

# **CERTIFIED SIX SIGMA GREEN BELT STUDY GUIDE**

## **PRACTICE EXAM 18 - 100 QUESTIONS**

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*This standalone practice exam is aligned to the ASQ Certified Six Sigma Green Belt Body of Knowledge. Select the single best answer for each question. For a timed simulation, allow four hours.*

*Answer key and explanations follow the questions.*

# **PRACTICE EXAM 18: CERTIFIED SIX SIGMA GREEN BELT (100 QUESTIONS)**

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*This 100-question practice exam follows the ASQ CSSGB body of knowledge. Select the single best answer for each question. For a timed simulation, allow four hours. This unofficial study resource is not an ASQ examination.*

**1.** A Green Belt is considering an issue during the organizational Six Sigma planning phase. Which response is most appropriate?

- A. hold safety stock at every step for this project scenario
- B. order the largest economical batch for this project scenario
- C. apply just-in-time replenishment to reduce excess inventory
- D. schedule production by monthly forecast alone for this project scenario

**2.** A Green Belt is considering an issue during the organizational Six Sigma planning phase. Which response is most appropriate?

- A. skip verification after design for this project scenario with the team evidence
- B. repeat DMAIC without a defined process for this project scenario with the team evidence
- C. begin with final inspection only for this project scenario with the team evidence
- D. use DMADV when creating a new process that must meet CTQs

**3.** A Green Belt is considering an issue during the organizational Six Sigma planning phase. Which response is most appropriate?

- A. add only severity and occurrence for this project scenario with the team evidence
- B. calculate an FMEA risk priority number from severity, occurrence, and detection
- C. average all three ratings for this project scenario with the team evidence

D. subtract detection from severity for this project scenario with the team evidence

4. A Green Belt is considering an issue during the organizational Six Sigma planning phase. Which response is most appropriate?

- A. use design FMEA to examine product failure modes before release
- B. use process FMEA only after customer complaints for this project scenario
- C. substitute a control chart for failure analysis for this project scenario
- D. evaluate only supplier invoices for this project scenario with the team evidence

5. A Green Belt is considering an issue during the organizational Six Sigma planning phase. Which response is most appropriate?

- A. promise a specific solution immediately for this project scenario with the team evidence
- B. state that quality should improve for this project scenario with the team evidence
- C. define the project problem using baseline performance and business impact
- D. list every possible stakeholder complaint for this project scenario with the team evidence

6. A Green Belt is considering an issue during the organizational Six Sigma planning phase. Which response is most appropriate?

- A. choose the team's favorite problem for this project scenario
- B. align a project objective to a measurable business driver
- C. start with a solution already selected for this project scenario
- D. limit discussion to department preferences for this project scenario

7. A Green Belt is considering an issue during the organizational Six Sigma planning phase. Which response is most appropriate?

- A. remove customer measures from reviews for this project scenario with the team evidence
- B. replace all measures with a single finance metric for this project scenario

- C. report only monthly defect counts for this project scenario with the team evidence
- D. use a balanced scorecard to connect local measures with strategy

**8.** A Green Belt is considering an issue during the organizational Six Sigma planning phase. Which response is most appropriate?

- A. identify the system constraint before increasing upstream output
- B. maximize every resource utilization rate for this project scenario
- C. build inventory before studying the flow for this project scenario
- D. add inspection after every operation for this project scenario

**9.** A Green Belt is considering an issue during the organizational Six Sigma planning phase. Which response is most appropriate?

- A. average setup time across products for this project scenario with the team evidence
- B. use the longest individual cycle time for this project scenario
- C. divide defects by total output for this project scenario with the team evidence
- D. calculate takt time from available production time and customer demand

**10.** A Green Belt is considering an issue during the organizational Six Sigma planning phase. Which response is most appropriate?

- A. list only departmental job titles for this project scenario
- B. map material and information flow from supplier through customer
- C. draw an organization chart for this project scenario with the team evidence
- D. rank employees by utilization for this project scenario with the team evidence

**11.** A Green Belt is considering an issue during the organizational Six Sigma planning phase. Which response is most appropriate?

- A. use a spaghetti diagram to study excessive travel in a work area

- B. create a Pareto chart of defect categories for this project scenario with the team evidence
- C. run a capability study for this project scenario with the team evidence
- D. build a responsibility matrix for this project scenario with the team evidence

**12.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. replace customer research with internal guesses for this project scenario
- B. rank defects only by repair cost for this project scenario
- C. use the Kano model to distinguish basic expectations from delighters
- D. classify every feature as mandatory for this project scenario with the team evidence

**13.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. use a charter as a detailed work instruction for this project scenario
- B. write a charter that states scope, goal, business case, and roles
- C. omit baseline information for this project scenario with the team evidence
- D. define a solution before the problem for this project scenario with the team evidence

**14.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. display customer requirements for this project scenario with the team evidence during this improvement effort
- B. plot individual measurements over time for this project scenario with the team evidence
- C. rank causes by frequency for this project scenario with the team evidence
- D. use a work breakdown structure to decompose project deliverables into work packages

**15.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. use a Gantt chart to communicate tasks, durations, and schedule progress
- B. identify root causes of defects for this project scenario with the team evidence
- C. compare distributions to specifications for this project scenario with the team evidence

D. assign RACI roles automatically for this project scenario with the team evidence

**16.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. find the most popular team activity for this project scenario with the team evidence
- B. identify the task with lowest cost for this project scenario with the team evidence
- C. use critical-path analysis to find tasks that determine the shortest project duration
- D. select the activity with most resources for this project scenario with the team evidence

**17.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. measure benefits after closing the project for this project scenario
- B. track only the primary target for this project scenario with the team evidence
- C. remove measures once results improve for this project scenario with the team evidence
- D. include consequential metrics to detect harm caused by an improvement

**18.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. calculate a confidence interval for this project scenario with the team evidence
- B. use an affinity diagram to organize a large set of related ideas
- C. monitor a process over time for this project scenario with the team evidence
- D. assign cause-and-effect probabilities for this project scenario with the team evidence during this improvement effort

**19.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. use a prioritization matrix to compare alternatives against weighted criteria
- B. choose the option with the loudest advocate for this project scenario
- C. select the quickest suggestion for this project scenario with the team evidence
- D. avoid defining decision criteria for this project scenario with the team evidence

**20.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. assign every person final approval for this project scenario with the team evidence
- B. replace all roles with a single sponsor for this project scenario with the team evidence
- C. use a RACI chart to clarify who is responsible, accountable, consulted, and informed
- D. avoid documenting decisions for this project scenario with the team evidence during this improvement effort

**21.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. use nominal group technique to generate ideas and rank them independently
- B. let the manager decide before discussion for this project scenario with the team evidence
- C. use unstructured debate only for this project scenario with the team evidence
- D. eliminate silent idea generation for this project scenario with the team evidence

**22.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. seek rapid unanimous agreement for this project scenario with the team evidence
- B. address groupthink by inviting dissenting evidence before a decision
- C. exclude people with concerns for this project scenario with the team evidence
- D. treat seniority as proof for this project scenario with the team evidence

**23.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. replace data with verbal updates for this project scenario with the team evidence
- B. skip reviews to preserve momentum for this project scenario with the team evidence
- C. use a tollgate review to verify deliverables before moving phases
- D. close the project before implementation for this project scenario with the team evidence

**24.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. focus only on final financial results for this project scenario
- B. delete working files after closure for this project scenario with the team evidence
- C. keep results within the project team for this project scenario
- D. document lessons learned so future teams can reuse project knowledge

**25.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. define boundaries after implementation for this project scenario with the team evidence
- B. assume processes stay within one department for this project scenario
- C. use a boundary only for budgets for this project scenario
- D. distinguish a process boundary from an organizational reporting boundary

**26.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. start the project before identifying a sponsor for this project scenario
- B. choose the largest problem regardless of boundaries for this project scenario
- C. select a project with meaningful impact and a manageable scope
- D. select work solely because data are unavailable for this project scenario

**27.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. use a SIPOC to clarify suppliers, inputs, process, outputs, and customers
- B. estimate correlation between variables for this project scenario with the team evidence
- C. calculate control limits for this project scenario with the team evidence
- D. schedule project tasks for this project scenario with the team evidence

**28.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. assign ownership to the newest team member for this project scenario

- B. identify the process owner who can sustain changes after the project
- C. leave ownership undefined for this project scenario with the team evidence
- D. make the facilitator permanent owner for this project scenario with the team evidence

**29.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. collect opinions without performance criteria for this project scenario
- B. compare unrelated internal departments only for this project scenario
- C. ignore external practices for this project scenario with the team evidence
- D. use competitive benchmarking to compare performance with direct competitors

**30.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. sample only satisfied customers for this project scenario
- B. ask questions that suggest the desired answer
- C. collect voice-of-customer input through unbiased interview questions
- D. discard negative feedback as outliers for this project scenario

**31.** A Green Belt is considering an issue during the Define phase. Which response is most appropriate?

- A. convert every request into a cost target for this project scenario
- B. translate a customer need into measurable critical-to-quality requirements
- C. treat all needs as equal priorities for this project scenario
- D. wait until control planning to define needs for this project scenario

**32.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. classify product weight as continuous variables data
- B. classify it as nominal data for this project scenario
- C. treat it as a count of defects
- D. label it an ordinal category for this project scenario

**33.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. assume they are continuous observations for this project scenario
- B. treat them as ratio measurements only for this project scenario
- C. classify defect counts per unit as discrete attributes data
- D. label them interval-scale measurements for this project scenario with the team evidence

**34.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. sample one shift to represent all shifts for this project scenario with the team evidence
- B. select only the first units produced for this project scenario with the team evidence
- C. choose units easiest to inspect for this project scenario with the team evidence
- D. use random sampling when each unit should have an equal selection chance

**35.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. use stratified sampling when important subgroups must be represented
- B. sample only the largest subgroup for this project scenario
- C. remove subgroup labels before sampling for this project scenario
- D. treat every subgroup as identical for this project scenario

**36.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. replace all values with the largest value for this project scenario with the team evidence
- B. use the median when an extreme value would distort the arithmetic mean
- C. use the range as a location measure for this project scenario with the team evidence
- D. discard the entire data set for this project scenario with the team evidence

**37.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. treat it as a specification limit for this project scenario
- B. use it to identify the most frequent category for this project scenario
- C. use standard deviation to describe typical spread around the mean
- D. use it as a sample size for this project scenario

**38.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. document customer interviews for this project scenario with the team evidence
- B. show task dependencies for this project scenario with the team evidence
- C. assign team accountability for this project scenario with the team evidence
- D. use a histogram to display the distributional shape of continuous data

**39.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. use a scatter diagram to explore association between two quantitative variables
- B. rank defect categories by count for this project scenario with the team evidence
- C. monitor stability over time for this project scenario with the team evidence
- D. document a future-state process for this project scenario with the team evidence

**40.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. rank failure modes by risk for this project scenario with the team evidence
- B. compare a process mean to a target for this project scenario
- C. use a gauge R&R study to assess repeatability and reproducibility
- D. estimate customer satisfaction for this project scenario with the team evidence

**41.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. compare one operator with another only for this project scenario with the team evidence

- B. check measurement bias by comparing observed values with a reference value
- C. use a Pareto chart of defects for this project scenario with the team evidence
- D. calculate takt time for this project scenario with the team evidence

**42.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. use customer surveys as control limits for this project scenario
- B. calculate  $C_p$  from specification width alone for this project scenario
- C. ignore time-order behavior for this project scenario with the team evidence
- D. verify process stability before interpreting a capability index

**43.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. treat  $C_p$  as a centering measure only for this project scenario with the team evidence
- B. interpret  $C_p$  as potential capability based on specification width and within variation
- C. use  $C_p$  to count defects directly for this project scenario with the team evidence
- D. equate  $C_p$  with customer satisfaction for this project scenario with the team evidence

**44.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. interpret  $C_{pk}$  as capability adjusted for process centering
- B. use  $C_{pk}$  only for attribute counts for this project scenario
- C. treat  $C_{pk}$  as a project schedule metric for this project scenario
- D. ignore the nearest specification limit for this project scenario

**45.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. treat specifications as calculated from process data
- B. set control limits equal to customer requirements
- C. distinguish control limits from specification limits for this project scenario
- D. use both terms interchangeably for this project scenario

**46.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. use a normal probability plot to assess whether normality is plausible
- B. identify the project critical path for this project scenario with the team evidence
- C. assign responsibilities to stakeholders for this project scenario with the team evidence
- D. translate voice-of-customer needs for this project scenario with the team evidence

**47.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. assume recorded data are always correct for this project scenario with the team evidence
- B. include checks for missing and impossible values in a data-collection plan
- C. delete data definitions after collection for this project scenario with the team evidence
- D. allow each collector to use different codes for this project scenario

**48.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. set control limits from specifications for this project scenario with the team evidence
- B. rank customers by revenue for this project scenario with the team evidence
- C. calculate a p-value for this project scenario with the team evidence during this improvement effort
- D. use a process map to identify handoffs, rework loops, and missing steps

**49.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. assume they always occur independently for this project scenario with the team evidence
- B. treat mutually exclusive events as events that cannot occur together
- C. add their probabilities only when dependent for this project scenario
- D. interpret them as equal probabilities for this project scenario with the team evidence

**50.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. divide each probability by the sample size for this project scenario
- B. add probabilities regardless of event relationship for this project scenario
- C. subtract the larger probability for this project scenario with the team evidence
- D. apply the multiplication rule for independent events by multiplying probabilities

**51.** A Green Belt is considering an issue during the Measure phase. Which response is most appropriate?

- A. model continuous normal measurements only for this project scenario with the team evidence
- B. model time between rare events for this project scenario with the team evidence
- C. use a binomial distribution for counts of successes in fixed trials
- D. model ranked survey categories for this project scenario with the team evidence

**52.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. increase test power by using a larger sample when other conditions remain fixed
- B. increase random measurement error for this project scenario with the team evidence during this improvement effort
- C. raise variation deliberately for this project scenario with the team evidence during this improvement effort
- D. remove relevant observations for this project scenario with the team evidence during this improvement effort

**53.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. use a paired t-test when measurements are naturally matched
- B. compare unrelated groups with no pairing for this project scenario
- C. test a single proportion only for this project scenario
- D. compare only categorical frequencies for this project scenario with the team evidence

**54.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. test association of two categories only for this project scenario
- B. compare one process with specifications for this project scenario with the team evidence
- C. use ANOVA to compare means across more than two groups
- D. rank causes by frequency for this project scenario with the team evidence

**55.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. set an individuals-chart limit for this project scenario
- B. estimate a continuous regression slope for this project scenario
- C. compare paired continuous means for this project scenario
- D. use chi-square analysis for association among categorical variables

**56.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. rank actions by project duration for this project scenario with the team evidence
- B. use a cause-and-effect diagram to organize potential causes by categories
- C. calculate sample statistics for this project scenario with the team evidence
- D. document training attendance for this project scenario with the team evidence

**57.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. replace data collection with opinions for this project scenario with the team evidence
- B. select the most frequent defect automatically for this project scenario with the team evidence
- C. use 5 Whys to probe successive causal links behind a problem
- D. set a specification limit for this project scenario with the team evidence

**58.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. display a future-state value stream for this project scenario with the team evidence

- B. use a fault tree to analyze combinations of events leading to failure
- C. assign customer priorities for this project scenario with the team evidence during this improvement effort
- D. calculate a capability index for this project scenario with the team evidence

**59.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. perform gap analysis by comparing current performance with a defined future state
- B. estimate a p-value from current data for this project scenario with the team evidence
- C. replace a project charter for this project scenario with the team evidence
- D. choose a sampling method for this project scenario with the team evidence

**60.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. determine a contract price for this project scenario with the team evidence
- B. calculate a customer satisfaction score for this project scenario with the team evidence
- C. assign a project sponsor for this project scenario with the team evidence
- D. use a multi-vari study to separate positional, cyclical, and temporal variation

**61.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. remove contradictory observations for this project scenario with the team evidence
- B. ignore variables outside the model for this project scenario with the team evidence
- C. assume a high correlation is proof for this project scenario
- D. investigate a confounder before claiming that a correlation is causal

**62.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. change the hypothesis after seeing p-value for this project scenario
- B. select the conclusion first for this project scenario
- C. state the null hypothesis before examining test results

D. omit the comparison value for this project scenario

**63.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. compare customer requirements to CTQs for this project scenario with the team evidence
- B. use an F-test to compare variability when its assumptions are satisfied
- C. find a process constraint for this project scenario with the team evidence
- D. assign tasks to a project plan for this project scenario with the team evidence

**64.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. report confidence intervals to communicate estimate uncertainty
- B. replace estimates with a single exact claim
- C. treat the interval as a control limit
- D. avoid reporting sample size for this project scenario

**65.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. separate special-cause investigation from routine common-cause management
- B. adjust the process after every point for this project scenario
- C. treat all variation as operator error for this project scenario
- D. ignore stable patterns for this project scenario

**66.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. ignore possible confounding variables for this project scenario with the team evidence
- B. assume association proves a cause for this project scenario
- C. distinguish correlation from causation when two variables move together
- D. treat a scatterplot as experimental proof for this project scenario

**67.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. prove causation without a design for this project scenario with the team evidence during this improvement effort
- B. use linear regression to estimate an outcome from a predictor when the relationship is appropriate
- C. replace a control chart for this project scenario with the team evidence during this improvement effort
- D. classify defects by category for this project scenario with the team evidence during this improvement effort

**68.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. declare practical importance automatically for this project scenario with the team evidence
- B. treat it as the probability the alternative is true for this project scenario
- C. ignore the chosen significance level for this project scenario with the team evidence
- D. interpret a small p-value as evidence against the stated null hypothesis

**69.** A Green Belt is considering an issue during the Analyze phase. Which response is most appropriate?

- A. assume a small p-value guarantees business value
- B. distinguish statistical significance from practical significance for this project scenario
- C. avoid considering effect size for this project scenario
- D. accept every significant result without context for this project scenario

**70.** A Green Belt is considering an issue during the Improve phase. Which response is most appropriate?

- A. avoid defining acceptance criteria for this project scenario with the team evidence during this improvement effort
- B. substitute a proof of concept for a control plan for this project scenario
- C. declare success before testing for this project scenario with the team evidence during this improvement effort
- D. use a proof of concept to demonstrate that a proposed solution can work

**71.** A Green Belt is considering an issue during the Improve phase. Which response is most appropriate?

- A. maximize work-in-process inventory for this project scenario with the team evidence
- B. push large batches based solely on forecasts for this project scenario
- C. use a pull system to trigger work from downstream demand
- D. schedule every station independently for this project scenario with the team evidence

**72.** A Green Belt is considering an issue during the Improve phase. Which response is most appropriate?

- A. use kanban signals to authorize replenishment in a pull system
- B. use kanban as a root-cause tool for this project scenario
- C. replace visual signals with monthly forecasts for this project scenario
- D. increase batch sizes automatically for this project scenario with the team evidence

**73.** A Green Belt is considering an issue during the Improve phase. Which response is most appropriate?

- A. treat it as a financial accounting method for this project scenario
- B. use 5S only for final inspection for this project scenario
- C. apply 5S to organize, standardize, and sustain an effective workplace
- D. apply it only after a defect occurs for this project scenario

**74.** A Green Belt is considering an issue during the Improve phase. Which response is most appropriate?

- A. remove standard work for this project scenario with the team evidence
- B. inspect errors only after shipment for this project scenario
- C. increase tolerance limits for this project scenario with the team evidence
- D. use poka-yoke to prevent or immediately detect an error

**75.** A Green Belt is considering an issue during the Improve phase. Which response is most appropriate?

- A. use SMED principles to reduce changeover time
- B. increase lot size before studying setup for this project scenario
- C. combine setup with customer inspection for this project scenario
- D. delay setup work until the machine stops

**76.** A Green Belt is considering an issue during the Improve phase. Which response is most appropriate?

- A. allow each operator to invent a method for this project scenario
- B. use standard work to document the best current method consistently
- C. replace training with memory for this project scenario with the team evidence
- D. treat standards as permanent and unchangeable for this project scenario

**77.** A Green Belt is considering an issue during the Improve phase. Which response is most appropriate?

- A. conduct a kaizen event as a focused, rapid improvement effort
- B. replace all projects with annual planning for this project scenario
- C. avoid cross-functional participation for this project scenario with the team evidence
- D. wait for a major capital investment for this project scenario

**78.** A Green Belt is considering an issue during the Improve phase. Which response is most appropriate?

- A. add inspection after every step for this project scenario with the team evidence
- B. increase queues to protect utilization for this project scenario with the team evidence
- C. use continuous flow to reduce waiting and handoff delays where feasible
- D. separate linked operations unnecessarily for this project scenario with the team evidence

**79.** A Green Belt is considering an issue during the Improve phase. Which response is most appropriate?

- A. approve a solution without user testing for this project scenario
- B. use try-storming to test a proposed solution under realistic conditions
- C. replace pilot data with opinions for this project scenario with the team evidence

D. eliminate contingency plans for this project scenario with the team evidence

**80.** A Green Belt is considering an issue during the Improve phase. Which response is most appropriate?

- A. use factors only for scheduling for this project scenario with the team evidence
- B. define factors as customer complaints for this project scenario with the team evidence
- C. treat factors as output responses for this project scenario with the team evidence
- D. identify factors as controllable input variables in a designed experiment

**81.** A Green Belt is considering an issue during the Improve phase. Which response is most appropriate?

- A. treat levels as response measurements for this project scenario with the team evidence
- B. define levels as the settings chosen for an experimental factor
- C. use levels as defect counts for this project scenario with the team evidence
- D. assume each factor has one setting for this project scenario

**82.** A Green Belt is considering an issue during the Improve phase. Which response is most appropriate?

- A. assign only one treatment to all units for this project scenario
- B. run treatments in a convenient fixed order for this project scenario
- C. use randomization to reduce bias from uncontrolled influences in an experiment
- D. ignore time-related effects for this project scenario with the team evidence

**83.** A Green Belt is considering an issue during the Improve phase. Which response is most appropriate?

- A. replace randomization with inspection for this project scenario with the team evidence
- B. repeat a reading only after failure for this project scenario
- C. add more factors without runs for this project scenario
- D. use replication to estimate experimental error and improve precision

**84.** A Green Belt is considering an issue during the Improve phase. Which response is most appropriate?

- A. interpret an interaction when one factor's effect depends on another factor level
- B. assume main effects always tell the full story for this project scenario
- C. ignore nonparallel patterns on an interaction plot for this project scenario with the team evidence
- D. treat factors as unrelated by definition for this project scenario with the team evidence

**85.** A Green Belt is considering an issue during the Improve phase. Which response is most appropriate?

- A. use a pilot test to learn before broad implementation
- B. implement globally without testing for this project scenario with the team evidence
- C. wait for final audit findings for this project scenario
- D. eliminate measures during rollout for this project scenario with the team evidence

**86.** A Green Belt is considering an issue during the Control phase. Which response is most appropriate?

- A. treat it as a specification violation automatically for this project scenario with the team evidence
- B. adjust the process before investigating for this project scenario with the team evidence during this improvement effort
- C. treat a point beyond a control limit as evidence of a possible special cause
- D. ignore the point if the average is on target for this project scenario with the team evidence

**87.** A Green Belt is considering an issue during the Control phase. Which response is most appropriate?

- A. use subgroups to hide variation for this project scenario with the team evidence
- B. mix observations from unrelated conditions for this project scenario with the team evidence
- C. group data only by convenient calendar weeks for this project scenario
- D. form rational subgroups so within-group variation reflects short-term common causes

**88.** A Green Belt is considering an issue during the Control phase. Which response is most appropriate?

- A. record only the target value for this project scenario with the team evidence
- B. document reaction plans in a control plan for out-of-control signals
- C. omit responsibility for response for this project scenario with the team evidence
- D. remove data collection requirements for this project scenario with the team evidence

**89.** A Green Belt is considering an issue during the Control phase. Which response is most appropriate?

- A. allow uncontrolled local copies for this project scenario with the team evidence
- B. use document control to ensure workers use the current approved procedure
- C. replace revision history with verbal updates for this project scenario with the team evidence
- D. delete training records for this project scenario with the team evidence

**90.** A Green Belt is considering an issue during the Control phase. Which response is most appropriate?

- A. build a training plan that addresses the changed standard work and competence
- B. announce the change without practice for this project scenario with the team evidence
- C. train only the project sponsor for this project scenario with the team evidence
- D. delay training until audit failure for this project scenario with the team evidence

**91.** A Green Belt is considering an issue during the Control phase. Which response is most appropriate?

- A. define it as certification-body audit for this project scenario with the team evidence
- B. define it as an audit by a customer for this project scenario
- C. distinguish a first-party audit as an internal audit by the organization itself
- D. treat it as an informal team meeting for this project scenario with the team evidence

**92.** A Green Belt is considering an issue during the Control phase. Which response is most appropriate?

- A. treat it as a financial review for this project scenario with the team evidence

- B. define it as an internal audit only for this project scenario with the team evidence
- C. define it as an independent certification audit for this project scenario with the team evidence
- D. distinguish a second-party audit as an audit of a supplier by a customer

**93.** A Green Belt is considering an issue during the Control phase. Which response is most appropriate?

- A. replace learning with one-time implementation for this project scenario with the team evidence
- B. act before planning or checking for this project scenario with the team evidence
- C. use PDCA only after a failure for this project scenario with the team evidence
- D. apply PDCA by planning a change, trying it, checking results, then acting

**94.** A Green Belt is considering an issue during the Control phase. Which response is most appropriate?

- A. use total productive maintenance to improve equipment reliability through broad participation
- B. leave maintenance only to emergency repair for this project scenario with the team evidence
- C. treat operators as disconnected from equipment care for this project scenario
- D. eliminate preventive maintenance records for this project scenario with the team evidence

**95.** A Green Belt is considering an issue during the Control phase. Which response is most appropriate?

- A. replace standards with verbal reminders for this project scenario with the team evidence during this improvement effort
- B. hide performance data in monthly reports for this project scenario with the team evidence
- C. use visual management to make status and abnormalities obvious at the point of work
- D. use visuals only for decoration for this project scenario with the team evidence during this improvement effort

**96.** A Green Belt is considering an issue during the Control phase. Which response is most appropriate?

- A. use a p chart for individual weights for this project scenario with the team evidence
- B. use an X-bar and R chart for rational subgroups of continuous measurements

- C. use a c chart for sample means for this project scenario with the team evidence
- D. use an np chart for ranges for this project scenario with the team evidence

**97.** A Green Belt is considering an issue during the Control phase. Which response is most appropriate?

- A. use an X-bar chart with no subgroups for this project scenario with the team evidence
- B. use an individuals and moving-range chart for one observation at a time
- C. use a p chart for dimensions for this project scenario with the team evidence
- D. use a c chart for sample totals for this project scenario with the team evidence

**98.** A Green Belt is considering an issue during the Control phase. Which response is most appropriate?

- A. use a p chart to monitor the proportion defective when sample size can vary
- B. use an np chart when denominators differ for this project scenario with the team evidence
- C. use an X-bar chart for defectives for this project scenario with the team evidence
- D. use a c chart for continuous measurements for this project scenario with the team evidence

**99.** A Green Belt is considering an issue during the Control phase. Which response is most appropriate?

- A. use an R chart for defectives for this project scenario with the team evidence
- B. use a p chart only for constant counts for this project scenario with the team evidence
- C. use a u chart for individual values for this project scenario with the team evidence
- D. use an np chart to monitor the number defective with constant sample size

**100.** A Green Belt is considering an issue during the Control phase. Which response is most appropriate?

- A. use a p chart for defect counts for this project scenario with the team evidence
- B. use a u chart only for constant opportunity for this project scenario with the team evidence
- C. use a c chart for counts of defects when opportunity area is constant
- D. use an X-bar chart for nonconformities for this project scenario with the team evidence

## Practice Exam 18: Answer Key and Explanations

1. **C** — apply just-in-time replenishment to reduce excess inventory is correct because just-in-time replenishes based on actual consumption and flow needs. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently consistently consistently decisions.
2. **D** — use DMADV when creating a new process that must meet CTQs is correct because dmadv is a design-focused roadmap for new or fundamentally redesigned work. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.
3. **B** — calculate an FMEA risk priority number from severity, occurrence, and detection is correct because an fmea rpn combines severity, occurrence, and detection ratings. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.
4. **A** — use design FMEA to examine product failure modes before release is correct because design fmea targets product-design risks before production begins. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently decisions.
5. **C** — define the project problem using baseline performance and business impact is correct because a useful problem statement is factual, bounded, and measurable. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.
6. **B** — align a project objective to a measurable business driver is correct because six sigma projects should connect improvement work to organizational value. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.
7. **D** — use a balanced scorecard to connect local measures with strategy is correct because a balanced scorecard links operational indicators to strategic outcomes. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.
8. **A** — identify the system constraint before increasing upstream output is correct because theory of constraints focuses attention on the limiting resource. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently consistently decisions.

**9. D** — calculate takt time from available production time and customer demand is correct because takt time expresses the pace needed to meet customer demand. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**10. B** — map material and information flow from supplier through customer is correct because a value-stream map makes end-to-end flow and waste visible. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently decisions.

**11. A** — use a spaghetti diagram to study excessive travel in a work area is correct because a spaghetti diagram traces movement through physical space. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**12. C** — use the Kano model to distinguish basic expectations from delighters is correct because kano analysis distinguishes satisfaction effects of different feature types. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**13. B** — write a charter that states scope, goal, business case, and roles is correct because a charter establishes the project's purpose, boundaries, and governance. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**14. D** — use a work breakdown structure to decompose project deliverables into work packages is correct because a wbs organizes the work required to produce project deliverables. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**15. A** — use a Gantt chart to communicate tasks, durations, and schedule progress is correct because gantt charts show planned timing and progress for project activities. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**16. C** — use critical-path analysis to find tasks that determine the shortest project duration is correct because critical-path tasks have no scheduling slack without affecting completion. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**17. D** — include consequential metrics to detect harm caused by an improvement is correct because consequential metrics guard against shifting a problem elsewhere. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently decisions.

**18. B** — use an affinity diagram to organize a large set of related ideas is correct because affinity diagrams group ideas into natural themes. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**19. A** — use a prioritization matrix to compare alternatives against weighted criteria is correct because a prioritization matrix makes tradeoffs explicit and repeatable. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently decisions.

**20. C** — use a RACI chart to clarify who is responsible, accountable, consulted, and informed is correct because raci prevents role ambiguity by distinguishing four participation types. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**21. A** — use nominal group technique to generate ideas and rank them independently is correct because nominal group technique balances individual input with structured ranking. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**22. B** — address groupthink by inviting dissenting evidence before a decision is correct because constructive dissent helps teams test assumptions and avoid groupthink. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently decisions.

**23. C** — use a tollgate review to verify deliverables before moving phases is correct because tollgates provide structured sponsor review of phase deliverables. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently decisions.

**24. D** — document lessons learned so future teams can reuse project knowledge is correct because lessons learned transfer useful knowledge beyond the completed project. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**25. D** — distinguish a process boundary from an organizational reporting boundary is correct because processes often cross functions, so their boundaries must reflect actual flow. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**26. C** — select a project with meaningful impact and a manageable scope is correct because good project selection balances value, feasibility, and scope. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently decisions.

**27. A** — use a SIPOC to clarify suppliers, inputs, process, outputs, and customers is correct because sipoc provides a high-level view of process boundaries and relationships. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**28. B** — identify the process owner who can sustain changes after the project is correct because the process owner has authority and accountability for ongoing performance. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**29. D** — use competitive benchmarking to compare performance with direct competitors is correct because competitive benchmarking compares like-for-like external competitors. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently consistently consistently consistently decisions.

**30. C** — collect voice-of-customer input through unbiased interview questions is correct because neutral prompts and representative customers reduce response bias. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently consistently consistently consistently decisions.

**31. B** — translate a customer need into measurable critical-to-quality requirements is correct because ctqs operationalize customer needs into measurable characteristics. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently consistently consistently consistently decisions.

**32. A** — classify product weight as continuous variables data is correct because weight can take values on a continuum and is variables data. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently decisions.

**33. C** — classify defect counts per unit as discrete attributes data is correct because counts are discrete and are commonly analyzed as attributes data. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**34. D** — use random sampling when each unit should have an equal selection chance is correct because random sampling reduces selection bias by giving units equal opportunity. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**35. A** — use stratified sampling when important subgroups must be represented is correct because stratification ensures planned representation of meaningful subgroups. It best fits the stated situation.

The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently consistently consistently decisions.

**36. B** — use the median when an extreme value would distort the arithmetic mean is correct because the median is resistant to the influence of extreme observations. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**37. C** — use standard deviation to describe typical spread around the mean is correct because standard deviation summarizes dispersion of values around their average. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**38. D** — use a histogram to display the distributional shape of continuous data is correct because histograms group numerical data into intervals to reveal shape and spread. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**39. A** — use a scatter diagram to explore association between two quantitative variables is correct because scatter diagrams display paired values and can reveal association patterns. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**40. C** — use a gauge R&R study to assess repeatability and reproducibility is correct because gauge R&R separates equipment repeatability from appraiser reproducibility. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently decisions.

**41. B** — check measurement bias by comparing observed values with a reference value is correct because bias is the consistent difference between measurements and a reference. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**42. D** — verify process stability before interpreting a capability index is correct because capability interpretation assumes a stable, predictable process. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently consistently consistently consistently consistently decisions.

**43. B** — interpret  $C_p$  as potential capability based on specification width and within variation is correct because  $C_p$  compares specification spread with process spread without considering centering. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**44. A** — interpret Cpk as capability adjusted for process centering is correct because cpk incorporates the process mean's position relative to specification limits. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently decisions.

**45. C** — distinguish control limits from specification limits is correct because control limits describe process behavior; specifications express acceptable output requirements. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently consistently consistently decisions.

**46. A** — use a normal probability plot to assess whether normality is plausible is correct because a normal probability plot helps evaluate alignment with a normal distribution. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**47. B** — include checks for missing and impossible values in a data-collection plan is correct because data-quality checks prevent avoidable errors from entering analysis. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**48. D** — use a process map to identify handoffs, rework loops, and missing steps is correct because process mapping exposes how work actually moves through a process. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**49. B** — treat mutually exclusive events as events that cannot occur together is correct because mutually exclusive events have no shared outcomes in one trial. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**50. D** — apply the multiplication rule for independent events by multiplying probabilities is correct because independent-event multiplication uses the product of the individual probabilities. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**51. C** — use a binomial distribution for counts of successes in fixed trials is correct because binomial models count successes across a fixed number of similar trials. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**52. A** — increase test power by using a larger sample when other conditions remain fixed is correct because larger samples generally improve the ability to detect a real effect. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**53. A** — use a paired t-test when measurements are naturally matched is correct because paired designs analyze within-pair differences and account for matching. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently decisions.

**54. C** — use ANOVA to compare means across more than two groups is correct because anova evaluates whether group means differ beyond expected random variation. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**55. D** — use chi-square analysis for association among categorical variables is correct because chi-square methods evaluate categorical counts against expected patterns. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently consistently consistently decisions.

**56. B** — use a cause-and-effect diagram to organize potential causes by categories is correct because a cause-and-effect diagram structures possible sources of a problem. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**57. C** — use 5 Whys to probe successive causal links behind a problem is correct because repeated why questions can move analysis beyond a symptom to causes. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**58. B** — use a fault tree to analyze combinations of events leading to failure is correct because fault trees use logical relationships among events that can produce failure. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**59. A** — perform gap analysis by comparing current performance with a defined future state is correct because gap analysis makes the difference between present and desired performance explicit. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**60. D** — use a multi-vari study to separate positional, cyclical, and temporal variation is correct because multi-vari studies help locate sources and patterns of process variation. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**61. D** — investigate a confounder before claiming that a correlation is causal is correct because confounders can create or distort an observed relationship between variables. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**62. C** — state the null hypothesis before examining test results is correct because predefining hypotheses preserves the integrity of statistical inference. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently consistently decisions.

**63. B** — use an F-test to compare variability when its assumptions are satisfied is correct because an f-test evaluates evidence about the ratio of two variances. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**64. A** — report confidence intervals to communicate estimate uncertainty is correct because confidence intervals express a plausible range under the sampling model. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently consistently decisions.

**65. A** — separate special-cause investigation from routine common-cause management is correct because common and special causes require different management responses. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently consistently consistently decisions.

**66. C** — distinguish correlation from causation when two variables move together is correct because association alone cannot establish that one variable causes another. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently decisions.

**67. B** — use linear regression to estimate an outcome from a predictor when the relationship is appropriate is correct because regression models an estimated relationship for prediction or explanation. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**68. D** — interpret a small p-value as evidence against the stated null hypothesis is correct because a p-value measures compatibility of data with the null hypothesis. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**69. B** — distinguish statistical significance from practical significance is correct because practical significance depends on effect size, cost, and operational meaning. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently consistently consistently decisions.

**70. D** — use a proof of concept to demonstrate that a proposed solution can work is correct because a proof of concept gives early evidence of technical feasibility. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**71. C** — use a pull system to trigger work from downstream demand is correct because pull systems link production and replenishment to actual downstream consumption. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**72. A** — use kanban signals to authorize replenishment in a pull system is correct because kanban provides a visual authorization mechanism for controlled replenishment. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**73. C** — apply 5S to organize, standardize, and sustain an effective workplace is correct because 5s improves workplace organization and makes abnormal conditions easier to see. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**74. D** — use poka-yoke to prevent or immediately detect an error is correct because poka-yoke designs the process to avoid mistakes or expose them immediately. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**75. A** — use SMED principles to reduce changeover time is correct because smed separates and streamlines setup activities to shorten changeovers. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently consistently consistently decisions.

**76. B** — use standard work to document the best current method consistently is correct because standard work establishes a repeatable baseline that can be improved. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**77. A** — conduct a kaizen event as a focused, rapid improvement effort is correct because kaizen events concentrate team effort on a defined improvement opportunity. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**78. C** — use continuous flow to reduce waiting and handoff delays where feasible is correct because continuous flow reduces delays by moving work smoothly between steps. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**79. B** — use try-storming to test a proposed solution under realistic conditions is correct because try-storming exposes practical issues through hands-on simulation and testing. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**80. D** — identify factors as controllable input variables in a designed experiment is correct because factors are input variables deliberately varied to study their effects. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**81. B** — define levels as the settings chosen for an experimental factor is correct because levels are the specific values or categories assigned to a factor. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**82. C** — use randomization to reduce bias from uncontrolled influences in an experiment is correct because randomization helps spread nuisance influences across treatment conditions. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**83. D** — use replication to estimate experimental error and improve precision is correct because replication provides repeated independent experimental information at conditions. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently consistently decisions.

**84. A** — interpret an interaction when one factor's effect depends on another factor level is correct because interactions mean the effect of one factor changes across levels of another. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**85. A** — use a pilot test to learn before broad implementation is correct because pilots test feasibility and unintended effects on a limited scale. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**86. C** — treat a point beyond a control limit as evidence of a possible special cause is correct because a control-limit signal indicates unusual process behavior worth investigating. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**87. D** — form rational subgroups so within-group variation reflects short-term common causes is correct because rational subgrouping makes between-subgroup signals more informative. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement consistently consistently decisions.

**88. B** — document reaction plans in a control plan for out-of-control signals is correct because a control plan states what to monitor and how to react. It best fits the stated situation. The other choices use an

unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**89. B** — use document control to ensure workers use the current approved procedure is correct because document control maintains the availability and identity of approved instructions. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**90. A** — build a training plan that addresses the changed standard work and competence is correct because training plans build capability needed to sustain an implemented change. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**91. C** — distinguish a first-party audit as an internal audit by the organization itself is correct because first-party audits are conducted internally by or for the organization. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**92. D** — distinguish a second-party audit as an audit of a supplier by a customer is correct because second-party audits are typically customer assessments of suppliers. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**93. D** — apply PDCA by planning a change, trying it, checking results, then acting is correct because pdca is a disciplined cycle for learning and standardizing improvement. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**94. A** — use total productive maintenance to improve equipment reliability through broad participation is correct because tpm integrates maintenance practices to improve availability and performance. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**95. C** — use visual management to make status and abnormalities obvious at the point of work is correct because visual management makes conditions and required actions easier to recognize. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**96. B** — use an X-bar and R chart for rational subgroups of continuous measurements is correct because x-bar and r charts monitor subgroup averages and within-subgroup ranges. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**97. B** — use an individuals and moving-range chart for one observation at a time is correct because individuals charts suit continuous data collected one observation per period. It best fits the stated

situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**98. A** — use a p chart to monitor the proportion defective when sample size can vary is correct because a p chart tracks fraction nonconforming and accommodates varying sample sizes. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**99. D** — use an np chart to monitor the number defective with constant sample size is correct because an np chart tracks nonconforming counts when the inspected sample size is fixed. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.

**100. C** — use a c chart for counts of defects when opportunity area is constant is correct because a c chart monitors defect counts under a constant opportunity basis. It best fits the stated situation. The other choices use an unrelated method, omit essential evidence, or apply the concept incorrectly. Proper application supports defensible, repeatable improvement decisions.