# PRACTICE EXAM 22: WASTEWATER COLLECTION LEVEL 1 SIMULATION (100 QUESTIONS)

*This simulation contains 100 multiple-choice questions. Select the single best answer for each item. The question mix follows the published Collection Class I domain weighting used for study planning; local procedures and current official examination materials control where they differ. Answer-key explanations follow the questions.*

**1.** At an emergency response drill, what is the primary purpose of a coarse bar screen at a collection facility?

A. Add oxygen to the incoming wastewater
B. Measure dissolved oxygen in the wet well
C. Disinfect wastewater before discharge
D. Remove large debris before it reaches pumps

**2.** At a service-lateral inspection, which condition is a grit-removal process designed to control?

A. Growth of biological floc in a clarifier
B. Settlement of sand and other dense inorganic particles
C. Dissolution of grease into the wastewater
D. Evaporation of volatile organic compounds

**3.** At a planned shutdown, a pump repeatedly loses capacity after handling fibrous material. Which inspection is most useful first?

A. Check the impeller and suction path for ragging
B. Increase the motor nameplate voltage
C. Close the discharge valve completely
D. Disable the high-level alarm

**4.** At a post-repair verification, what is the main function of a check valve in a sewage pump discharge line?

A. Control the motor speed during startup
B. Remove grit from the force main
C. Limit reverse flow when the pump stops
D. Measure the wet-well depth

**5.** At an overnight alarm review, why is an air-release valve installed at a high point in some force mains?

A. To release trapped air that can restrict flow
B. To add chlorine during normal pumping
C. To stop every pressure surge automatically
D. To measure the pump impeller diameter

**6.** At a confined-space planning meeting, what is the purpose of a properly shaped manhole bench?

A. Store spare pumps above the invert
B. Guide flow through the channel while limiting solids deposits
C. Create a standing-water seal around the frame
D. Support electrical conduit in the chimney

**7.** At a collection-system work order, a pump transfers 2,400 gallons in 30 minutes. What is the average rate?

A. 40 gpm
B. 60 gpm
C. 120 gpm
D. 80 gpm

**8.** At a generator exercise, why should lubrication be applied according to the equipment manufacturer's schedule?

A. Lubricant replaces the need for alignment checks
B. Grease prevents every type of electrical fault
C. Both under-lubrication and over-lubrication can damage bearings
D. The schedule eliminates the need for inspection

**9.** At a dry-weather monitoring run, what is a common concern when hydrogen sulfide is present around a wet well?

A. The wastewater becomes sterile immediately
B. The pump curve becomes independent of flow
C. The electrical system becomes self-grounding
D. Corrosion and toxic exposure can both develop

**10.** At a residential service area, what does an automatic transfer switch do at a lift station with standby power?

A. Transfers selected loads between normal and emergency sources
B. Changes the pump impeller direction by hand
C. Filters solids from generator fuel
D. Calibrates the wet-well level sensor

**11.** At the north lift station, why should float switches be inspected for free movement in a wet well?

A. The float determines the pipe material strength
B. A free float removes the need for alarms
C. A restricted float may fail to start or stop equipment at the intended level
D. The float controls the disinfectant dose directly

**12.** At a wet-weather inspection route, what does a pump mechanical seal primarily help prevent?

A. Reverse flow through the discharge check valve
B. Leakage along the rotating shaft
C. Air entry through the station vent
D. Solids settlement in the incoming sewer

**13.** At a sewer rehabilitation project, what is a likely effect of a sudden force-main pressure surge?

A. It permanently increases the pipe diameter
B. It removes all trapped air without a valve
C. It can stress pipe, fittings, supports, and pump components
D. It guarantees a lower operating cost

**14.** At the maintenance shop, why are isolation valves exercised during planned maintenance?

A. To increase wastewater strength before sampling
B. To recalibrate every connected flow meter
C. To eliminate the need for bypass planning
D. To confirm they can close or open when isolation is needed

**15.** At a remote pump station, which approach best supports odor control at a collection facility?

A. Control the source and verify the treatment system's operation
B. Mask every odor without checking the wet well
C. Close all ventilation openings permanently
D. Rely only on public complaints to find problems

**16.** At a morning shift turnover, what can closed-circuit television inspection reveal inside a sewer?

A. The exact treatment-plant effluent permit result
B. Defects, obstructions, infiltration points, and structural conditions
C. The generator's fuel age without a sample
D. The motor winding temperature while off

**17.** At a force-main inspection, a force-main high point is at elevation 186 feet and the pump discharge point is at elevation 154 feet. What is the elevation difference?

A. 32 ft
B. 22 ft
C. 30 ft
D. 40 ft

**18.** At a public right-of-way, what is the best first response when a level sensor reading conflicts with a field observation?

A. Immediately delete the SCADA trend
B. Verify the condition with an independent measurement
C. Assume the field observation is wrong
D. Disable all station alarms permanently

**19.** At a recurring blockage investigation, what does a motor overload trip generally indicate?

A. The sewer has been disinfected completely
B. The pump has no electrical connection
C. The check valve is guaranteed closed
D. The motor or driven equipment exceeded a protected operating condition

**20.** At a SCADA review, why is a pump curve useful during collection-system troubleshooting?

A. It lists every confined-space hazard at the station
B. It replaces all field measurements
C. It relates expected pump performance to flow and head
D. It determines the legal reporting deadline

**21.** At an emergency response drill, what is the purpose of cleaning a level sensor face or transducer surface?

A. Increase the wet-well volume
B. Change the force-main slope
C. Remove deposits that can distort the level signal
D. Create a second emergency power source

**22.** At a service-lateral inspection, which practice best protects a submersible pump cable?

A. Keep the cable supported and protected from abrasion or sharp edges
B. Pull the pump by the cable during removal
C. Place the cable across the hatch opening
D. Coil it against a moving impeller

**23.** At a planned shutdown, why should an emergency stop be tested under a controlled procedure?

A. It proves every alarm has the same priority
B. The test confirms the stop function without creating an uncontrolled outage
C. It increases the pump's normal capacity
D. It replaces lockout and tagout requirements

**24.** At a post-repair verification, what is the main purpose of routine wet-well washdown when the procedure calls for it?

A. Raise the incoming flow rate

B. Change the sewer's legal classification
C. Replace the need for pump inspection
D. Reduce deposits that can interfere with equipment and level sensing

**25.** At an overnight alarm review, which record is most useful for identifying gradual pump degradation?

A. One isolated odor complaint without a location
B. A consistent history of flow, head, current, run time, and observations
C. A blank work order with no operating data
D. A replacement-parts catalog alone

**26.** At a confined-space planning meeting, why should a valve lineup be verified before returning a repaired pump to service?

A. Valve position changes the pipe material
B. Verification removes the need for an alarm
C. A lineup check only matters at treatment plants
D. An incorrect lineup can create deadheading, reverse flow, or an unintended path

**27.** At a collection-system work order, a wet-well level falls from 9.0 feet to 6.0 feet during pumping. What percentage of the original level value was reduced?

A. 33.3% (approximately)
B. 25 %
C. 30 %
D. 66.7 %

**28.** At a generator exercise, which source is classified as infiltration rather than inflow?

A. Rainwater entering through an open cleanout

B. Roof drainage connected to a sanitary sewer
C. Groundwater entering through cracks or defective joints
D. A permitted industrial discharge at a service connection

**29.** At a dry-weather monitoring run, what is a common sign of root intrusion in a gravity sewer?

A. A perfectly stable dry-weather flow pattern
B. Repeated localized blockages near joints or service connections
C. A clean force-main air valve
D. A generator transfer during a storm

**30.** At a residential service area, why is grease control important in a collection system?

A. Grease increases pipe slope automatically
B. Grease disinfects wastewater as it cools
C. Grease prevents inflow during rainfall
D. Accumulated grease can narrow the flow path and trap solids

**31.** At the north lift station, what does a smoke test primarily help locate?

A. The exact depth of every buried pipe
B. The pump curve for a lift station
C. Potential openings and improper connections that admit smoke
D. The dissolved oxygen level in a wet well

**32.** At a wet-weather inspection route, when is dye testing especially useful?

A. When a suspected connection must be traced to a specific drainage path
B. When measuring motor insulation resistance
C. When balancing two pump impellers
D. When determining a manhole's concrete strength

**33.** At a sewer rehabilitation project, what is the main reason for selecting a sewer-cleaning nozzle to match the pipe and deposit?

A. Every nozzle produces identical thrust and cleaning
B. The nozzle must remove material without damaging the pipe or reducing control
C. A nozzle choice determines the sewer's legal capacity
D. The largest nozzle is always the safest option

**34.** At the maintenance shop, what is the strongest use of a CCTV inspection record?

A. Link observed defects to a location and maintenance decision
B. Replace all field safety checks
C. Predict the weather for the next month
D. Verify generator fuel quality without sampling

**35.** At a remote pump station, why should a manhole cover be replaced or secured when it is damaged?

A. A cover defect changes wastewater chemistry
B. A new cover removes the need for inspections
C. Cover weight controls pump speed
D. A defective cover can create a traffic, fall, and public-safety hazard

**36.** At a morning shift turnover, what is the safest first step when a blockage is suspected upstream of a lift station?

A. Open every nearby manhole without a plan
B. Send high-pressure water toward an occupied space
C. Confirm conditions and control the affected flow path before clearing
D. Disable the high-level alarm to stop nuisance calls

**37.** At a force-main inspection, a bypass pump moves 1,200 gallons per minute. How long will it take to move 36,000 gallons at that rate?

A. 20 min
B. 24 min
C. 36 min
D. 30 min

**38.** At a public right-of-way, what is the purpose of suitable bedding beneath a new sewer pipe?

A. Seal every manhole from the atmosphere
B. Provide uniform support and help maintain the intended grade
C. Increase pump motor horsepower
D. Eliminate the need for compaction

**39.** At a recurring blockage investigation, what should be confirmed before starting a temporary bypass around a blocked line?

A. Capacity, routing, backup power, alarms, and communication responsibilities
B. Only the color of the discharge hose
C. That all nearby alarms have been removed
D. That the bypass needs no contingency plan

**40.** At a SCADA review, after a sanitary sewer overflow is controlled, what is a high-priority restoration action?

A. Leave the area untouched until the next annual inspection
B. Rinse contamination into the nearest storm drain
C. Remove affected material and restore the area using the approved response procedure
D. Erase the event from the maintenance record

**41.** At an emergency response drill, why inspect service laterals when repeated upstream blockages have no clear mainline defect?

A. A lateral can contribute roots, grease, defects, or improper connections
B. Laterals cannot affect the public sewer
C. A lateral inspection changes pump voltage
D. Laterals are inspected only after a generator test

**42.** At a service-lateral inspection, what is the best practice before entering a sewer easement on private property?

A. Enter without notice because the asset is public
B. Remove property markers to improve access
C. Skip the hazard assessment if the route is familiar
D. Confirm access authority, notify affected parties, and follow the work plan

**43.** At a planned shutdown, why must buried utilities be located before excavation near a sewer?

A. Utility locating improves wastewater strength
B. A locate ticket replaces shoring
C. Unknown utilities can create electrocution, explosion, flooding, or service hazards
D. Utility lines cannot be damaged by hand tools

**44.** At a post-repair verification, what is the purpose of controlled backfill around a repaired sewer?

A. Increase inflow through the repair
B. Restore support while limiting settlement and damage to the repaired asset
C. Make the pipe self-cleaning at every flow
D. Replace all required surface restoration

**45.** At an overnight alarm review, which condition most strongly supports a preventive cleaning program?

A. A single unrelated equipment alarm
B. A repeatable history of deposits or blockages at known locations
C. A clean generator inspection sheet
D. A new employee orientation record

**46.** At a confined-space planning meeting, what is the value of an accurate collection-system asset inventory?

A. It replaces field verification permanently
B. It eliminates the need for work orders
C. It reports flow without any instruments
D. It connects each asset to location, condition, maintenance, and operational history

**47.** At a collection-system work order, a sewer rises 6 feet over a horizontal distance of 300 feet. What is the slope expressed as a percentage?

A. 0.5 %
B. 1.5 %
C. 2 %
D. 5 %

**48.** At a generator exercise, why can corrosion be a collection-system maintenance concern even when the pipe still carries flow?

A. Material loss can weaken the asset before hydraulic failure is obvious
B. Corrosion always improves pipe roughness
C. Corrosion calibrates the level sensor
D. Corrosion prevents hydrogen sulfide formation

**49.** At a dry-weather monitoring run, what should a work order closeout record include?

A. Only the crew's arrival time
B. The asset, work performed, observations, materials, and remaining needs
C. A blank field for the next operator
D. A replacement for all inspection records

**50.** At a residential service area, why should a temporary bypass include a visible or remote flow check?

A. A flow check makes backup power unnecessary
B. Bypass flow never changes after startup
C. Monitoring can reveal loss of capacity, hose movement, or developing overflow risk
D. Monitoring is useful only after the job is complete

**51.** At the north lift station, what is the main limitation of cutting roots without correcting the entry point?

A. Root cutting permanently seals every joint
B. Root cutting prevents all grease deposits
C. Root cutting changes the pump control logic
D. The roots can regrow and recreate the restriction

**52.** At a wet-weather inspection route, why flush a sewer after certain cleaning or repair activities?

A. Flushing can remove loosened material and confirm that flow is restored
B. Flushing increases the design slope
C. Flushing replaces the need for debris control
D. Flushing guarantees structural integrity

**53.** At a sewer rehabilitation project, which information makes a blockage report most actionable?

A. Only the name of the person who called
B. A general statement that the sewer is bad
C. A pump serial number from another site
D. Exact location, observed symptoms, time, conditions, and response taken

**54.** At the maintenance shop, why should a manhole invert be checked after a repair or cleaning job?

A. The invert controls generator transfer voltage
B. An invert check changes the pipe material
C. A damaged or obstructed invert can restrict flow and collect solids
D. A clean invert proves the entire sewer is structurally sound

**55.** At a remote pump station, why alternate duty and standby pumps when the control strategy permits it?

A. Rotation shares wear and confirms both pumps remain available
B. Rotation guarantees identical flow from worn pumps
C. Rotation removes the need for level alarms
D. Rotation changes the wet-well volume

**56.** At a morning shift turnover, what does a high-level alarm at a lift station require first?

A. Silence the alarm and leave the site
B. Confirm the level and begin the approved response for rising storage
C. Close the incoming sewer without a plan
D. Reset every breaker before observing conditions

**57.** At a force-main inspection, a rectangular wet-well section is 10 feet long, 8 feet wide, and 5 feet deep. What is its volume?

A. 400 cu ft
B. 80 cu ft
C. 230 cu ft
D. 500 cu ft

**58.** At a public right-of-way, why compare the displayed wet-well level with an independent field check?

A. It changes the pump impeller trim
B. It eliminates the need to inspect floats
C. It helps distinguish a real level change from an instrument problem
D. It proves the force main has no air

**59.** At a recurring blockage investigation, what should an operator verify before changing pump start and stop setpoints?

A. Only the color of the control-panel labels
B. That alarms can be permanently disabled
C. That the wet well is empty at every start
D. The approved control basis, equipment limits, and effect on storage and starts

**60.** At a SCADA review, what is a useful first check when a lift-station control panel shows a pump fault?

A. Replace the panel without recording the code
B. Identify the fault code and compare it with field conditions
C. Force the pump to run indefinitely
D. Disconnect all alarm communication

**61.** At an emergency response drill, why is routine generator exercise important at a remote lift station?

A. It proves the sewer has no infiltration
B. It confirms the emergency source can start and carry intended loads
C. It replaces fuel and battery maintenance
D. It eliminates the need for transfer testing

**62.** At a service-lateral inspection, what is the operational concern when a discharge check valve leaks backward?

A. The pump may see reverse flow, backspin, or repeated re-pumping
B. The wet well becomes a drinking-water reservoir
C. The generator produces higher voltage by design
D. The leak calibrates the level sensor

**63.** At a planned shutdown, why must ventilation be evaluated before authorized wet-well entry?

A. Ventilation makes a permit unnecessary
B. Fresh air removes the need for a harness
C. The atmosphere may contain toxic, oxygen-deficient, or combustible hazards
D. The fan determines the pump curve

**64.** At a post-repair verification, what should a bypass connection be checked for before flow is redirected?

A. Only whether the hose is a bright color
B. Whether every alarm can be deleted
C. Whether the line can run without backup
D. Secure connections, adequate capacity, leak protection, and a monitored discharge

**65.** At an overnight alarm review, which condition can increase odor generation in a wet well?

A. A short, well-mixed detention period

B. Long detention with low oxygen and septic wastewater
C. A verified clean level sensor
D. A completed valve exercise

**66.** At a confined-space planning meeting, why track individual pump run time at a multiple-pump station?

A. Uneven run time can reveal control, availability, or performance problems
B. Run time determines the sewer's legal slope
C. Run time replaces flow measurement
D. Run time proves the impeller is undamaged

**67.** At a collection-system work order, two identical pumps each deliver 250 gallons per minute while operating together. What is the combined rate?

A. 125 gpm
B. 250 gpm
C. 750 gpm
D. 500 gpm

**68.** At a generator exercise, what can a seal-failure alarm indicate on a submersible lift-station pump?

A. The pump has achieved its best efficiency point
B. The wet well is automatically disinfected
C. Moisture has reached a monitored area that requires investigation
D. The force main has been pressure tested

**69.** At a dry-weather monitoring run, why keep a station screen or basket clear when the design includes one?

A. Accumulated debris can restrict inflow and increase upstream level

B. Debris improves pump cooling
C. A screen replaces the high-level alarm
D. The basket controls generator frequency

**70.** At a residential service area, what should be confirmed before opening a wet-well access hatch?

A. Only the last pump start time
B. That the hatch can be left open unattended
C. Surface hazards, atmospheric risk, fall protection, and the task plan
D. That a rescue plan is unnecessary for brief work

**71.** At the north lift station, how can an operator use pump performance data most effectively?

A. Treat every reading as unrelated to the system
B. Compare flow and head trends with the pump's expected operating range
C. Use motor current alone to declare success
D. Ignore changes until the pump stops completely

**72.** At a wet-weather inspection route, why should a lift-station emergency plan name communication responsibilities?

A. Communication is needed only after restoration
B. Named roles prevent every equipment failure
C. A contact list replaces field verification
D. Clear roles reduce delay when storage, power, or pumping capacity is lost

**73.** At a sewer rehabilitation project, what does a trend show that a single spot reading may not?

A. The exact cause of every change
B. A guarantee that an instrument is calibrated
C. Whether a condition is stable, changing, recurring, or seasonal

D. The safe entry status of a wet well

**74.** At the maintenance shop, why calibrate a level or flow instrument against a known reference?

A. To increase pipe diameter
B. To remove all signal noise permanently
C. To change the station's emergency storage
D. To compare the instrument's output with an accepted standard or field value

**75.** At a remote pump station, what is the best response when a SCADA alarm is acknowledged but the condition persists?

A. Investigate the cause and confirm that the process has returned to control
B. Assume acknowledgement corrected the equipment
C. Delete the alarm history
D. Mute every related alarm for the shift

**76.** At a morning shift turnover, what can foul an ultrasonic level sensor in a wet well?

A. A correctly entered work-order number
B. Condensation, foam, deposits, or obstructions in the signal path
C. A clean pump curve
D. A properly secured manhole cover

**77.** At a force-main inspection, a station records 480,000 gallons over 24 hours. What is the average flow in gallons per hour?

A. 20000 gph
B. 2000 gph
C. 12000 gph
D. 24000 gph

**78.** At a public right-of-way, why compare a flow totalizer with an independent volume or runtime check?

A. A totalizer never needs verification
B. The check changes the pipe slope
C. Runtime alone proves the meter is accurate
D. The comparison can reveal scaling, signal, or configuration errors

**79.** At a recurring blockage investigation, what makes a wastewater sample point representative?

A. It is the closest point to a parked vehicle
B. It reflects the flow or condition being evaluated without avoidable bias
C. It is always located in stagnant water
D. It is selected only because access is easy

**80.** At a SCADA review, why verify a surprising SCADA value in the field?

A. SCADA values are always more accurate than instruments
B. Field checks remove the need for alarm review
C. A field check can separate a true process change from a data problem
D. A surprising value should be accepted without question

**81.** At an emergency response drill, how should alarms generally be prioritized?

A. By consequence, urgency, and the time available to prevent harm
B. By the order in which screens are displayed
C. By how often operators hear them
D. By the color chosen without a risk review

**82.** At a service-lateral inspection, what is a likely concern when a SCADA trend contains a long unexplained data gap?

A. The gap proves the process was normal
B. The gap improves the totalizer accuracy
C. The gap replaces the need for a work order
D. Decisions based on the trend may omit an important operating period

**83.** At a planned shutdown, why normalize flow data when comparing different operating periods?

A. Normalization removes all measurement uncertainty
B. Different time bases or conditions can otherwise make comparisons misleading
C. Normalized data never needs a timestamp
D. Flow cannot be compared across seasons

**84.** At a post-repair verification, what is the value of establishing an operating baseline after equipment repair?

A. It provides a reference for detecting future drift or recurrence
B. It guarantees the repair will never fail
C. It replaces the manufacturer's limits
D. It prevents any future alarm

**85.** At an overnight alarm review, what may cause a level signal to drift slowly upward while field level remains stable?

A. A perfectly stable field condition alone
B. A clean work-order closeout
C. Sensor fouling, calibration drift, or changing signal configuration
D. A properly exercised isolation valve

**86.** At a confined-space planning meeting, what should a monitoring report do with a value that was corrected after verification?

A. Delete the original value without explanation
B. Replace every historical value with the new one
C. Report only the value that supports the preferred conclusion
D. Preserve the original observation, correction basis, and final interpretation

**87.** At a collection-system work order, a process uses 0.5 million gallons per day at a dose of 10 milligrams per liter. Using 8.34, what is the approximate chemical mass per day?

A. 4.17 lb/day
B. 41.7 lb/day
C. 16.68 lb/day
D. 83.4 lb/day

**88.** At a generator exercise, what does lockout and tagout control during equipment maintenance?

A. The sewer's average daily flow
B. The color of a safety vest
C. Unexpected energization, startup, or release of stored energy
D. Routine office filing requirements

**89.** At a dry-weather monitoring run, how should personal protective equipment be selected?

A. Choose the most comfortable item without review
B. Use one PPE combination for every task
C. Use the hazard assessment and task-specific exposure information
D. Rely on PPE instead of engineering controls

**90.** At a residential service area, what is essential before an authorized confined-space entry?

A. A quick verbal promise to work carefully
B. A fan without testing or communication
C. A short task duration with no permit review
D. A complete entry plan, atmospheric evaluation, attendant, and rescue capability

**91.** At the north lift station, what information is normally found on a safety data sheet?

A. Hazards, handling, storage, exposure controls, and emergency information
B. A pump's hydraulic curve
C. A sewer's CCTV defect map
D. The annual maintenance budget

**92.** At a wet-weather inspection route, why should a work zone near a roadway use an approved traffic-control setup?

A. It makes the sewer self-cleaning
B. It creates a predictable separation between traffic, workers, and equipment
C. It replaces high-visibility clothing in every case
D. It allows equipment to be parked without sight distance

**93.** At a sewer rehabilitation project, what is the value of reporting a near miss?

A. It assigns blame without investigation
B. It reveals a hazard before the same condition causes an injury or release
C. It proves no corrective action is needed
D. It replaces required incident reporting after an injury

**94.** At the maintenance shop, what makes an incident record useful?

A. A factual timeline, conditions, actions, witnesses, and follow-up needs
B. A conclusion written before facts are collected
C. Only the name of the person who found it
D. A statement that avoids all details

**95.** At a remote pump station, why should radio or phone communication use clear location and status information?

A. Long messages always improve emergency response
B. Location is unnecessary when alarms exist
C. Informal abbreviations are always understood
D. Specific information helps others respond without guessing

**96.** At a morning shift turnover, which practice best supports basic SCADA cybersecurity?

A. Share one password across every shift
B. Connect unknown devices to the control network
C. Use individual credentials, controlled access, and prompt reporting of suspicious activity
D. Disable logging so access is less visible

**97.** At a force-main inspection, a maintenance program completed 18 of 24 planned inspections. What percentage was completed?

A. 60 %
B. 72 %
C. 75 %
D. 80 %

**98.** At a public right-of-way, what is the best description of a complete maintenance work order?

A. It records only the employee's initials

B. It omits unresolved conditions to keep the list short
C. It replaces all safety documentation
D. It identifies the asset, task, findings, action, parts, and status

**99.** At a recurring blockage investigation, how should an operator handle a public report of sewage odor or overflow?

A. Record the location and time, assess promptly, and follow the response procedure
B. Dismiss it unless the caller provides a photograph
C. Wait for a second complaint before checking
D. Promise a cause before investigating

**100.** At a SCADA review, why should emergency contact information be checked periodically?

A. Contact lists never become outdated
B. A plan fails if the listed people or numbers cannot be reached
C. A contact list replaces the emergency procedure
D. Only office staff need current numbers

## Practice Exam 22: Answer Key and Explanations

**1. D** — Remove large debris before it reaches pumps is correct. Large debris can damage pumps or obstruct downstream equipment, so screening protects the process train at the first practical point. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**2. B** — Settlement of sand and other dense inorganic particles is correct. Grit is dense and abrasive, so controlled settling removes it before it wears pumps, fills channels, or accumulates in tanks. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**3. A** — Check the impeller and suction path for ragging is correct. Fibrous material commonly wraps around impellers or restricts the suction path, reducing hydraulic performance even when the motor still

runs. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**4. C** — Limit reverse flow when the pump stops is correct. A check valve allows forward flow and closes when flow reverses, helping protect the pump and reducing draining or backspin in the discharge line. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**5. A** — The selected answer is correct. Air can collect at high points, reduce the effective flow area, and create operating or surge problems. An air-release device provides a controlled escape path. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**6. B** — The selected answer is correct. A bench directs wastewater smoothly through the invert and reduces dead areas where solids can settle. It also gives personnel a safer, cleaner footing when entry is authorized. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**7. D** — 80 gpm is correct because Average rate is volume divided by elapsed time, so 2,400 gallons divided by 30 minutes gives 80 gallons per minute. The other options do not address the controlling condition. Operators should verify the field condition, follow the approved procedure, and document the response. This supports safe work, reliable equipment, and clear shift communication.

**8. C** — Both under-lubrication and over-lubrication can damage bearings is correct. Bearings require the correct lubricant type and quantity. Too little lubricant increases friction, while too much can cause heat, seal damage, or churning. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**9. D** — Corrosion and toxic exposure can both develop is correct. Hydrogen sulfide can create serious atmospheric hazards and contribute to corrosion. Operators must treat the area as a potential exposure and equipment-deterioration problem. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**10. A** — Transfers selected loads between normal and emergency sources is correct. An automatic transfer switch detects loss or restoration of the normal source and manages the planned transfer of connected emergency loads. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**11. C** — The selected answer is correct. Level floats must move through their designed range without snagging on cables, piping, or deposits. Restricted movement can create missed starts, nuisance alarms, or overflow risk. The other options miss the controlling condition. Operators should verify the

observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**12. B** — Leakage along the rotating shaft is correct. The mechanical seal limits fluid movement along the rotating shaft where it passes through the pump casing, protecting the motor area and preserving pump integrity. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**13. C** — It can stress pipe, fittings, supports, and pump components is correct. Rapid changes in velocity create transient pressure conditions. Those loads can damage piping and equipment even when steady-state pressure appears acceptable. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**14. D** — The selected answer is correct. A valve that is never operated may seize or become difficult to locate. Exercising it under controlled conditions confirms readiness before an emergency or repair. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**15. A** — Control the source and verify the treatment system's operation is correct. Odor control works best when operators address septicity, detention, ventilation, and treatment performance together rather than relying on masking or a single device. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**16. B** — Defects, obstructions, infiltration points, and structural conditions is correct. CCTV provides a visual record of pipe condition. It can show cracks, roots, deposits, joint problems, and other features that guide maintenance or rehabilitation. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**17. A** — 32 ft is correct because Elevation difference is found by subtracting the lower point from the higher point, giving 32 feet of vertical difference. The other options do not address the controlling condition. Operators should verify the field condition, follow the approved procedure, and document the response. This supports safe work, reliable equipment, and clear shift communication.

**18. B** — Verify the condition with an independent measurement is correct. Conflicting indications require confirmation. A second instrument, visual check, or controlled test can distinguish a sensor problem from a real process change. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**19. D** — The selected answer is correct. An overload trip protects the motor from excessive current or heating. Operators should investigate the cause, such as blockage, low voltage, or mechanical resistance.

The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**20. C** — The selected answer is correct. A pump curve helps compare observed flow and head with expected performance. That comparison can indicate wear, blockage, valve position problems, or system changes. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**21. C** — Remove deposits that can distort the level signal is correct. Deposits, grease, or ragging can interfere with the sensing surface or signal path. Cleaning restores a better connection between actual level and displayed level. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**22. A** — The selected answer is correct. The cable carries both electrical energy and a watertight connection. Abrasion, pulling, or pinching can damage insulation and create a serious electrical hazard. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**23. B** — The selected answer is correct. Emergency controls must be reliable, but testing them can stop equipment. A controlled test coordinates operations, protects workers, and confirms the expected response. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**24. D** — The selected answer is correct. Deposits can foul floats, sensors, screens, and pump intakes. Planned washdown reduces accumulation while keeping the task within the facility's safe work procedure. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**25. B** — The selected answer is correct. Trendable operating data creates a baseline. Comparing current measurements with that history helps identify gradual loss of capacity or rising mechanical and electrical load. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**26. D** — The selected answer is correct. Pump startup depends on the intended suction and discharge path. A wrong position can damage equipment, flood an area, or send flow where workers do not expect it. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**27. A** — 33.3% (approximately) is correct because The reduction is 3 feet, and 3 divided by the original 9 feet equals one-third, or about 33.3 percent. The other options do not address the controlling condition. Operators should verify the field condition, follow the approved procedure, and document the response. This supports safe work, reliable equipment, and clear shift communication.

**28. C** — Groundwater entering through cracks or defective joints is correct. Infiltration enters through defects below or near the groundwater level, while inflow is a direct connection or opening that admits

surface water or stormwater. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**29. B** — Repeated localized blockages near joints or service connections is correct. Roots often enter through joints or cracks and grow into the flow path. Repeated blockages at the same location support targeted inspection and correction. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**30. D** — Accumulated grease can narrow the flow path and trap solids is correct. Grease adheres to pipe walls and can capture wipes and other solids. Preventing or removing the buildup reduces blockages and overflow risk. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**31. C** — Potential openings and improper connections that admit smoke is correct. Smoke testing places visible smoke in the collection network. Smoke escaping at roofs, cleanouts, or other openings can reveal connection and inflow problems. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**32. A** — The selected answer is correct. Dye follows a controlled water path and can confirm whether a roof, yard, or plumbing drain connects to the sanitary system. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**33. B** — The selected answer is correct. Nozzle angle, flow, and pressure affect traction and cleaning. Matching the tool to the pipe and deposit reduces damage and improves the quality of the work. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**34. A** — Link observed defects to a location and maintenance decision is correct. A useful CCTV record identifies the asset, location, defect, and condition. That information supports cleaning, repair, rehabilitation, and future comparison. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**35. D** — The selected answer is correct. Manhole covers are part of the public right-of-way. Damage or displacement can injure people, admit stormwater, and expose the utility to preventable risk. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**36. C** — The selected answer is correct. Blockages can release stored energy or cause flooding when disturbed. Confirmation, isolation, communication, and a controlled clearing plan protect workers and

the public. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**37. D** — 30 min is correct because Time is volume divided by rate, so 36,000 gallons divided by 1,200 gallons per minute requires 30 minutes. The other options do not address the controlling condition. Operators should verify the field condition, follow the approved procedure, and document the response. This supports safe work, reliable equipment, and clear shift communication.

**38. B** — The selected answer is correct. Uniform bedding supports the pipe, limits point loading, and helps preserve alignment and slope. Poor support can lead to settlement, joint stress, or deformation. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**39. A** — Capacity, routing, backup power, alarms, and communication responsibilities is correct. A bypass moves risk to another flow path. Confirming capacity, discharge protection, monitoring, and contingency actions reduces the chance of a secondary overflow. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**40. C** — The selected answer is correct. Restoration limits exposure and protects the public and environment. The response should include cleanup, disinfection when directed, documentation, and any required follow-up. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**41. A** — The selected answer is correct. Service laterals can be the source of recurring restrictions or wet-weather inflow. Checking them prevents the mainline from receiving all the blame for a local problem. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**42. D** — The selected answer is correct. Easement work combines operational access with property and safety concerns. Confirming authority and communicating the plan reduces conflict and keeps the crew within its assignment. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**43. C** — Unknown utilities can create electrocution, explosion, flooding, or service hazards is correct. Excavation can expose energized, pressurized, or hazardous utilities. Locating and verifying them is a basic control before soil is disturbed. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**44. B** — The selected answer is correct. Backfill must support the pipe and surrounding soil without shifting the repair. Controlled placement and compaction reduce future settlement and pavement or alignment problems. The other options miss the controlling condition. Operators should verify the

observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**45. B** — A repeatable history of deposits or blockages at known locations is correct. Maintenance history can identify locations where deposits recur. Scheduling work before failure is usually more controlled than waiting for an emergency blockage. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**46. D** — The selected answer is correct. An inventory gives operators a shared reference for planning, response, and records. Accurate identifiers also reduce confusion during emergencies and contractor work. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**47. C** — 2 % is correct because Percentage slope is rise divided by horizontal distance, multiplied by 100. Six divided by 300 equals 0.02, or 2 percent. The other options do not address the controlling condition. Operators should verify the field condition, follow the approved procedure, and document the response. This supports safe work, reliable equipment, and clear shift communication.

**48. A** — Material loss can weaken the asset before hydraulic failure is obvious is correct. Corrosion may reduce wall thickness, damage supports, or create defects that later admit groundwater. Early condition assessment supports planned rehabilitation. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**49. B** — The asset, work performed, observations, materials, and remaining needs is correct. A complete closeout preserves what changed and what remains open. That information improves future troubleshooting, inventory accuracy, and maintenance planning. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**50. C** — The selected answer is correct. Bypass conditions can change with inflow, blockage, or equipment failure. Continuous or frequent checks provide time to correct the problem before a release occurs. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**51. D** — The selected answer is correct. Cutting restores capacity temporarily but does not remove the pathway that allowed roots to enter. Inspection and repair or recurring maintenance may still be needed. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**52. A** — The selected answer is correct. Cleaning can leave loosened solids in the line. Controlled flushing moves material to a point where it can be collected and verifies that the passage is open. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**53. D** — The selected answer is correct. Specific location and symptoms help the next crew prepare the correct equipment and avoid repeating work. Accurate timing also supports trend and response analysis. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**54. C** — The selected answer is correct. The invert is the flow path through the manhole. Damage, excess mortar, or debris can create a restriction even when the connecting pipes appear open. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**55. A** — Rotation shares wear and confirms both pumps remain available is correct. Alternation balances run time and provides an opportunity to detect a failed standby before it is urgently needed. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**56. B** — The selected answer is correct. A high level can progress to an overflow. Operators should verify the indication, check pumping capability, and follow the station's emergency and communication procedures. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**57. A** — 400 cu ft is correct because The rectangular volume is length multiplied by width multiplied by depth. Ten times eight times five equals 400 cubic feet. The other options do not address the controlling condition. Operators should verify the field condition, follow the approved procedure, and document the response. This supports safe work, reliable equipment, and clear shift communication.

**58. C** — The selected answer is correct. Independent confirmation is valuable when a level signal drives alarms or starts. It prevents an incorrect instrument from directing an unsafe or ineffective response. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**59. D** — The selected answer is correct. Setpoints control storage, pump cycling, and overflow margin. A change should be evaluated against design intent, equipment limits, and approved operating practice. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**60. B** — The selected answer is correct. The fault code narrows the problem, while field conditions show whether the indication matches reality. Recording both supports safe troubleshooting and later repair. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**61. B** — The selected answer is correct. Emergency power is valuable only when it starts, transfers, and supports the planned load. Exercise records reveal problems before a utility outage. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**62. A** — The selected answer is correct. Backflow can reverse the pump or return wastewater to the wet well, increasing starts and wear. The valve should be inspected within the approved isolation plan. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**63. C** — The atmosphere may contain toxic, oxygen-deficient, or combustible hazards is correct. Wet wells can accumulate hazardous gases and lack oxygen. Atmospheric testing, ventilation, entry controls, and rescue planning must work together. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**64. D** — Secure connections, adequate capacity, leak protection, and a monitored discharge is correct. A bypass failure can cause a release quickly. Confirming the physical connection and monitoring plan controls that risk during changing inflow conditions. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**65. B** — Long detention with low oxygen and septic wastewater is correct. Extended detention allows oxygen depletion and septic conditions to develop. Odor control may require operational, chemical, ventilation, or maintenance changes. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**66. A** — Uneven run time can reveal control, availability, or performance problems is correct. Run-time balance is a practical operating indicator. A large difference can signal a failed standby, incorrect alternation, or unequal pump performance. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**67. D** — 500 gpm is correct. When both pumps deliver simultaneously, their individual rates add. Two pumps at 250 gallons per minute provide a combined 500 gallons per minute. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**68. C** — The selected answer is correct. A seal alarm may indicate moisture intrusion or a related electrical condition. Continuing to operate without evaluation can damage the motor or create a hazard. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**69. A** — Accumulated debris can restrict inflow and increase upstream level is correct. A blocked screen increases head loss and can starve equipment or raise the wet-well level. Cleaning must follow the station's safe handling procedure. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**70. C** — The selected answer is correct. Opening the hatch can expose workers to falls, gases, traffic, and biological hazards. A pre-task review keeps the work controlled even when entry is not planned. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**71. B** — Compare flow and head trends with the pump's expected operating range is correct. Performance is a relationship among flow, head, current, and operating conditions. Trends can identify degradation early and support targeted maintenance. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**72. D** — Clear roles reduce delay when storage, power, or pumping capacity is lost is correct. Emergencies involve operations, maintenance, supervisors, and sometimes public agencies. Clear responsibilities help the right people act before storage is exhausted. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**73. C** — The selected answer is correct. A trend adds time and context. It can reveal gradual drift, repeated peaks, or a response to weather that a single measurement cannot show. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**74. D** — To compare the instrument's output with an accepted standard or field value is correct. Calibration tests whether the displayed value represents the measured condition. A known reference makes adjustment and documentation defensible. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**75. A** — Investigate the cause and confirm that the process has returned to control is correct. Acknowledgement records operator awareness; it does not correct the process. Persistent alarms require field verification, troubleshooting, and documented follow-up. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**76. B** — Condensation, foam, deposits, or obstructions in the signal path is correct. Ultrasonic instruments depend on a clear acoustic path and suitable surface reflection. Foam, vapor, or deposits can make the reported level unreliable. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**77. A** — 20000 gph is correct. Average hourly flow is the recorded volume divided by the number of hours. Dividing 480,000 gallons by 24 hours gives 20,000 gallons per hour. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**78. D** — The comparison can reveal scaling, signal, or configuration errors is correct. Independent checks help identify a meter factor, wiring, data, or configuration problem. Agreement improves confidence; disagreement prompts targeted investigation. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**79. B** — It reflects the flow or condition being evaluated without avoidable bias is correct. A representative point captures the intended process condition. Mixing, flow, access, and contamination risks should be considered when selecting it. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**80. C** — The selected answer is correct. Remote data is valuable but not infallible. Independent verification prevents incorrect decisions based on failed sensors, communications, scaling, or stale data. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**81. A** — By consequence, urgency, and the time available to prevent harm is correct. Alarm priority should reflect what can happen and how quickly action is needed. Consistent priorities help operators focus attention during competing events. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**82. D** — The selected answer is correct. Missing data weakens the record and may hide an alarm, overflow, or change in performance. The gap should be investigated and clearly documented. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**83. B** — The selected answer is correct. Comparisons are meaningful only when units, time windows, and relevant conditions are aligned. Normalization helps distinguish real change from a difference in measurement basis. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**84. A** — It provides a reference for detecting future drift or recurrence is correct. A documented post-repair baseline captures normal readings under known conditions. Later deviations can then be recognized and investigated sooner. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**85. C** — Sensor fouling, calibration drift, or changing signal configuration is correct. A slow mismatch between field condition and signal suggests the measurement chain deserves review. Cleaning, verification, and calibration can identify the cause. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**86. D** — Preserve the original observation, correction basis, and final interpretation is correct. Transparent records show what was observed and why it changed. That supports auditability, honest trend interpretation, and better future decisions. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**87. B** — 41.7 lb/day is correct. Using the standard conversion factor, mass per day equals flow in million gallons per day multiplied by dose and 8.34. The result is 41.7 pounds per day. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**88. C** — Unexpected energization, startup, or release of stored energy is correct. Lockout and tagout isolate hazardous energy and communicate the restriction. Verification is required before work begins because a label alone does not remove energy. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**89. C** — The selected answer is correct. PPE is the final layer in a control strategy. The hazard assessment identifies the protection needed for chemicals, biological material, traffic, noise, and other exposures. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**90. D** — A complete entry plan, atmospheric evaluation, attendant, and rescue capability is correct. Confined-space risk can change rapidly. Entry controls must address the atmosphere, isolation, communication, attendants, retrieval, and rescue before the entrant goes in. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**91. A** — Hazards, handling, storage, exposure controls, and emergency information is correct. A safety data sheet communicates chemical hazards and protective measures. Operators use it to plan handling, spill response, storage, and exposure controls. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**92. B** — It creates a predictable separation between traffic, workers, and equipment is correct. Traffic controls manage movement and provide advance warning. Their layout should match the roadway, work activity, visibility, and local procedure. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**93. B** — The selected answer is correct. Near misses provide early warning. Reviewing them can correct equipment, planning, communication, or behavior before the consequence becomes more serious. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**94. A** — A factual timeline, conditions, actions, witnesses, and follow-up needs is correct. A factual record supports learning and follow-up. It should distinguish observations from assumptions and preserve information needed for corrective action. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**95. D** — Specific information helps others respond without guessing is correct. Clear communication reduces delay and misunderstanding. Location, condition, hazards, and requested support give the next person a usable operational picture. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**96. C** — The selected answer is correct. Individual access and logging support accountability. Controlled changes and prompt reporting reduce the chance that a compromised account or device affects operations. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**97. C** — 75 % is correct because Completion percentage is completed inspections divided by planned inspections, multiplied by 100. Eighteen divided by 24 equals 0.75, or 75 percent. The other options do not address the controlling condition. Operators should verify the field condition, follow the approved procedure, and document the response. This supports safe work, reliable equipment, and clear shift communication.

**98. D** — It identifies the asset, task, findings, action, parts, and status is correct. A complete work order preserves the operational history and makes remaining work visible. That improves planning, accountability, and troubleshooting. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**99. A** — The selected answer is correct. Public reports can provide early warning. A prompt, factual assessment helps determine whether the condition is operational, maintenance-related, or an emergency. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.

**100. B** — The selected answer is correct. Personnel, roles, and phone numbers change. Periodic checks keep escalation practical when power, overflow, access, or safety conditions require immediate coordination. The other options miss the controlling condition. Operators should verify the observation and document the response. This supports safe work, reliable equipment, and clear shift communication.