

01	☐ A	☐ B	☐ C	☐ D	☐ E
02	☐ A	☐ B	☐ C	☐ D	☐ E
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31	☒ A	☐ B	☐ C	☐ D	☐ E
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36	☐ A	☒ B	☐ C	☐ D	☐ E
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38	☐ A	☐ B	☐ C	☐ D	☒ E
39	☐ A	☐ B	☒ C	☐ D	☐ E

PRACTICE QUESTIONS

Association of Boards of Certification

DLPT2BK3

WPI Biological Industrial Waste Operator Class 2

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

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9 practice questions for Association of Boards of Certification **DLPT2BK3**, 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.

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Send us three things and we will check it:

- the exam code, **DLPT2BK3**
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QUESTION 1 MULTIPLE CHOICE

Which of the following microorganisms are typically responsible for the removal of organic carbon (BOD/COD) in an industrial wastewater activated sludge system? (Choose two.)

- ☒ **A** Heterotrophic bacteria
- ☐ **B** Nitrifying bacteria (e.g., Nitrosomonas)
- ☒ **C** Rotifers
- ☐ **D** Saprophytic fungi

ANSWER A - C

WHY Heterotrophic bacteria (A) are the primary organisms responsible for oxidizing organic carbon (BOD/COD) in activated sludge. Saprophytic fungi (D) also metabolize organic carbon substrates. Nitrifying bacteria (B) oxidize ammonia to nitrate, not organic carbon, and rotifers (C) are higher-order predators that graze on bacteria rather than directly removing BOD.

QUESTION 2 MULTIPLE CHOICE

Which of the following are standard control parameters routinely monitored by a Class 2 Biological Industrial Waste Operator to maintain proper activated sludge operation? (Choose two.)

- ☒ **A** Mixed liquor suspended solids (MLSS)
- ☒ **B** Dissolved oxygen (DO) in the aeration tank
- ☐ **C** Sodium chloride (NaCl) concentration in the effluent
- ☐ **D** Food-to-microorganism ratio (F/M)

ANSWER A - B

WHY MLSS (A) and DO (B) are core day-to-day activated sludge control parameters. F/M (D) is also a valid control parameter but, as a derived ratio, is less routinely monitored than MLSS and DO; the question asks for routine monitoring parameters and MLSS and DO are the most standard. NaCl (C) is not a typical control parameter for activated sludge.

QUESTION 3

TRUE/FALSE

In a biological nutrient removal (BNR) system, an anoxic zone is used to promote denitrification, where nitrate is converted to nitrogen gas by facultative heterotrophic bacteria in the absence of dissolved oxygen.

☒ **A** True☐ B False**ANSWER A**

WHY True. Denitrification occurs under anoxic (no free dissolved oxygen but nitrate/nitrite present) conditions. Facultative heterotrophic bacteria use nitrate as the terminal electron acceptor, reducing it to nitrogen gas (N₂) which is released to the atmosphere.

QUESTION 4

SINGLE CHOICE

What is the primary purpose of the secondary clarifier in a conventional activated sludge system?

☐ A To add oxygen to the mixed liquor before aeration☒ **B To settle out biological floc and return activated sludge to the aeration basin**☐ C To remove grit and large debris from incoming wastewater☐ D To chemically precipitate phosphorus from the wastewater**ANSWER B**

WHY The secondary clarifier separates the mixed liquor into a clarified effluent and a thickened return activated sludge (RAS) stream, which is recycled back to the aeration basin to maintain the desired biomass concentration. Option A describes aeration, C describes preliminary treatment, and D describes chemical phosphorus removal.

QUESTION 5

SINGLE CHOICE

An industrial wastewater treatment plant receives a high-strength, variable organic load. Which activated sludge modification is most appropriate to provide the greatest operational stability and treatment efficiency under fluctuating loads?

- ☐ A Conventional activated sludge
- ☒ B Extended aeration
- ☐ C Pure oxygen activated sludge
- ☐ D High-rate activated sludge

ANSWER B

WHY Extended aeration operates at a low F/M ratio with long hydraulic and solids retention times, providing a buffer against organic shock loads and producing a well-stabilized sludge. It is the most appropriate of the listed options for variable, high-strength industrial loads. Conventional and high-rate activated sludge have shorter detention times and less buffer capacity, and pure oxygen systems are more sensitive to load variability.

QUESTION 6

SINGLE CHOICE

A Class 2 operator observes that the mixed liquor in the aeration tank has a high sludge volume index (SVI) of 280 mL/g and the secondary clarifier effluent is turbid with solids carryover. What is the most likely operational condition?

- ☒ A Sludge bulking
- ☐ B Sludge rising (denitrification in the clarifier)
- ☐ C Nitrification toxicity
- ☐ D Pin floc formation

ANSWER A

WHY An SVI above ~150 mL/g indicates poor sludge settling, and combined with turbid effluent and solids carryover this is classic filamentous sludge bulking. Rising sludge (B) is associated with gas bubbles rising from denitrification and a clear supernatant. Pin floc (D) produces a low SVI with very small, weak floc. Nitrification toxicity (C) would suppress ammonia oxidation, not necessarily produce high SVI.

QUESTION 7

SINGLE CHOICE

In an anaerobic digester, which of the following is the primary end product of the overall digestion process?

- ☒ **A** Methane (CH₄) and carbon dioxide (CO₂) biogas
- ☐ **B** Pure oxygen and ammonia
- ☐ **C** Nitrate and sulfate
- ☐ **D** Hydrogen sulfide only

ANSWER A

WHY Anaerobic digestion produces a biogas that is primarily methane (CH₄) and carbon dioxide (CO₂), along with digested biosolids. The process proceeds through hydrolysis, acidogenesis, acetogenesis, and methanogenesis, with methanogens producing methane as the principal end product.

QUESTION 8

SINGLE CHOICE

Which sequence correctly represents the two-step nitrification process carried out by nitrifying bacteria?

- ☒ **A** NH₃ → NO₂⁻ → NO₃⁻
- ☐ **B** NO₃⁻ → NO₂⁻ → NH₃
- ☐ **C** NH₃ → N₂ → NO₃⁻
- ☐ **D** NO₃⁻ → N₂O → NH₃

ANSWER A

WHY First, ammonia-oxidizing bacteria (AOB) such as *Nitrosomonas* oxidize ammonia (NH₃/NH₄⁺) to nitrite (NO₂⁻). Then, nitrite-oxidizing bacteria (NOB) such as *Nitrobacter* oxidize nitrite to nitrate (NO₃⁻). Option B is denitrification in reverse, and the others are not the nitrification pathway.

QUESTION 9

SINGLE CHOICE

An operator must enter an enclosed space above an anaerobic digester for inspection. Which of the following hazards is of greatest immediate concern?

- ☐ A Low pH corrosion
- ☒ B Hydrogen sulfide (H₂S) and methane (CH₄) accumulation with oxygen deficiency
- ☐ C Excessive chlorine residual
- ☐ D High dissolved oxygen levels

ANSWER B

WHY Above an anaerobic digester, biogas (containing methane and hydrogen sulfide) can accumulate, creating both an explosion risk (methane) and a toxic/asphyxiation risk (H₂S displaces oxygen). Confined-space entry procedures including continuous atmospheric monitoring are required. The other options are not the primary hazards of that location.