PassQueen
a.k.a dumpsqueen.com

Lean Six Sigma Green Belt

Six Sigma LSSGB

Version Demo

Total Demo Questions: 17

Total Premium Questions: 175

Buy Premium PDF

https://passqueen.com

support@passqueen.com

PASSQUEEN.COM

support@passqueen.com

Topic Break Down

Topic	No. of Questions
Topic 1, Define Phase	25
Topic 2, Measure Phase	56
Topic 3, Analyze Phase	49
Topic 4, Improve Phase	25
Topic 5, Control Phase	20
Total	175

QUESTION NO: 1

Which statement(s) are correct for the Regression Analysis shown here? (Note: There are 2 correct answers).

Regression Analysis: HeatFlux versus %Cu, Thickness

```
The Regression Equation is
HeatFlux = 484 + 4.80 %Cu - 24.2 Thickness


Predictor Coef     SE Coef T      P
Constant  483.67   39.57   12.22  0.000
%Cu       4.7963   0.9511  5.04   0.000
Thickness -24.215  1.941   -12.48 0.000


S = 8.93207 R-Sq = 85.9%     R-Sq (adj) = 84.8%
Analysis of Variance
Source          DF   SS        MS        F       P
Regression       2   12607.6   6303.8    79.01   0.000
Residual Error  26   2074.3    79.8
Total           28   14681.9


Source        DF     Seq SS
%Cu           1      184.5
Thickness     1      12423.1

Unusual Observations
Obs  %Cu   HeatFlux   Fit       SE Fit  Residual  St Resid
1    40.6  271.80     274.74    5.08    -2.94         -0.40 X
22   36.3  254.50     230.91    2.39    23.59         2.74R


R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large influence.
```

A. This Regression is an example of a Multiple Linear Regression.

B. This Regression is an example of Cubic Regression.

C. %Cu explains the majority of the process variance in heat flux.

D. Thickness explains over 80% of the process variance in heat flux.

E. The number of Residuals in this Regression Analysis is 26.

ANSWER: A D

Explanation:

This Regression is an example of a Multiple Linear Regression. The fitted model uses more than one predictor variable—%Cu and Thickness—to model the response, heat flux. A model remains linear regression when its coefficients are estimated linearly and the predictors enter as first-order terms; it is not required that there be only one input variable. This is the standard multiple linear regression form, which models a continuous response from two or more explanatory variables. The NIST Engineering Statistics Handbook describes multiple linear regression as a model with more than one predictor variable: NIST: Multiple Linear Regression.

Thickness explains over 80% of the process variance in heat flux. The regression results show that Thickness accounts for more than 80% of the variation in the heat-flux response, as indicated by the relevant variance-explained result in the displayed output. In regression analysis, the proportion of response variation accounted for by fitted predictor terms is assessed using sums of squares and related measures such as the coefficient of determination. This makes the statement a valid interpretation of the reported variance contribution for Thickness. NIST explains this role of the coefficient of determination and variation decomposition in its regression guidance: NIST: Regression Model Validation.

QUESTION NO: 2

The higher the sigma level of a process the better the performance.

A. True

B. False

ANSWER: A

Explanation:

True is correct. In Six Sigma, a process sigma level expresses process capability in terms of how consistently the process output meets specification requirements. A higher sigma level corresponds to fewer defects per million opportunities and therefore better conformance to customer requirements. For example, under the commonly used Six Sigma long-term convention that includes a 1.5-sigma shift, a process operating at six sigma is associated with approximately 3.4 defects per million opportunities, whereas lower sigma levels have substantially higher defect rates. Raising sigma performance generally reflects reduced process variation, improved centering on the target, and a lower likelihood that output will fall outside its specification limits. This makes sigma level a useful common metric for comparing process quality performance, provided that specifications, defect definitions, and opportunity counts have been defined appropriately. The goal of Lean Six Sigma improvement work is to use data and structured methods such as DMAIC to identify and control sources of variation and defects, thereby improving the process's sigma capability and its ability to deliver value reliably. See the American Society for Quality overview of Six Sigma and NIST/SEMATECH e-Handbook of Statistical Methods for quality and process-capability context.

QUESTION NO: 3

Use of the ________ approach is the most classic arrangement when constructing a Fishbone Diagram.

A. Chronological

B. 6M

C. 5M

D. Alphabetical

ANSWER: B

Explanation:

The **6M** approach is the classic way to organize a Fishbone Diagram, also called an Ishikawa or cause-and-effect diagram, particularly in manufacturing and process-improvement settings. It provides six high-level cause categories that form the main "bones" branching from the problem statement: Man (people), Machine, Method, Material, Measurement, and Mother Nature (environment). A team then brainstorms and documents specific potential causes beneath each category, allowing ideas to be collected systematically rather than relying on an unstructured list of causes.

This arrangement supports Lean Six Sigma root-cause analysis because it encourages teams to consider process variation across people, equipment, procedures, inputs, data or inspection systems, and environmental conditions. The categories are a practical prompt for broad, cross-functional thinking during the Analyze phase; they do not themselves prove causation. Potential causes identified on the diagram should subsequently be validated using data, observation, and appropriate analytical methods. The American Society for Quality describes the fishbone diagram as a tool for exploring and displaying possible causes of a specific problem, while the 6M categorization remains its traditional manufacturing-oriented structure. See [ASQ's Fishbone Diagram resource] and [Lean Enterprise Institute's Fishbone Diagram definition].

QUESTION NO: 4

Which items would normally be included in an effective Control Plan? (Note: There are 3 correct answers).

A. Critical characteristics to be monitored.

B. Measurement method and monitoring frequency.

C. A reaction plan for an out-of-control condition.

D. The original project charter approval date.

E. A list of all potential project ideas not selected.

ANSWER: A B C

Explanation:

An effective Control Plan documents how the improved process will be monitored and managed after implementation. It identifies the critical characteristics or process variables to control, the method and frequency of measurement or review, the person responsible for performing the control, and the reaction plan when performance does not meet the defined standard. These elements make ownership and response expectations clear to the process team.

A reaction plan is especially important because simply collecting data does not sustain an improvement. The plan should state what action to take when a control limit is exceeded, a specification is not met, or another defined trigger occurs. The Control Plan becomes part of ongoing process management and should be updated when process conditions, requirements, or controls materially change. See ASQ's Control Phase overview.

QUESTION NO: 5

A process has a Cp of 1.50 and a Cpk of 0.72. Which conclusion is most appropriate?

A. The process is centered and has excessive variation

B. The process variation has potential capability, but the process is not centered within the specification limits

C. The process is necessarily out of statistical control

D. The process mean is exactly at the specification midpoint

ANSWER: B

Explanation:

The correct conclusion is **The process variation has potential capability, but the process is not centered within the specification limits.** Cp compares the process spread with the total specification width and represents potential capability when centering is ignored. A Cp of 1.50 indicates that the process spread is substantially narrower than the specification range.

Cpk considers both process spread and the distance from the process mean to the nearer specification limit. Because Cpk is much lower than Cp, the process mean is shifted toward one specification boundary. The team should first confirm process stability and measurement adequacy, then investigate centering and the sources of variation before relying on capability results for customer commitments. NIST explains the distinction between Cp and Cpk in its process capability analysis guidance.

QUESTION NO: 6

Which of these are correct if Cpk Upper is 2.0 and Cpk Lower is 1.0?

A. The process is not stable.

B. The process is shifted to the left.

C. Cpk must be reported as 1.0.

D. The process Mean is 1.5.

ANSWER: C

Explanation:

Cpk must be reported as 1.0. The overall process capability index, Cpk, is defined as the smaller of the one-sided upper and lower capability indices: Cpk = min(Cpu, Cpl). "Cpk Upper" corresponds to Cpu, which measures the distance from the process mean to the upper specification limit in units of three process standard deviations. "Cpk Lower" corresponds to Cpl, which measures the equivalent distance to the lower specification limit. Because the reported Cpk represents capability with respect to the nearest specification limit, it is governed by the limiting side of the specification. With an upper value of 2.0 and a lower value of 1.0, the minimum is 1.0, so the correct reported Cpk is 1.0. This calculation is meaningful when the process is evaluated using an appropriate estimate of its within-process variation and the capability analysis assumptions have been assessed. The standard definition and interpretation of capability indices are described by NIST's Engineering Statistics Handbook and ASQ's process capability index resource.

QUESTION NO: 7

Blocking is used in a Designed Experiment for which of these reasons? (Note: There are 3 correct answers).

A. Account for known nuisance variation

B. Reduce unexplained experimental error

C. Compare treatments under more similar conditions

D. Eliminate the need to randomize run order

E. Create additional levels for each process factor

ANSWER: A B C

Explanation:

Blocking is used to account for known nuisance sources of variation that could affect the response but are not the factors of primary interest. For example, a team may block by day, material lot, production line, or operator when those conditions are expected to differ. Including the block in the experimental design separates its effect from the treatment comparisons and can reduce unexplained experimental error.

Blocking also helps ensure that treatment combinations are compared under more similar conditions. It does not replace randomization; random run order is still used within blocks to protect against time-related and other uncontrolled effects. Blocking does not create additional factor levels or eliminate the need to study a critical process input. NIST discusses blocking as a method for accounting for known sources of variation in experimental design: NIST: Blocking in Designed Experiments.

QUESTION NO: 8

Which of these are appropriate uses of a Value Stream Map? (Note: There are 3 correct answers).

A. Visualize material and information flow across a process

B. Identify delays and work-in-process between activities

C. Develop a future-state design for improved flow

D. Calculate individual operator performance ratings

E. Replace all detailed standard work instructions

ANSWER: A B C

Explanation:

A Value Stream Map is used to visualize the end-to-end flow of materials and information required to provide a product or service. It documents the sequence of activities and the connections among process steps, making it useful for identifying handoffs, delays, inventory or work-in-process accumulation, and non-value-added time. A current-state map also provides the factual baseline from which a team can design a future-state process with improved flow.

Value Stream Mapping is broader than a detailed workstation procedure or an individual employee performance evaluation. Its primary focus is the system-level flow that creates value for the customer. The Lean Enterprise Institute Value Stream Mapping reference describes its use for seeing material and information flow across a value stream.

QUESTION NO: 9

Due to excessive pollution, GREEN Solutions Inc. is considering subsidizing public transportation to work for its employees. According to the manager it takes an average weekday commute of 39 minutes with a Standard Deviation of 7 minutes for the employees to get to work while they use their personal vehicles for their office commute while the management set a policy of not more than 40 minutes for their daily one-way commute. A survey conducted one day on 70 employees showed an average of 34 minutes commuting time using the metro public transportation system with a Standard Deviation of 21 minutes. Assuming a Normal Distribution for the commute times by either personal or public transportation, which of these is true?

A. The probability that they would arrive on time using personal vehicles is much higher than using the metro public transportation system (MPTS)

B. The probability that they would arrive on time using the MPTS is much higher than using their personal vehicles

C. The two probabilities are about the same excepting in one case the consistency is higher than the other

D. We need to compile more data around weekends to incorporate for traffic differences

E. When Standard Deviation is higher the probability goes down and so the MPTS is worse

ANSWER: C

Explanation:

The two probabilities are about the same excepting in one case the consistency is higher than the other is correct. Under the stated Normal-distribution assumption, calculate each on-time probability as the area below 40 minutes. For personal vehicles, the standardized value is $(40 - 39) / 7 = 0.143$, giving an on-time probability of approximately 0.557, or 55.7%. For the metro public transportation system, the standardized value is $(40 - 34) / 21 = 0.286$, giving an on-time probability of approximately 0.612, or 61.2%. The difference is roughly 5.5 percentage points, so these probabilities are reasonably described as about the same rather than dramatically different. The key operational distinction is consistency: personal-vehicle commute times have a standard deviation of 7 minutes, compared with 21 minutes for metro travel. Thus, personal-vehicle times are much less variable and more predictable, even though the metro's lower mean produces a slightly larger probability of being at or below the 40-minute policy threshold. This use of z-scores and cumulative normal probabilities follows standard normal-distribution practice; see the NIST normal distribution reference and the NIST standard normal distribution reference.

QUESTION NO: 10

Which of the following is used to test the significance for the analysis of a Variance Table?

A. t Test

B. F Test

C. Chi Square Test

D. Acid Test

ANSWER: B

Explanation:

F Test is used to determine statistical significance in an analysis of variance table. Analysis of variance evaluates whether observed differences among group means are larger than would reasonably be expected from random variation within the groups. Its test statistic is the F ratio: the mean square attributable to the factor or treatment is divided by the mean square error, which represents within-group variation. Under the null hypothesis that the relevant population means are equal, this ratio follows an F distribution with degrees of freedom determined by the model and error components.

In Lean Six Sigma work, this test is especially useful during Analyze when a team needs to assess whether a categorical input, such as supplier, machine, shift, or material type, has a statistically demonstrable relationship with a continuous process output. The variance table reports sums of squares, degrees of freedom, mean squares, the F statistic, and typically a p-value. Comparing that p-value with the project's selected significance level supports a data-based conclusion about whether the factor contributes meaningful variation in the response. NIST describes the F test as the basis for comparing variation in analysis of variance, and its ANOVA guidance details the associated variance decomposition and test statistic. See NIST's F-test reference and NIST's ANOVA reference.

QUESTION NO: 11

To create standardization of financial benefit calculations project savings are typically based on savings over what period of time?

A. 6 months

B. 12 months

C. 24 months

D. The remainder of the calendar year

E. The remainder of the fiscal year

ANSWER: B

Explanation:

12 months is the standard period typically used to express project savings because it annualizes the financial impact of an improvement. Using a common 12-month basis lets an organization compare projects that have different implementation dates, production volumes, or observation periods on a consistent financial scale. For example, if a process change produces a verified monthly reduction in scrap, rework, labor, or other controllable costs, the recurring monthly benefit can be projected across 12 months to state an annualized savings figure. This creates a common language for project selection, prioritization, benefit validation, and portfolio reporting.

In Lean Six Sigma, financial benefits should be tied to a documented baseline, a clearly defined post-improvement performance level, and validated cost assumptions. Finance participation is important to confirm whether the calculated amount represents hard savings, cost avoidance, revenue enhancement, or another benefit category, and to ensure that benefits are not double-counted. Annualizing the result does not eliminate the need to report actual benefits realized within the current fiscal period; rather, it provides the standardized project-savings measure used for comparison and governance. ASQ describes Six Sigma as a data-driven approach for improving process performance and business results, while Lean Enterprise Institute resources emphasize connecting improvement work to measurable value: ASQ: Six Sigma and Lean Enterprise Institute: What Is Lean?.

QUESTION NO: 12

Non-parametric testing is done when which of these are applicable? (Note: There are 3 correct answers).

A. When the traditional t tests don't produce the results we need

B. A Hypothesis Test for the Median of the population is in question

C. It does not require data to come from Normally Distributed populations

D. They look at the Median rather than the Mean of populations

E. When there are no parameters to measure in the process

ANSWER: B C D

Explanation:

Nonparametric testing is appropriate when the analysis concerns a population median, when the normal-distribution assumption is not supportable, and when the practical focus is on a location measure represented by the median rather than the arithmetic mean. In Lean Six Sigma work, these methods are especially useful for ordinal data, skewed process data, data with influential outliers, or small samples for which normality cannot be reasonably established. Rather than relying on estimates of population parameters under a specified distribution, many nonparametric procedures use signs, ranks, or ordered observations. For example, a one-sample sign test can evaluate whether a population median equals a target value, while rank-based procedures can compare process locations across groups without requiring normally distributed measurements. This makes nonparametric methods a robust alternative for validating improvement results when conventional parametric assumptions are unsuitable. "It does not require data to come from Normally Distributed populations" captures the key distributional advantage, and "A Hypothesis Test for the Median of the population is in question" and "They look at the Median rather than the Mean of populations" reflect common Green Belt applications of sign- and rank-based methods. See the NIST Engineering Statistics Handbook's discussion of nonparametric techniques and NIST guidance on the sign test for a population median.

QUESTION NO: 13

Examples of a Visual Factory include which of these? (Note: There are 2 correct answers).

A. White outlines on floor for proper inventory placement

B. Documented procedures with a numerical outline

C. Bad/Good indications of gauge readings with red and green outlines

D. Implementing a defect inspection device

ANSWER: A C

Explanation:

A visual factory makes workplace conditions, operating standards, and abnormalities apparent at a glance, so employees can act quickly without needing to search for information or interpret lengthy instructions. **White outlines on floor for proper inventory placement** are a standard visual-management practice: they identify the intended location and quantity boundaries for materials, supporting orderly flow, rapid recognition of missing or excess inventory, and sustained 5S conditions. **Bad/Good indications of gauge readings with red and green outlines** also provide an immediate visual signal of process status. Clear color-coded limits enable an operator to distinguish acceptable from unacceptable conditions promptly and respond before a problem progresses.

These controls embody the Lean principle that standards and deviations should be visible where work occurs. Effective visual management reduces reliance on memory, makes the normal condition explicit, supports consistent decisions across shifts, and helps teams identify abnormalities in real time. Floor markings and status indicators are therefore practical visual-factory mechanisms that reinforce standard work, workplace organization, and continuous improvement. ASQ describes visual management as communicating information through visual signals in the workplace: ASQ Visual Management. The

Lean Enterprise Institute also discusses visual controls as part of establishing and maintaining effective workplace organization: Lean Enterprise Institute: 5S.

QUESTION NO: 14

A p Chart is appropriate for monitoring which of these process conditions? (Note: There are 3 correct answers).

A. The data are classified as conforming or nonconforming.

B. The sample sizes may vary from subgroup to subgroup.

C. The measure plotted is the proportion of nonconforming units.

D. The response is a continuous dimensional measurement.

E. The chart is intended to count defects per unit.

ANSWER: A B C

Explanation:

A p Chart monitors the proportion or fraction of units that are nonconforming in each sample. It is an attribute control chart used when each inspected unit can be classified as conforming or nonconforming, such as pass/fail, complete/incomplete, or defective/not defective. Unlike an np Chart, a p Chart can accommodate samples of different sizes because the plotted statistic is a proportion rather than a count.

The samples should be collected in time order so that the chart can reveal changes in the process proportion nonconforming. The control limits may vary with sample size: smaller samples have wider limits because the estimate of the proportion has greater sampling variation. A p Chart is not intended for continuous measurements or for tracking the number of defects per unit; those conditions require different chart types. See NIST's discussion of p and np control charts and ASQ's control chart resource.

QUESTION NO: 15

As part of a Visual Factory plan __________ cards are created and utilized to identify areas in need of cleaning and organization.

A. Kanban

B. Kaizen

C. Poke-Yoke

D. WhoSai

E. Red Tag

ANSWER: E

Explanation:

Red Tag is correct. In a Visual Factory and 5S implementation, red tags are a visual-management device used during the Sort phase to make workplace conditions and questionable items immediately visible. Team members attach a red tag to items, locations, equipment, or materials that require review because they are unnecessary, misplaced, excessive, defective, unused, or obstructive. The tags typically capture practical information such as the item description, location, reason for tagging, date, and responsible person. Tagged items can then be moved to a designated red-tag holding area and evaluated for disposal, relocation, repair, or retention. This systematic visual signal helps teams remove clutter and establish an organized, clean, and safer work area, which supports the broader goals of 5S and Visual Factory practices. The red-tag process also makes abnormal conditions visible to everyone, enabling timely action and sustaining workplace organization through routine review. The American Society for Quality describes 5S as a workplace organization method that includes sorting and removing unnecessary items; red tagging is a commonly used practical technique for doing that. See ASQ's 5S tutorial and Lean Enterprise Institute's 5S overview.

QUESTION NO: 16

The Standard Deviation for the distribution of Means is called the ___________ and approaches zero as the sample size reaches 30.

A. Standard Error

B. Mean Deviation

C. Mean Spread

D. Mean Error

ANSWER: A

Explanation:

Standard Error is the correct term for the standard deviation of a sampling distribution of sample means. It quantifies how much the mean calculated from one random sample is expected to vary from the mean calculated from another sample of the same size, assuming repeated sampling from the same population. For a population with standard deviation σ and sample size n, the standard error of the mean is $\sigma/\sqrt{n}$; in practice, $s/\sqrt{n}$ is commonly used when σ is unknown. This relationship is central to Lean Six Sigma because it distinguishes inherent process variation among individual observations from the uncertainty associated with an estimated process mean.

Increasing sample size reduces the standard error because the denominator increases by the square root of n. The phrase about a sample size of 30 is best understood as a conventional practical guideline related to the sampling distribution of the mean and the Central Limit Theorem, rather than a literal point at which standard error becomes zero. Mathematically, standard error approaches zero only as sample size grows without bound. See NIST's discussion of the standard error of the mean and its sampling-distribution guidance.

QUESTION NO: 17

Significant variation in process performance is a consequence of several causes that can be classified using which of the terminologies shown. (Note: There are 2 correct answers).

A. Common

B. Random

C. Uneducated

D. Special

E. Vital

ANSWER: A D

Explanation:

Common and Special are the standard cause-classification terms used in statistical process control, a foundational method within Lean Six Sigma. Common causes are the numerous, inherent sources of variation that are consistently part of the process design and operating system. Their cumulative effect establishes the process's usual, predictable level of variation when the process is stable. Improving performance affected by common causes generally requires changing the process, system, methods, materials, or other conditions managed by leadership.

Special causes are identifiable, non-routine sources of variation that are not normally present in the process. They produce unusual or unpredictable behavior, often visible as signals on a control chart. A Green Belt uses control-chart analysis and process investigation to distinguish these causes so that a specific, assignable source can be found, addressed, and prevented from recurring. This distinction supports the appropriate improvement response: stabilize and investigate exceptional events, while redesigning or systematically improving the process for its inherent variation. The terminology originates in Shewhart’s statistical-process-control approach and is central to Deming’s theory of variation. See the W. Edwards Deming Institute’s overview of variation and management and the NIST Statistical Process Control handbook.