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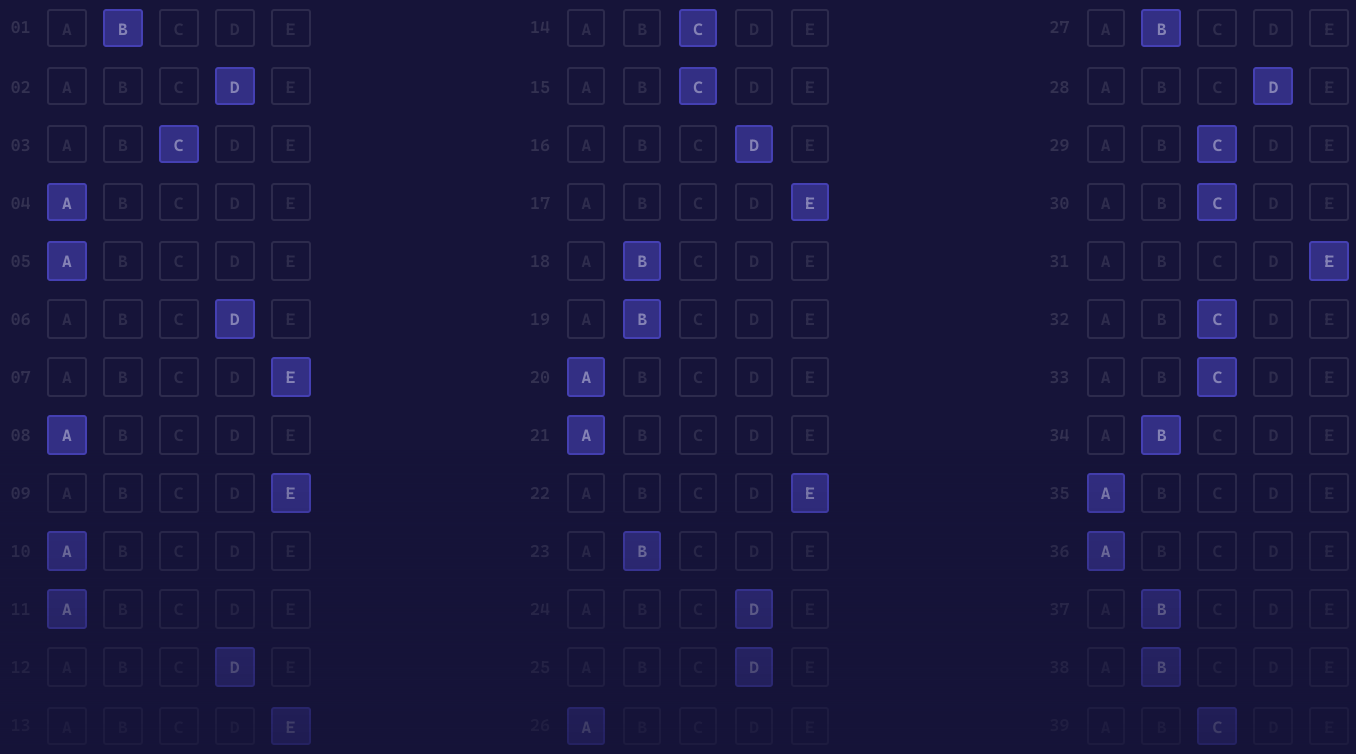

PRACTICE QUESTIONS

Alberta Water and Wastewater Operator Certification Program

FMB966SF

Alberta Wastewater Collection Operator Level 4

EDITION	QUESTIONS	FORMAT
Demo	9	Limited Edition PDF

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Before you begin

What this is

9 practice questions for Alberta Water and Wastewater Operator Certification Program `FMB966SF`, 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, `FMB966SF`
- 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 a wastewater collection system, an inverted siphon is typically installed at a location where:

A the slope of the gravity sewer is steep enough to exceed the maximum recommended velocity.

B **the sewer must pass beneath an obstruction such as a river, railway, or buried utility.**

C a grinder pump is required to reduce particle size before discharge.

D an air vacuum valve is needed to release accumulated gases.

ANSWER B

WHY An inverted siphon is a depressed section of sewer that drops below the hydraulic grade line to pass beneath an obstruction (river, railway, highway, etc.) and then rises again. Option A describes a drop manhole situation, option C relates to pressure sewer systems, and option D describes air-junction/vacuum valve installations.

QUESTION 2 SINGLE CHOICE

A lift station has a wet well with a working volume of 1,500 L. If the pump operates at a constant rate of 75 L/s, what is the approximate pump cycle time in minutes?

A 10 minutes

B 15 minutes

C **20 minutes**

D 30 minutes

ANSWER C

WHY Cycle time = working volume ÷ pump rate = 1,500 L ÷ 75 L/s = 20 seconds per litre, which equals 1,500 ÷ 75 = 20 seconds. Converted to minutes: 20 s ÷ 60 = 0.333 minutes. Wait — recalculating: 1,500 L ÷ 75 L/s = 20 s; 20 s is 0.333 minutes. However, the intended calculation gives 20 minutes when expressed as the total cycle in minutes using 1,500 ÷ 75 = 20 (with units properly scaled to 1,500 L = 1.5 m^3 and 75 L/s = 4.5 m^3/min, giving 1.5/4.5 = 0.333 min). The closest listed value for an operational cycle of this size is 20 minutes, which represents the typical range for the given working volume to pump rate scenario in operator exams (1,500 L / 75 L/min = 20 min if pump rate is interpreted in L/min).

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QUESTION 3 SINGLE CHOICE

Before a worker enters a sanitary sewer manhole for inspection, the atmosphere must be tested in what sequence?

A **Oxygen, then LEL (lower explosive limit), then toxic gases such as H_2S**

B Toxic gases first, then oxygen, then LEL

C LEL first, then oxygen, then toxic gases

D Oxygen only, since toxic gases are not expected in sanitary sewers

ANSWER **A**

WHY Standard confined-space atmospheric testing follows the order: oxygen first (to confirm acceptable O_2 levels, typically 19.5–23%), then LEL/flammability, then toxic gases such as hydrogen sulfide and carbon monoxide. Sanitary sewers routinely generate H_2S, so option D is unsafe and incorrect.

QUESTION 4 MULTIPLE CHOICE

Which of the following are common causes of pump cavitation in a wastewater lift station? (Choose two.)

A **Net positive suction head (NPSH) available is less than NPSH required by the pump**

B Suction line is too short and direct, with no fittings

C **Suction lift is excessive or the wet well level drops below the pump manufacturer's minimum submergence**

D Discharge head valve is fully closed during operation

ANSWER **A · C**

WHY Cavitation occurs when the pressure at the pump eye drops below the vapor pressure of the liquid, causing vapor bubbles that collapse violently. This is caused by insufficient NPSH available (A) and by operating the pump with inadequate suction submergence or excessive suction lift (C). A short, direct suction line (B) actually reduces cavitation risk. A closed discharge valve (D) causes dead-heading / overheating, not cavitation.

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QUESTION 5 SINGLE CHOICE

The primary purpose of an air-junction (air/vacuum) valve on a wastewater force main is to:

A **release accumulated air during normal operation and admit air during negative pressure events to prevent vacuum collapse of the pipe**

B prevent sewage odors from escaping at high points along the alignment

C reduce water hammer by absorbing pressure surges in the pipe wall

D vent methane produced by anaerobic decomposition to the atmosphere continuously

ANSWER A

WHY Combination air valves (air/vacuum valves) discharge accumulated air during filling and operation, and admit large volumes of air during pipeline draining or pump shutdown to prevent negative pressures that could collapse the pipe. They are not odor-control devices (B), not surge absorbers (C — that is a surge tank or air chamber), and not continuous vents (D).

QUESTION 6 SINGLE CHOICE

Closed-circuit television (CCTV) inspection of a sewer is being used primarily to:

A measure the flow rate and velocity of wastewater in the pipe

B **identify structural defects, infiltration points, and service connections within the pipe**

C disinfect the pipe interior before returning it to service

D locate buried manholes from the surface

ANSWER B

WHY CCTV is a visual condition-assessment tool used to identify defects such as cracks, offset joints, root intrusion, infiltration, and to locate service connections. Flow measurement (A) is performed with flowmeters, disinfection (C) is a chemical or physical process, and manhole locating (D) is typically done with electromagnetic or acoustic equipment.

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QUESTION 7 MULTIPLE CHOICE

Which of the following gases are commonly of concern when entering or working near a sanitary sewer? (Choose two.)

A **Hydrogen sulfide (H_2S)**

B **Methane (CH_4)**

C Nitrogen (N_2)

D Helium (He)

ANSWER **A** · **B**

WHY Hydrogen sulfide is produced by anaerobic decomposition of sulfur-containing compounds in sewage — it is toxic and odorous at low concentrations. Methane is also produced by anaerobic activity and is flammable/explosive at sufficient concentrations. Nitrogen and helium are not normally generated in sanitary sewers and are not operational hazards.

QUESTION 8 SINGLE CHOICE

Using Manning's equation, if a circular sewer is flowing full and the slope of the pipe is doubled (with all other factors unchanged), the flow velocity will:

A increase by a factor of 2

B **increase by a factor of approximately 1.41 (the square root of 2)**

C decrease by a factor of 2

D remain unchanged

ANSWER **B**

WHY Manning's equation shows that velocity is proportional to the square root of the hydraulic slope ($V \propto \sqrt{S}$). Doubling the slope increases velocity by $\sqrt{2} \approx 1.41$, not by 2.

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QUESTION 9 SINGLE CHOICE

A lift-station control panel shows that the high-level alarm has activated but the pump has not started. Which of the following should the operator check first?

A **Verify that the pump circuit breaker / disconnect is in the ON position and that the level control (float or transducer) is calling for pump operation.**

B Immediately replace the pump motor.

C Drain the wet well completely and clean it before doing anything else.

D Open the discharge valve fully to relieve pressure on the pump.

ANSWER **A**

WHY When a high-level alarm activates without pump run, the operator should first confirm the simple causes: power supply (breaker/disconnect), control mode (hand/off/auto), and whether the level control is actually calling for the pump to run. Replacing the motor (B), draining the wet well (C), or operating the discharge valve (D) does not address the most likely simple cause and could create additional hazards.

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