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39	A	B	C	D	E

PRACTICE QUESTIONS

Connecticut - Dept of Energy and Environmental Protection

KGNRTC5

Connecticut Wastewater Treatment Operator Class 1

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for Connecticut - Dept of Energy and Environmental Protection KGNRTC05, 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, KGNRTC05
- 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 responsibilities of a Class 1 wastewater treatment operator in Connecticut? (Choose two.)

- ☒ **A Monitor influent and effluent characteristics and make routine process adjustments**
- ☐ **B Design the hydraulic profile and structural layout of new treatment plants**
- ☒ **C Collect routine process control samples and perform standard laboratory analyses**
- ☐ **D Negotiate discharge permit limits with the regulatory agency on behalf of the utility**

ANSWER A • C

WHY Class 1 operators perform routine process monitoring (influent/effluent) and collect samples for laboratory analysis used to control the process. Plant hydraulic/structural design is performed by engineers, and permit negotiation is a management/legal function, not an operator responsibility.

QUESTION 2

MULTIPLE CHOICE

Which items of PPE should an operator wear before entering the wet well of a lift station to perform routine maintenance? (Choose two.)

- ☒ **A Confined-space/supplied-air respirator**
- ☐ **B Standard cloth dust mask**
- ☒ **C Chemical-resistant gloves and rubber boots**
- ☐ **D Open-toed footwear for quick release in an emergency**

ANSWER A • C

WHY Wet wells are permit-required confined spaces that may contain hydrogen sulfide and oxygen-deficient atmospheres; a supplied-air respirator and chemical-resistant gloves/boots are required. Cloth dust masks do not protect against gases, and open-toed footwear is unsafe in a wet well.

QUESTION 3

TRUE FALSE

An increase in the influent BOD loading to a secondary treatment system will typically result in an increased oxygen demand in the aeration basin.

☒ **A** True☐ **B** False**ANSWER A**

WHY BOD is a measure of biodegradable organic matter. More BOD means heterotrophic bacteria consume more dissolved oxygen, so oxygen demand in the aeration basin rises and additional aeration is typically required to maintain DO setpoints.

QUESTION 4

SINGLE CHOICE

What is the primary purpose of bar screens at the headworks of a wastewater treatment plant?

☐ **A** Remove dissolved organic matter from the wastewater☐ **B** Reduce the biochemical oxygen demand of the influent☒ **C** Remove large debris and rags to protect downstream equipment☐ **D** Disinfect the wastewater before primary treatment**ANSWER C**

WHY Bar screens are the first step in preliminary treatment and are designed to capture large objects (rags, sticks, plastics) so they do not damage pumps, grinders, and other downstream equipment. BOD removal, dissolved organics removal, and disinfection occur in later treatment stages.

QUESTION 5

SINGLE CHOICE

In the activated sludge process, what does the Mixed Liquor Suspended Solids (MLSS) concentration primarily represent?

- ☐ A The amount of inorganic grit remaining after primary clarification
- ☐ B The concentration of volatile organic compounds in the effluent
- ☒ C The concentration of biomass (active microorganisms and inert solids) in the aeration basin
- ☐ D The concentration of dissolved oxygen in the mixed liquor

ANSWER C

WHY MLSS is the total suspended solids concentration in the aeration basin and is used as an indicator of biomass inventory. It is the operating parameter adjusted (along with wasting rate) to control mean cell residence time and process performance.

QUESTION 6

SINGLE CHOICE

Which dissolved oxygen (DO) concentration is generally accepted as the minimum target in a conventional aeration basin to maintain healthy biological activity?

- ☐ A 0.0 mg/L
- ☐ B 0.5 mg/L
- ☒ C 2.0 mg/L
- ☐ D 8.0 mg/L

ANSWER C

WHY A DO concentration of approximately 2.0 mg/L is the widely accepted minimum for conventional activated sludge to keep the floc aerobic and prevent localized anaerobic conditions. 0.0–0.5 mg/L would cause anoxic/anaerobic conditions, and 8.0 mg/L is far above typical operating range and wastes energy.

QUESTION 7

SINGLE CHOICE

Why is grit removal important at the headworks of a wastewater treatment plant?

- ☐ A Grit removal enhances biological phosphorus removal
- ☐ B Grit removal eliminates the need for primary clarification
- ☒ C Grit protects pumps and prevents accumulation of heavy inorganic solids in tanks and digesters
- ☐ D Grit removal provides disinfection of the wastewater

ANSWER C

WHY Grit (sand, gravel, egg shells) is heavy inorganic material that abrades pumps and pipes and accumulates in aeration tanks, clarifiers, and digesters, reducing capacity and increasing wear. Removing it protects equipment and downstream processes.

QUESTION 8

SINGLE CHOICE

In the activated sludge process, what does the Food-to-Microorganism (F/M) ratio describe?

- ☐ A The ratio of return activated sludge flow to influent flow
- ☐ B The ratio of the dissolved oxygen supply to the basin volume
- ☒ C The ratio of incoming organic loading (food) to the mass of biomass (microorganisms) under aeration
- ☐ D The ratio of sludge volume index to effluent suspended solids

ANSWER C

WHY $F/M \text{ ratio} = \text{pounds of BOD applied per day} \div \text{pounds of MLVSS (or MLSS) under aeration}$. It is a fundamental control parameter that influences settling, treatment efficiency, and the type of microbial community present (e.g., higher F/M favors floc-forming bacteria).

QUESTION 9

SINGLE CHOICE

Which gas commonly found in wastewater collection systems and treatment plants is both toxic and capable of causing loss of consciousness at relatively low concentrations, and requires atmospheric testing before confined-space entry?

- ☐ A Oxygen
- ☐ B Nitrogen
- ☒ C Hydrogen sulfide
- ☐ D Carbon dioxide

ANSWER C

WHY Hydrogen sulfide (H₂S) is produced by anaerobic bacteria in sewers and digesters. It is highly toxic, has a 'rotten egg' odor at low concentrations, and rapidly paralyzes the olfactory nerve at higher, dangerous concentrations. Confined-space entry requires atmospheric testing for H₂S as well as O₂ and combustible gases.