25,000 gal/day; waste activated sludge flow = 500 gal/day; WAS concentration = 7,500 mg/L; effluent TSS = 15 mg/L. What is the MCRT in days?

A 6.7 days

B **10.0 days**

C 20.0 days

D 25.0 days

ANSWER B

WHY MCRT = (Aeration basin volume × MLSS) / (WAS flow × WAS TSS + Effluent flow × Effluent TSS). Assume MLSS ≈ WAS TSS (7,500 mg/L) when not provided separately. Pounds in aeration = (50,000 / 1,000,000) × 7,500 × 8.34 = 3,127.5 lb. Pounds leaving per day = (500/1,000,000) × 7,500 × 8.34 + (25,000/1,000,000) × 15 × 8.34 = 31.275 + 3.1275 ≈ 34.4 lb/day. MCRT = 3,127.5 / 34.4 ≈ 10.0 days.

QUESTION 9 SINGLE CHOICE

When performing a microscopic examination of activated sludge, the operator observes spherical bacteria growing in jelly-like, button-shaped masses. Which identification and process interpretation is correct?

A Filamentous organisms indicating low F/M bulking

B Zoogloea bacteria indicating a young, high F/M sludge

C Nocardia causing foaming and indicating high sludge age

D Ciliated protozoa indicating toxicity to the biomass

ANSWER B

WHY Zoogloea form characteristic jelly-like, fingered or button-shaped masses and are typically associated with a young, high F/M activated sludge where the bacteria produce exocellular polymers. Filamentous organisms (A) appear as long threads. Nocardia (C) appears as branching filaments and causes foaming. Ciliated protozoa (D) typically indicate a healthy, stable environment, not toxicity.