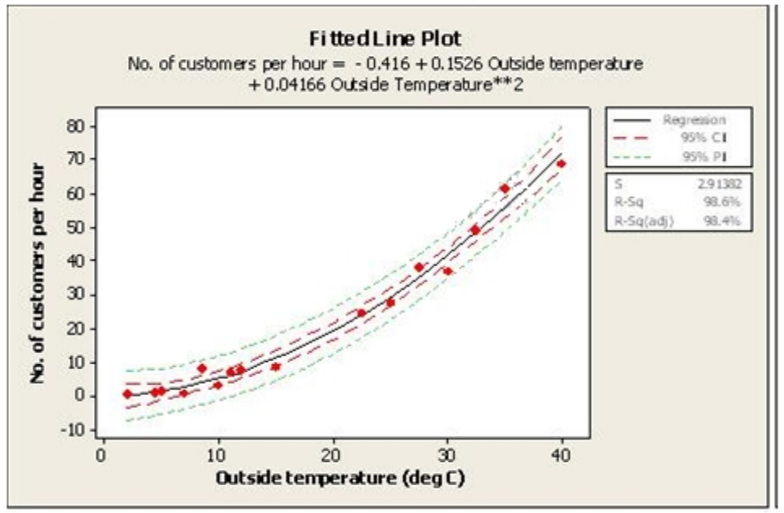
Number: ICBB
Passing Score: 800.0
Time Limit: 120.0
File Version: 11.0

Exam Code: ICBB

Exam Name: IASSC Certified Lean Six Sigma Black Belt

Exam A

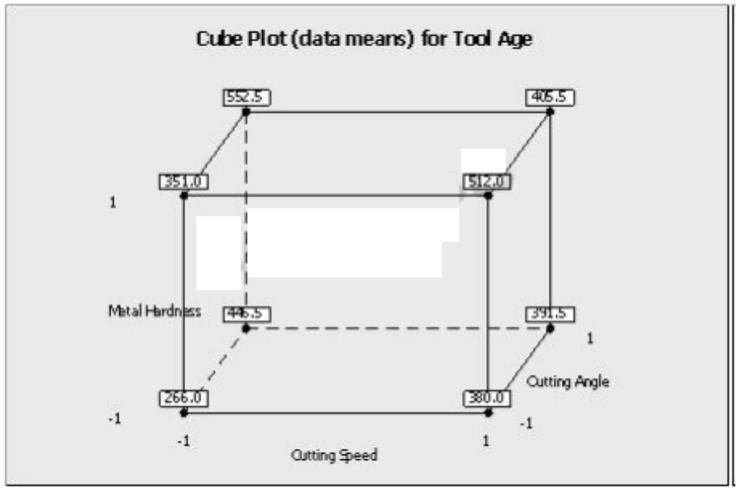
QUESTION 1
Which statement(s) are correct about the Regression shown here? (Note: There are 2 correct answers).



A. The dependent variable is the outside temperature
B. The relationship between outside temperature and number of customers per hour is a Linear Regression
C. The dashed lines indicate with 95% confidence where all of the process data should fall between
D. The dashed lines indicate with 95% confidence the estimate for the Quadratic Regression Line
E. The predicted number of customers per hour is close to 5 if the outside temperature is 10 deg C

Correct Answer: D, E
Section:

QUESTION 2
Which statement(s) are correct about the Factorial Plot shown here? (Note: There are 3 correct answers).



A. When the cutting speed increased from low to high level, the tool age increases
B. The coefficient of the metal hardness is positively related to the output of tool age
C. The coded coefficient is lower for cutting speed than the cutting angle related to the output of tool age
D. These plots prove a statistically significance factor with 95% confidence
E. These plots are an example of interaction plots

Correct Answer: A, B, C
Section:

QUESTION 3
How many experimental runs exist in a Full Factorial and fully randomized design for 4 factors with 2 replicates for the Corner Points and no Center Points? The factors in the experiment are only at 2-levels.

A. 10
B. 32
C. 256
D. 64

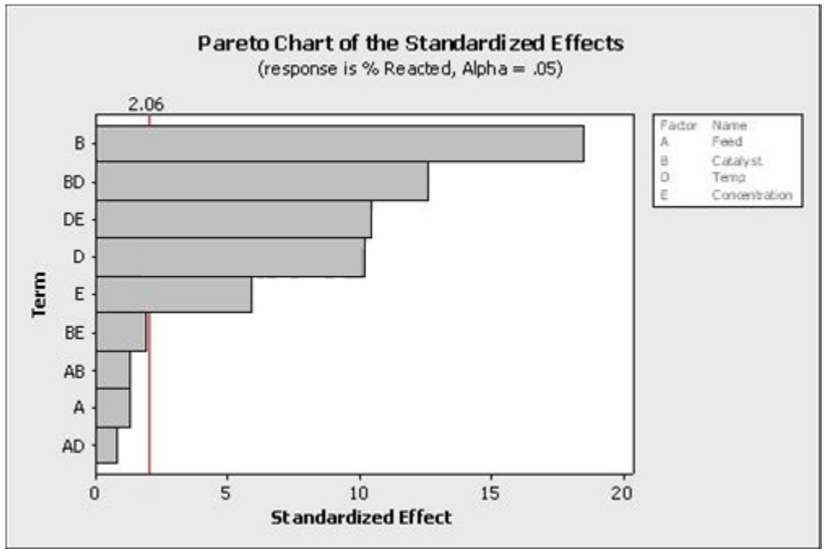
Correct Answer: B
Section:

QUESTION 4
If an experiment has 5 factors and no replicates for a 2-level Experimental Design with 16 experimental runs which statement is incorrect?

A. The Experimental Design is half-fractional
B. The Main Effects are confounded with only 4-way interactions
C. The Main Effects for the 5 factors are not aliased or confounded but the 2-way interactions are confounded with the 3-way interactions
D. The experiment has 8 experimental runs with the first factor at the high level

Correct Answer: C
Section:

QUESTION 5
Which statement(s) are correct about the Pareto Chart shown here for the DOE analysis? (Note: There are 2 correct answers).



A. It is unknown from this graph how many factors were in the Experimental Design
B. The factors to keep in the mathematical model are E, D, DE, BD and B with an alpha risk equal to 2.06
C. The effects to keep in the mathematical model are E, D, DE, BD and B with an alpha risk equal to 0.05
D. The factors to keep in the mathematical model with a 5% alpha risk are BE, AB, A and AD

Correct Answer: A, C
Section:

QUESTION 6
Fractional Factorial, _____and Response Surface Method are types of planned experiments.

A. Multi-Vari Analysis
B. Baldridge Channels
C. One Factor at a Time or OFAT
D. Factorial Design

Correct Answer: D
Section:

QUESTION 7
Relative to a Design of Experiments the term _____ refers to variables being a linear combination of each other.

A. Mirror Image
B. Directly Parallel
C. Collinear
D. None of the above

Correct Answer: C

Section:

QUESTION 8
Which statement(s) are incorrect about Fractional Factorial Designs?

A. A Half Fractional Design for 5 factors has the same number of experimental runs as a Full Factorial Design for 4 factors assuming no repeats or replicates or Center Points
B. Quarter Fractional experiments can exist for those with 4 factors
C. Resolution V design is desired while controlling costs of experimentation
D. Half Fractional experiments do not exist for those designs with only 2 factors

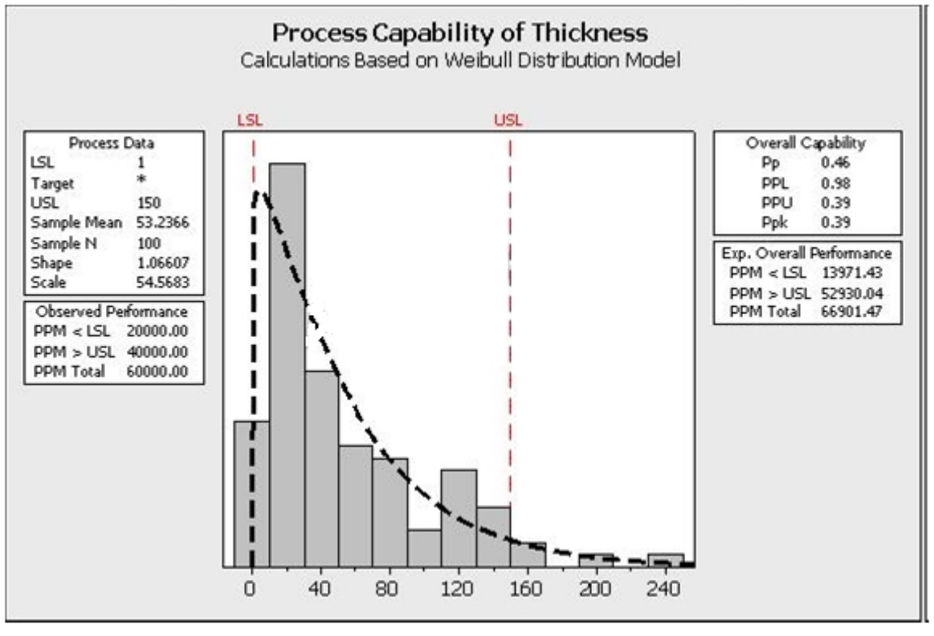
Correct Answer: C
Section:

QUESTION 9
If in an experiment all possible variable pairs sum to zero the design is Orthogonal.

A. True
B. False

Correct Answer: A
Section:

QUESTION 10
Review the analysis shown here. Which statements are true about the process? (Note: There are 3 correct answers).

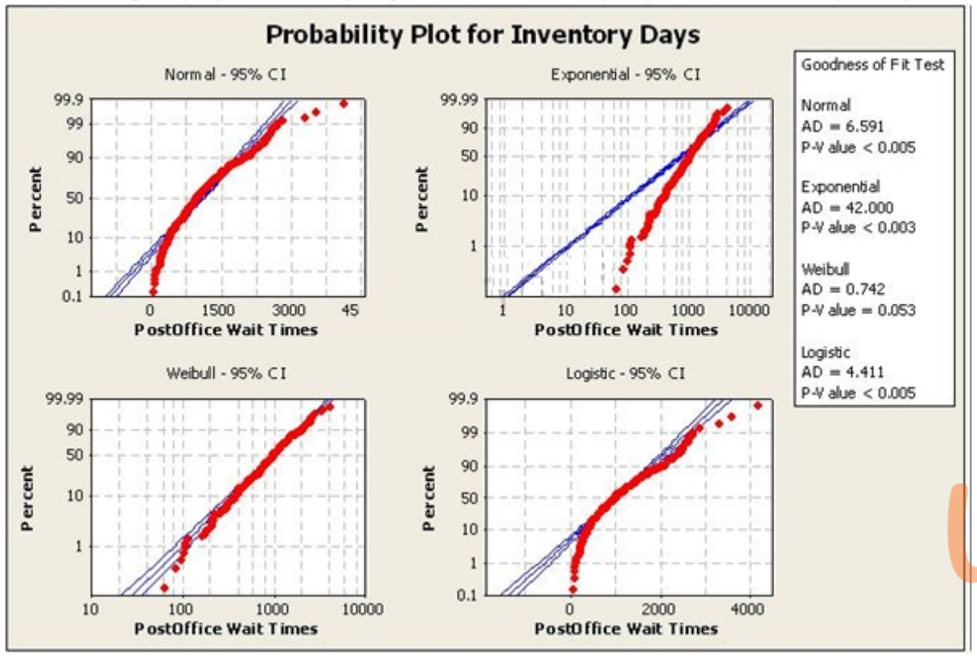


A. The initial focus for this project would be to determine why the thicknesses are so frequently too low
B. The majority of the process is closer to the lower specification limit
C. This process is described with the Weibull Distribution

D. The process has more problems with Variation than Centering
E. The process follows a non-normal distribution with the given data

Correct Answer: B, D, E
Section:

QUESTION 11
A Lean Six Sigma project is attempting to reduce inventory days. The Process Capability will be monitored as part of the Control Phase to track the sustainability of the improvement.



Which distribution type is best used for performing the Capability Analysis?

A. Weibull Distribution
B. Normal Distribution
C. Exponential Distribution
D. Logistic Distribution
E. Gaussian Distribution

Correct Answer: A
Section:

QUESTION 12
Which of these might contribute to similar distributions having Unequal Variance?

A. Extreme tails
B. Outliers
C. Multiple Modes
D. All of the above

Correct Answer: D
Section:

QUESTION 13
A Belt working in a supply chain environment has to make a decision to change suppliers of critical raw materials for a new product upgrade. The purchasing manager is depending on the Belt's effort requiring that the average cost of an internal critical raw material component be less than or equal to $4,200 in order to stay within budget. Using a sample of 35 first article components, a Mean of the new product upgrade price of $4,060, and a Standard Deviation of $98 was estimated. Select the answer that best states the Practical Problem.

A. If the average cost per component is $4,200 or less, then the purchase manager will introduce the new product upgrade with new components
B. If the average cost per component is greater than $4,200, then the purchase manager will introduce the new product upgrade with new components
C. Only if the average cost per product upgrade is $4,060, will the purchase manager introduce new product upgrades with new components
D. If the average cost per new product upgrade is less than $180, then the purchase manager will introduce the new product upgrade with new components

Correct Answer: C
Section:

QUESTION 14
A (n) _____ is best used to compare a Machine 1 average quality characteristic to the same quality characteristic of Machine 2.

A. F test
B. 1-Sample t-test
C. 2-Sample t-test
D. ANOVA test

Correct Answer: C
Section:

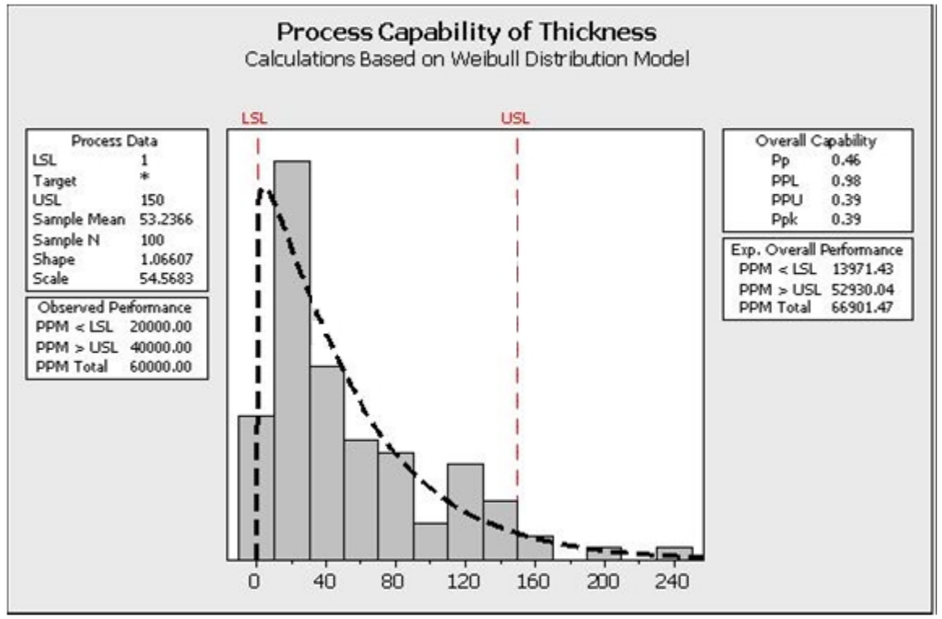
QUESTION 15
For the data set shown here which of these statements is/are true?

Grade A	Grade B	Grade C
0.917	1.1	0.63
0.68	0.173	4.17
1.74	0.24	0.6
0.3	0.67	0.84
0.33	6.94	0.22
4.13		

A. Hypothesis Testing of Means or Medians cannot be done since there are an unequal number of observations for the 3 samples
B. A Paired T-test would be applicable for comparing Grade B and Grade A since they follow each other in the data set
C. Grade A has the lowest sample Mean of the 3 samples
D. Grade A has a higher sample Mean than Grade B

Correct Answer: C
Section:

QUESTION 16
Review the analysis shown here.

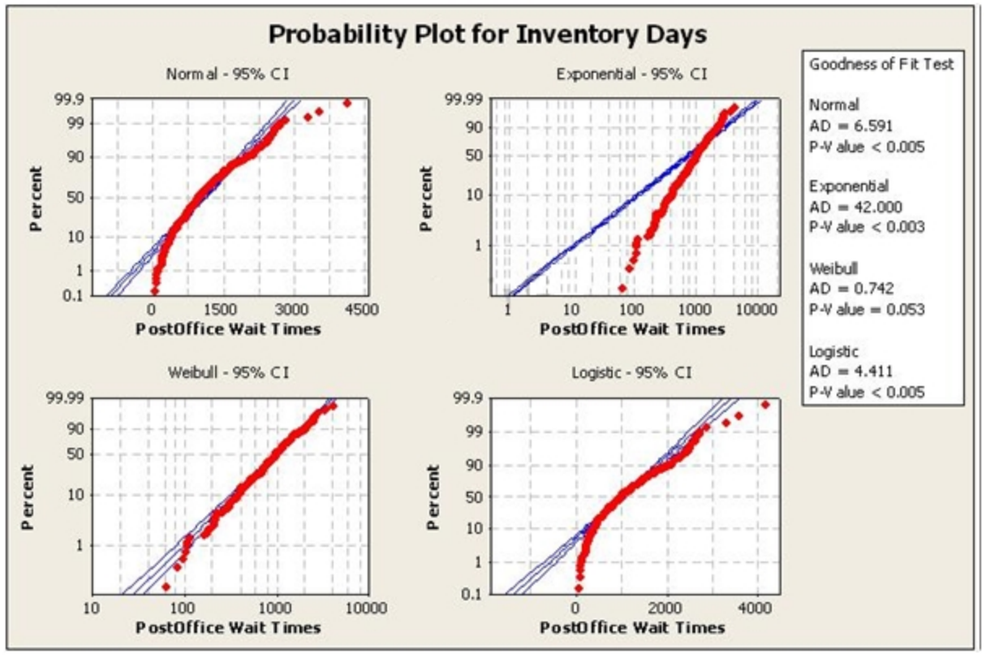


Which statements are true about the process? (Note: There are 3 correct answers).

A. The initial focus for this project would be to determine why the thicknesses are so frequently too low.
B. The majority of the process is closer to the lower specification limit.
C. This process is described with the Weibull Distribution.
D. The process has more problems with Variation than Centering.
E. The process follows a non-normal distribution with the given data.

Correct Answer: B, D, E
Section:

QUESTION 17
A Lean Six Sigma project is attempting to reduce inventory days. The Process Capability will be monitored as part of the Control Phase to track the sustainability of the improvement. Which distribution type is best used for performing the Capability Analysis?



A. Weibull Distribution
B. Normal Distribution
C. Exponential Distribution
D. Logistic Distribution
E. Gaussian Distribution

Correct Answer: A
Section:

QUESTION 18
What conclusion is most correct about the Experimental Design shown here with the response in the far right column?

Adv	Bev	Des	Crux	Response
-1	-1	-1	-1	20
1	-1	-1	1	14
-1	1	-1	1	17
1	1	-1	-1	10
-1	-1	1	1	19
1	-1	1	-1	13
-1	1	1	-1	14
1	1	1	1	10

A. No factor has enough statistical confidence greater than 95% to have an impact on the response rate
B. Constant, Adv and Bev are the only factors statistically affecting the response rate with 95% confidence or more
C. If the Adv is increased from the low level to the high level, the response rate increases
D. The response level is statistically concluded to only need the Adv and Bev factors set at the low level to get the largest response rate
E. This design does not have enough experimental runs to conclude anything as evidenced by the lack of P-values in the MINITABTM output

Correct Answer: D
Section:

QUESTION 19
A (n) _____ has occurred when two inputs have a greater impact on a change in the output than either of the inputs has by itself.

A. Dependency
B. Bimodal reaction
C. Interaction
D. Amplified effect

Correct Answer: C
Section:

QUESTION 20
When conducting a Hypothesis Test using Continuous Data the proper sample size is influenced by the extent to which we need to assess a Difference to be detected and the inherent variation in the process.

A. True
B. False

Correct Answer: A
Section:

QUESTION 21
The validity of the decision made with Hypothesis Testing is dependent upon all of these except _____.

A. Beta risk
B. Alpha risk
C. Range of data
D. Sample size

Correct Answer: C
Section:

QUESTION 22
Statistical Difference is the magnitude of difference or change required to distinguish between a true difference, brought about by change or improvement, and one that could have occurred by chance.

A. True
B. False

Correct Answer: A
Section:

QUESTION 23
To be an effective Lean Six Sigma practitioner one must understand the difference between _____.

A. ANOVA and the Analysis of Variance

B. Nonparametric tests and tests of Non-normal Data
C. F-test and test of variances of 2 samples
D. Practical and Statistical significance

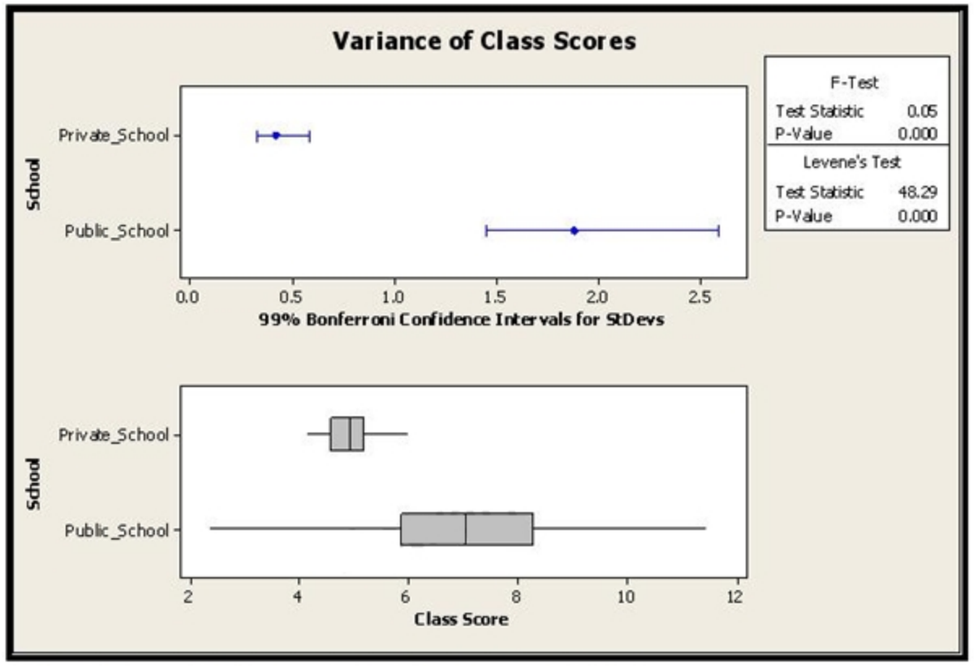
Correct Answer: D
Section:

QUESTION 24
A Belt is analyzing data and upon creation of the graphical analysis sees multiple modes. One of the primary reasons this could occur is because the process has experienced a _____.

A. Significant change from one shift to another
B. Sizable Measurement System error
C. Catastrophic failure of some sort
D. Any one of these

Correct Answer: D
Section:

QUESTION 25
From the variance F-test shown above, which of these conclusions is/are valid?



Test for Equal Variances: Class Score versus School

99% Bonferroni confidence intervals for standard deviations

School	N	Lower	StDev	Upper
Private_School	50	0.32753	0.42210	0.58233
Public_School	50	1.45338	1.87303	2.58404

F-Test (Normal Distribution)
Test statistic = 0.05, p-value = 0.000

A. The variance between the class score distribution is significantly different
B. The variance between the class score distribution is not significantly different
C. This test applies only to Normal Distributed data at 99 % confidence
D. This test applies only to Non-normal Data at 99 % confidence
E. There are not enough data points to make any statistical conclusions

Correct Answer: A
Section:

QUESTION 26
Time is always the metric on the horizontal scale of a(n) _____ Chart.

A. Pareto
B. Xbar

C. Multi-Vari
D. NP

Correct Answer: C
Section:

QUESTION 27
To properly analyze the variables impacting the output of a process we need to collect data that represents at least 80% of the variation in the process and assure ourselves we are collecting data from all three types of variation which are _____.

A. Within, Between and Temporal
B. Within, Between and Temporary
C. Without, Above and Below
D. Induced, Natural and Unavoidable

Correct Answer: A
Section:

QUESTION 28
When the Inputs, X's, for your process are Normally Distributed about the Mean, the Outputs, Y's, will always be Normally Distributed.

A. True
B. False

Correct Answer: B
Section:

QUESTION 29
On a _____ a Belt screens variables, or various inputs, to analyze their relative impact on the output of concern.

A. X-Y Matrix
B. Weighted Scale
C. Multi-Vari Chart
D. Poisson Chart

Correct Answer: C
Section:

QUESTION 30
For a Normal Distribution as samples size increases the Range in Mean and Standard Deviation decrease relative to the Mean and Standard Deviation of the population.

A. True
B. False

Correct Answer: A
Section:

QUESTION 31

Some of the sources for different types of error that can be quantified using Statistical Analysis are _____.

A. Error in sampling
B. Bias in sampling
C. Error in measurement
D. All of these answers are correct

Correct Answer: D
Section:

QUESTION 32
Since Normality is required if we intend to use the data collected as a predictive tool. To test for Normality of data we must determine if the P-value is _____.

A. Equal to 0.05
B. Less than 0.05
C. Greater than 0.05
D. Greater than 0.5

Correct Answer: C
Section:

QUESTION 33
The Normal Distribution is considered to be the most important distribution in statistics and, among other things is defined as having a total area under the curve of 1, is mounded and symmetrical and the Mean, Median and Mode are _____.

A. All evenly divisible by 3
B. Twice the Standard Deviation
C. Within 10% of each other
D. The same number

Correct Answer: D
Section:

QUESTION 34
Following process modifications, the Null Hypothesis states that no improvement to the process has occurred. If we discover the Null Hypothesis Test was rejected when it was false that would be a(n) _____.

A. Alpha Error
B. Type I Error
C. Type II Error
D. Type III Error

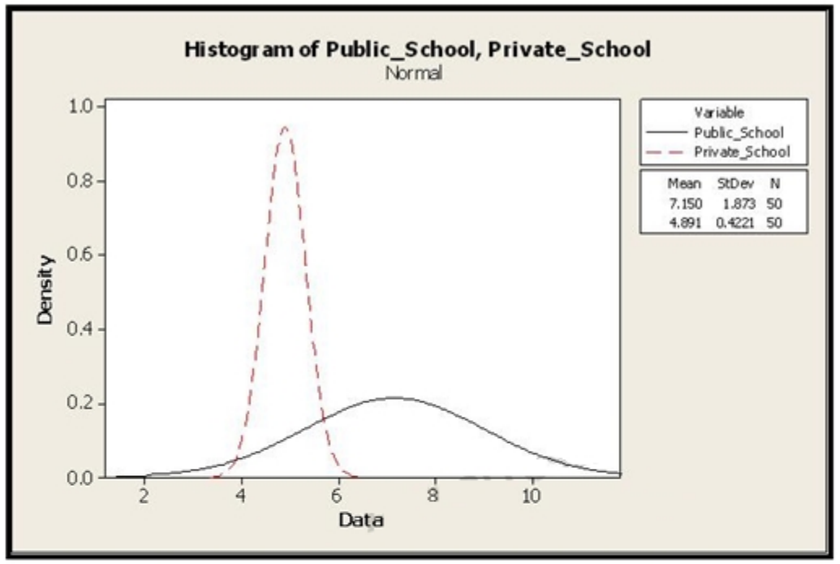
Correct Answer: C
Section:

QUESTION 35
A statistical test or Hypothesis Test is performed to reject or fail to reject a stated hypothesis and it converts the Practical Problem into a Statistical Problem.

A. True
B. False

Correct Answer: A
Section:

QUESTION 36
The class score distribution of schools in a metropolitan area is shown here along with an analysis output. Comment on the statistical significance between the Means of the two distributions. Select the most appropriate statement.



Two-sample t for Private_School vs Public_School

	N	Mean	StDev	SE Mean
Private_School	50	4.891	0.422	0.060
Public_School	50	7.15	1.87	0.26

Difference = mu (Private_School) - mu (Public_School)
Estimate for difference: -2.259
99% CI for difference: (-2.985, -1.534)
T-Test of difference = 0 (vs not =): T-Value = -8.32 p-Value = 0.000 DF = 53

A. The two class Means are statistically different from each other
B. The two class Means statistically not different from each other
C. Inadequate information on class Means to make any statistical conclusions
D. A visual comparison shows that class Means are not statistically different
E. A visual comparison shows that class Means are statistically different

Correct Answer: A
Section:

QUESTION 37
A _____ is used primarily to track the stability of the average value of a metric of interest.

A. NP Chart
B. Xbar-R Chart
C. I-MR Chart
D. C Chart

Correct Answer: B
Section:

QUESTION 38
For her injection molding project a Belt needed to track the percentage of defectives of a particular sample set so she used a _____ to display the data?

A. Individual Chart
B. C Chart
C. Xbar Chart
D. P Chart

Correct Answer: D
Section:

QUESTION 39
Which of these graphs demonstrates conditions which would be sufficient to enable OCAP for the process?

A. Xbar Chart
B. Time Series Chart
C. Neither
D. Both

Correct Answer: A
Section:

QUESTION 40
Control Charts were developed by Dr. Shewhart to track data over time. To detect Special Cause variation the Control Charts use which of these?

A. Data shift analysis
B. Outlier analysis methods
C. Center Line and Control Limits
D. None of the above

Correct Answer: C
Section:

QUESTION 41
Common and _____ Cause Variation are the focus of Statistical Process Control.

A. Uncommon
B. Ordinary
C. Special
D. Selective

Correct Answer: C
Section:

QUESTION 42
Special Cause Variation falls into which two categories?

A. Natural & Unnatural
B. Short Term & Long Term
C. Assignable & Pattern
D. Attribute & Discreet

Correct Answer: C
Section:

QUESTION 43
Range Charts are the technique used to determine if Special Causes are occurring within the subgroups of the _____.

A. Histograms
B. SPC Charts
C. NP Charts
D. Pareto Charts

Correct Answer: B
Section:

QUESTION 44
If the production is for higher volume and monitoring and the Mean and variability is to be monitored for four machines producing product and the characteristic to be monitored is Variable Data, which SPC Chart is best to be selected?

A. Xbar-R Chart
B. Individual-MR Chart
C. NP Chart
D. CUSUM Chart

Correct Answer: A
Section:

QUESTION 45
When a Belt Poka-Yoke's a defect out of the process entirely then she should track the activity with a robust SPC system on the characteristic of interest in the defect as an early warning system.

A. True
B. False

Correct Answer: B
Section:

QUESTION 46
Following the completion of a LSS project the Belt not only creates a Control Plan he also develops a _____ so those involved in the process know what to do when the critical metrics move out of spec.

A. Response Plan
B. Call List
C. Chain-of-Command
D. Defect Analysis Plan

Correct Answer: A
Section:

QUESTION 47
The Control Limits width varies if the sample size varies for which type of chart?

A. P Charts
B. NP Charts
C. Xbar-R Charts
D. Time Series Charts

Correct Answer: A
Section:

QUESTION 48
Which of these elements are not included in Implementation plans?

A. Work breakdown structure
B. Risk management plans
C. Cost/Benefit ratios
D. Planned audits of work completion

Correct Answer: C
Section:

QUESTION 49
Upon completion and validation of an improvement to a process a Belt and the Project Team create a Control Plan that contains which of these?

A. Standard operating work description of the process change
B. Description of the monitoring system in place to assure continued compliance
C. Summary of the targeted critical metrics for process performance measurement
D. All of the above

Correct Answer: D
Section:

QUESTION 50
What conclusion is most correct about the Experimental Design shown here with the response in the far right column?

Adv	Bev	Des	Crux	Response
-1	-1	-1	-1	20
1	-1	-1	1	14
-1	1	-1	1	17
1	1	-1	-1	10
-1	-1	1	1	19
1	-1	1	-1	13
-1	1	1	-1	14
1	1	1	1	10

A. No factor has enough statistical confidence greater than 95% to have an impact on the response rate
B. Constant, Adv and Bev are the only factors statistically affecting the response rate with 95% confidence or more
C. If the Adv is increased from the low level to the high level, the response rate increases
D. The response level is statistically concluded to only need the Adv and Bev factors set at the low level to get the largest response rate
E. This design does not have enough experimental runs to conclude anything as evidenced by the lack of P-values in the MINITABTM output

Correct Answer: D
Section:

QUESTION 51
Which Experimental Design typically is most associated with the fewest number of input variables or factors in the design?

A. Fractional Factorial design
B. Full Factorial design
C. Simple Linear Regression
D. Response Surface Design

Correct Answer: D
Section:

QUESTION 52
The method of Steepest Ascent guides you toward a target inside the original inference space.

A. True
B. False

Correct Answer: B
Section:

QUESTION 53
Situations where standardized work needs to be incorporated include all of these except _____.

A. Machines continually operating to reduce the labor cost per piece
B. Lack of a system to assure proper inventory levels at repair stations

C. Changeover instructions incomplete
D. Process flow for the same product assembly taking various cycle time for completion

Correct Answer: A
Section:

QUESTION 54
The Lean toolbox includes all of these items except _____.

A. Mistake Proofing
B. Visual Factory
C. Design of Experiments
D. Inventory Management

Correct Answer: C
Section:

QUESTION 55
Questions that can be best answered by a Visual Factory include all of these except _____.

A. Are downtime issues easily noted?
B. Can extra inventory be seen easily?
C. Are unneeded tools or supplies easily noted?
D. Are setups optimized for lower scrap levels?

Correct Answer: D
Section:

QUESTION 56
If a Six Sigma project was to reduce repair station inventory and the team found the inventory was creeping up over time which Lean tools should be considered in the Control Phase to reestablish and sustain the project success?

A. Review the Visual Factory to assure inventory in excess of desired visible
B. Improve the lighting to assure adequate visibility
C. Analyze data from supplier deliveries
D. Reword the standardized work instructions to use active verbs and not passive phrases

Correct Answer: A
Section:

QUESTION 57
When a Belt implements an improvement that is automated thus requiring no particular understanding for use he has applied which Lean tool?

A. Mistake Proofing
B. Kaizen Event
C. 5S

D. None

Correct Answer: A
Section:

QUESTION 58
Kaizens or Kaikakus and Six Sigma projects are intended to create incremental process improvements versus breakthrough, significant improvements.

A. True
B. False

Correct Answer: B
Section:

QUESTION 59
Which of these items contribute to what is necessary for successful Kaizen events?

A. Analysis tools
B. Management support
C. Operator support
D. All of these answers are correct

Correct Answer: D
Section:

QUESTION 60
Kanban establishes a means of monitoring production, conveyance and delivery information such that efficient flow is established. The method used by Kanban is to require a _____ before anything moves.

A. Sign-off
B. Signal
C. Bell to ring
D. Work order

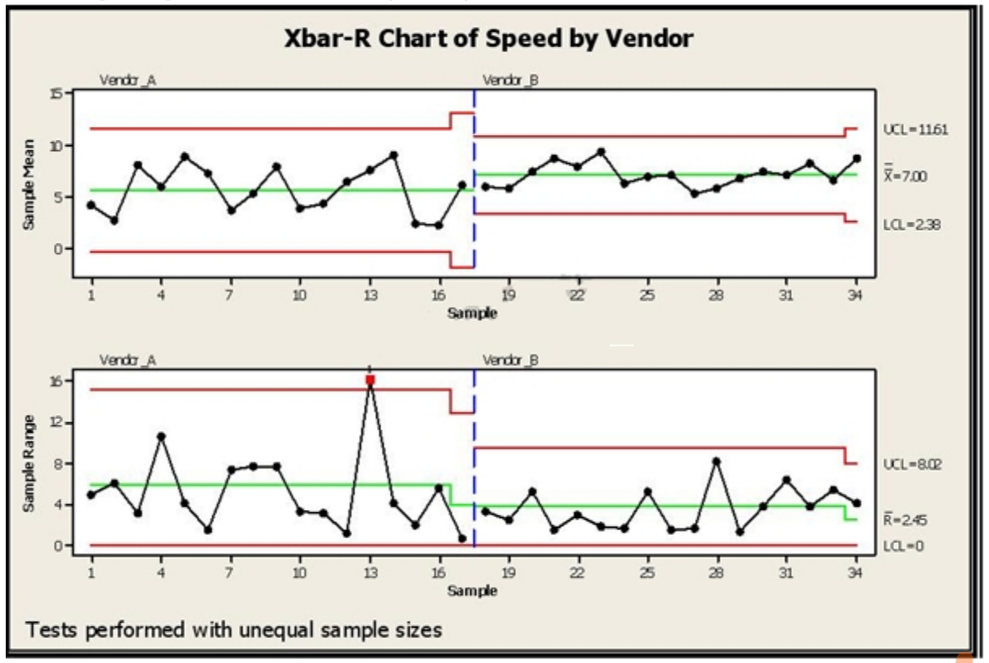
Correct Answer: B
Section:

QUESTION 61
When a Belt decides to use written procedures and visual controls to improve the consistency of the tasks that must occur in the process he is improving he has utilized the _____ activity of 5S.

A. Sustaining
B. Sorting
C. Standardizing
D. Straightening

Correct Answer: C
Section:

QUESTION 62
SPC Charts are used extensively in different business and decision-making environments. In this example a vendor is being selected based on speed of delivery. Which of the conclusions would help you pick a vendor for your needs regarding lead-time of delivery from your vendors? (Note: There are 4 correct answers).



A. Vendor A with a much shorter lead time in delivery
B. Vendor B as it has a better consistency (lower variance) on lead time
C. Vendor B as Vendor A shows a situation out of control as shown in red
D. Vendor B as the Control Limits are much narrower than Vendor A
E. Vendor B with higher lead time, but a process with much narrower Control Limits

Correct Answer: B, C, D, E
Section:

QUESTION 63
Fractional Factorial designs are used to reduce the _____ because the number of runs has been lowered.

A. Time and cost of experiments
B. Number of people involved
C. Number of data measurement points
D. Output summary

Correct Answer: A
Section:

QUESTION 64
Fractional Factorial Designs are used to analyze factors to model the output as a function of inputs if Hypothesis Testing in the Analyze Phase was inadequate to sufficiently narrow the factors that significantly impact the output(s).

A. True
B. False

Correct Answer: A
Section:

QUESTION 65
A Factorial Experiment based on a Level 2 Design with 6 factors would require 16 runs to fully assess the interactions.

A. True
B. False

Correct Answer: B
Section:

QUESTION 66
A Full Factorial experiment using a 3 level 3 factor approach has been proposed to test the viability of an extrusion machine experiment. How many treatment combinations will this approach involve?

A. 6
B. 9
C. 27
D. 54

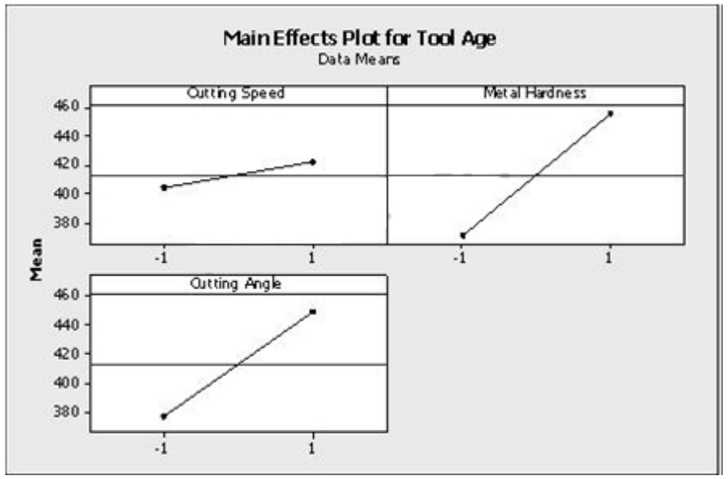
Correct Answer: C
Section:

QUESTION 67
Screening experiments are the proper choice when a Belt is faced with the situation of highly Fractional Factorial Designs.

A. True
B. False

Correct Answer: A
Section:

QUESTION 68
Which statement(s) are correct about the DOE Factorial plot output here? (Note: There are 3 correct answers).



A. Two factors were operated at 3 levels each
B. The highest tool age was achieved with metal hardness at high level while keeping the cutting speed at the low level
C. The design indicated above is a 32 factorial design
D. The cutting speed and cutting angle are at the low level for the least tool age achieved
E. All factors had 2 levels in the experiment

Correct Answer: B, C, E
Section:

QUESTION 69
Which statement(s) are incorrect for the Regression Analysis shown here? (Note: There are 2 correct answers).

Regression Analysis: Turbine Output versus Air-Fuel Ratio, % steam, ...

The Regression Equation is
TurbineOutput = 16.5 + 3.21 Air-Fuel Ratio + 0.386 % methane
+ 0.0166 SteamExitTemp

Predictor	Coef	SE Coef	T	P
Constant	16.488	2.918	5.65	0.000
Air-Fuel Ratio	3.2148	0.2377	13.52	0.000
% methane	0.38637	0.07278	5.31	0.000
SteamExitTemp	0.016576	0.004273	3.88	0.004

S = 0.508616 R-Sq = 98.6% R-Sq(adj) = 98.2%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	3	170.003	56.668	219.06	0.000
Residual Error	9	2.328	0.259		
Total	12	172.331			

Source	DF	Seq SS
Air-Fuel Ratio	1	159.048
% methane	1	7.062
SteamExitTemp	1	3.892

A. The air-fuel ratio explains most of the TurbineOutput variation
B. The Regression explains over 98% of the process variation
C. This Multiple Linear Regression has three statistically significant independent variables
D. If the air-fuel ratio increases by 1, the TurbineOutput more than triples
E. The SteamExitTemp explains the most variation of the TurbineOutput

Correct Answer: D, E
Section:

QUESTION 70
Which statement(s) are most correct for the Regression Analysis shown here?

Regression Analysis: Turbine Output versus Air-Fuel Ratio, % steam, ...

The Regression Equation is
TurbineOutput = 16.5 + 3.21 Air-Fuel Ratio + 0.386 % methane
+ 0.0166 SteamExitTemp

Predictor	Coef	SE Coef	T	P
Constant	16.488	2.918	5.65	0.000
Air-Fuel Ratio	3.2148	0.2377	13.52	0.000
% methane	0.38637	0.07278	5.31	0.000
SteamExitTemp	0.016576	0.004273	3.88	0.004

S = 0.508616 R-Sq = 98.6% R-Sq(adj) = 98.2%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	3	170.003	56.668	219.06	0.000
Residual Error	9	2.328	0.259		
Total	12	172.331			

Source	DF	Seq SS
Air-Fuel Ratio	1	159.048
% methane	1	7.062
SteamExitTemp	1	3.892

A. The Regression explains 50.8% of the process variation
B. The air-fuel ratio explains most of the TurbineOutput variation
C. This Simple Linear Regression explains 98+% of the process variation
D. This Multiple Linear Regression has four statistically significant independent variables

Correct Answer: B
Section:

QUESTION 71
A valid mathematical Regression represents all of the characteristics shown except _____.

A. The residuals when plotted follow a Normal Distribution
B. The sum of the residuals is zero
C. All of the standardized residuals will be within 3 Standard Deviations
D. Most standardized residuals are within 2 Standard Deviations

Correct Answer: A
Section:

QUESTION 72
When a Belt conducts a Linear Correlation Analysis and finds that as an X increases the Y also increase then he has proven a _____ correlation.

A. Negative
B. Positive
C. Monomial
D. Single alignment

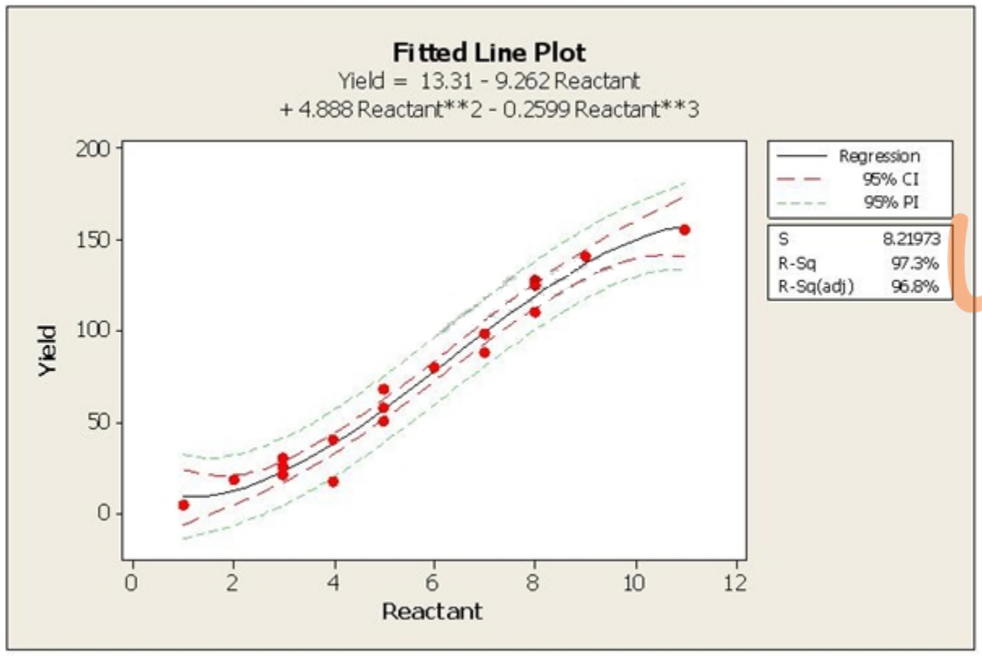
Correct Answer: B
Section:

QUESTION 73
A valid Multiple Linear Regression (MLR) is characterized by all of these except _____.

A. It is an assumption that the X's (inputs) are not correlated to each other
B. The X's (inputs) are assumed to be independent of each other
C. MLR is conducted based on a deliberate form of experimentation
D. The Residuals from MLR analysis have to be Normally Distributed

Correct Answer: C
Section:

QUESTION 74
Which statement is NOT correct about the Fitted Line Plot shown here?



A. The independent variable is the reactant
B. If the reactant was 6 units, with 95 % confidence we would expect a minimum yield of 100 units
C. With at least 95% confidence, we can expect less than 10 units of Yield when the reactant is at a value of 1
D. A reactant value between 2 and 4 units yields around 20 to 40
E. When the reactant increases, the expected yield would increase

Correct Answer: D
Section:

QUESTION 75
The Lean toolbox includes all of the following items except _____.

A. Poke-Yoke
B. Standard Operating Procedures
C. Kaizen
D. 5S the work area

Correct Answer: B
Section:

QUESTION 76
Questions that can be best answered by a Visual Factory include all of these except _____.

A. Are setups optimized for lower scrap levels?
B. Can extra inventory be seen easily?
C. Can changeover challenges be recognized?
D. Are unneeded tools or supplies easily noted?

Correct Answer: A
Section:

QUESTION 77
Situations where standardized work needs to be incorporated include all of these except _____.

A. Changeover instructions incomplete
B. Lack of a system to assure proper inventory levels at repair stations
C. Machines continually operating to reduce the labor cost per piece
D. Process flow for the same product assembly taking various cycle time for completion

Correct Answer: C
Section:

QUESTION 78
If a Six Sigma project was to reduce changeover times and the team found the project success was decreasing over time since changeover times began to creep back up, which Lean tools should be considered in the Control Phase to reestablish and sustain the project success?

A. Improve the lighting to assure adequate visibility
B. Confirm a Visual Factory exists to assure proper communication of status of machines
C. Implement Kanbans to assure enough inventory for the process step
D. Reword the standardized work instructions to use active verbs and not passive phrases

Correct Answer: B
Section:

QUESTION 79
Kaizens or Kaikakus and Six Sigma projects are intended to create breakthrough, significant process improvement versus minor, incremental improvements.

A. True

B. False

Correct Answer: A
Section:

QUESTION 80
Using this partial Z Table, how many units from a month's production run are expected to not satisfy customer requirements for the following process?
Upper specification limit: 7.2 Lower specification limit: 4.3 Mean of the process: 5.9 Standard Deviation: 0.65 Monthly production: 450 units

A. 3
B. 7
C. 10
D. 12

Correct Answer: D
Section:

QUESTION 81
Which of these items are not parts of what is necessary for successful Kaizens?

A. Good lighting
B. Management support
C. Operator support
D. Analysis tools

Correct Answer: A
Section:

QUESTION 82
When a Belt implements an improvement that is automated thus requiring no particular understanding for use he has applied which Lean tool?

A. Mistake Proofing
B. Kaizen Event
C. 5S
D. None of the above

Correct Answer: A
Section:

QUESTION 83
Kanban establishes a means of monitoring production, conveyance and delivery information such that efficient flow is established. The method used by Kanban is to require a _____ before anything moves.

A. Sign-off
B. Signal
C. Bell to ring
D. Work order

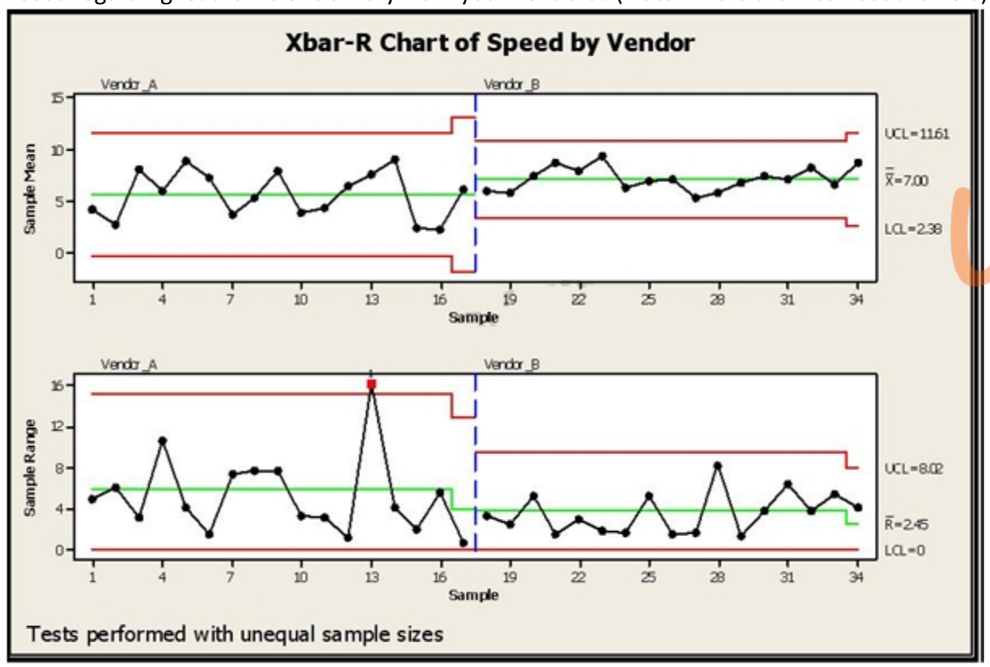
Correct Answer: B
Section:

QUESTION 84
For a Kanban to be successful which of these must occur?

A. Consistent cycle times
B. Fairly stable process demand of product or service
C. Low defect rate of incoming product or service
D. All of the above

Correct Answer: D
Section:

QUESTION 85
SPC Charts are used extensively in different business and decision-making environments. In this example a vendor is being selected based on speed of delivery. Which of the conclusions would help you pick a vendor for your needs regarding lead-time of delivery from your vendors? (Note: There are 4 correct answers).



A. Vendor A with a much shorter lead time in delivery
B. Vendor B as it has a better consistency (lower variance) on lead time
C. Vendor B since Vendor A shows a situation out of control as shown in red
D. Vendor B since the Control Limits are much narrower than Vendor A
E. Vendor B has higher lead time, but a process with much narrower Control Limits

Correct Answer: B, C, D, E
Section:

QUESTION 86

Common and Special Cause _____ are the focus of Statistical Process Control.

A. Prediction
B. Ideation
C. Capability
D. Variation

Correct Answer: D
Section:

QUESTION 87
Special Cause Variation falls into which two categories? (Note: There are 2 correct answers).

A. Natural
B. Short term
C. Assignable
D. Pattern

Correct Answer: C, D
Section:

QUESTION 88
Control Charts were developed by Dr. Shewhart to track data over time. To detect Special Cause variation the Control Charts use which of these?

A. Data shift analysis
B. Outlier analysis methods
C. Center Line and Control Limits
D. None of the above

Correct Answer: C
Section:

QUESTION 89
If the production is for higher volume and monitoring and the Mean and variability is to be monitored for four machines producing product and the characteristic to be monitored is Variable Data, which SPC Chart is best to be selected?

A. Xbar-R Chart
B. Individual-MR Chart
C. NP Chart
D. CUSUM Chart

Correct Answer: A
Section:

QUESTION 90
If you can Poka-Yoke a defect out of the process entirely then you do not need use SPC on the characteristic of interest in the defect.

A. True
B. False

Correct Answer: A
Section:

QUESTION 91
Range Charts are the technique used to determine if _____ are occurring within the subgroups of the SPC Charts.

A. Common Causes
B. Special inspections
C. Unnatural forces
D. Special Causes

Correct Answer: D
Section:

QUESTION 92
If a process has subgroups for Variable data and the process runs for a long period of time, then the best pair of SPC Charts to use would be an Xbar and _____.

A. NP Chart
B. Individuals Chart
C. R Chart
D. C Chart

Correct Answer: C
Section:

QUESTION 93
The Control Limits width varies if the sample size varies for which type of chart?

A. P Charts
B. NP Charts
C. Xbar-R Charts
D. Time Series Charts

Correct Answer: A
Section:

QUESTION 94
Which of these elements are not included in Implementation plans?

A. Work breakdown structure
B. Cost/Benefit ratios
C. Risk management plans
D. Planned audits of work completion

Correct Answer: B
Section:

QUESTION 95
Following the completion of a LSS project the Belt not only creates a Control Plan he also develops a _____ so those involved in the process know what to do when the critical metrics move out of spec.

A. Response Plan
B. Call List
C. Chain-of-Command
D. Defect Analysis Plan

Correct Answer: A
Section:

QUESTION 96
Six Sigma is a business improvement discipline whose fundamental view is based on a _____ oriented approach of the business.

A. Profit
B. Performance
C. Process
D. Predatory

Correct Answer: B
Section:

QUESTION 97
Much of the Six Sigma methodology is used to identify and remove causes for _____.

A. Process Variation
B. Material Costs
C. Excess Inventory
D. Lost Sales

Correct Answer: A
Section:

QUESTION 98
When variation is removed from the output of a process then the process customer can have more confidence in the experience that results from the process.

A. True
B. False

Correct Answer: A
Section:

QUESTION 99
The distance between the Mean of a data set and the Point of Inflection on a Normal curve is called the _____.

A. Curve Spread
B. Standard Deviation
C. Numerical Average
D. Data Breadth

Correct Answer: B
Section:

QUESTION 100
One of the foundations of Lean Six Sigma is the concept that the output of a process (Y) is influenced by the process inputs (X's) and is commonly shown as which formula?

A. Y = Z(X2)
B. Y = f(X3)
C. Y = f(Xn)
D. Y = g(X+ 1.5)

Correct Answer: C
Section:

QUESTION 101
When we gather information for the Voice of the Business we are primarily interested in information concerning the _____ of the business.

A. Advertising budget
B. Market share
C. Profitability
D. Ownership

Correct Answer: C
Section:

QUESTION 102
When a Belt creates a Process Map she will use a _____ to depict a decision point requiring a Yes or No decision.

A. Circle
B. Square
C. Diamond
D. Rectangle

Correct Answer: C
Section:

QUESTION 103
A Belt has determined that the inventory of repair parts at a rework station can be reduced by 45%. According to Cost of Poor Quality (COPQ) definitions inventory reduction would be considered _____.

A. Soft Savings
B. COPQ efficiency

C. Median Savings
D. Hard Savings

Correct Answer: D
Section:

QUESTION 104
Customers make their decisions based on Features, Integrity (of the seller) Delivery and _____?

A. Color
B. Expense
C. Season
D. None

Correct Answer: B
Section:

QUESTION 105
The Hardware Store ordered ten lawn mower from the manufacturer and just before shipping the manufacturer found one to have a motor that wouldn't start. For the manufacturer this would be categorized as what type of cost?

A. Internal Failure Costs
B. External Failure Costs
C. Prevention Costs
D. Appraisal Costs

Correct Answer: A
Section:

QUESTION 106
Cost of Poor Quality (COPQ) can be classified as Visible Costs and Hidden Costs. All these items are Hidden Cost except _____.

A. Lost Customer Loyalty
B. Returns
C. Time Value of Money
D. Late Delivery

Correct Answer: B
Section:

QUESTION 107
Which of these are examples of business metrics or Key Performance Indicators commonly referred to as KPI's?

A. Cycle Time
B. Defects
C. No. of Units Reworked
D. Labor Hours

E. All of these answers are correct

Correct Answer: E
Section:

QUESTION 108
When one speaks of 20% of something contributing 80% of the affect they are referring to what is known as the _____.

A. Shewhart Example
B. Pareto Principle
C. Balance Equation
D. Connection Principle

Correct Answer: B
Section:

QUESTION 109
Using this data calculate the percentage of DPU.

A. 2.74
B. 3.23
C. 4.56
D. 5.93

Correct Answer: B
Section:

QUESTION 110
As a means of measuring the effects on other areas of a process as a result of changes in the primary metric we also define and track _____.

A. Parallel process metrics
B. Secondary metrics
C. Tertiary metrics
D. Industry standards

Correct Answer: B
Section:

QUESTION 111
Calculate the Rolled Throughput Yield of this process using this data. Data. unit input: 1450, unit output: 1390, defects repaireD. 320, scrap: 60

A. 71.33%
B. 72.66%
C. 73.79%
D. 77.93%

Correct Answer: C

Section:

QUESTION 112
''A calculated time frame that matches customer demand'' is a definition of what Lean Principles term?

A. Value Stream
B. Kaizen event
C. Takt time
D. Kanban

Correct Answer: C
Section:

QUESTION 113
What dollar amount of savings would a project show if it reduced your outstanding Accounts Receivable by $1.4 million dollars to $5.3 million total and your organization's marginal cost of capital was 6.2%?

A. $43,400
B. $86,800
C. $117,500
D. $328,600

Correct Answer: B
Section:

QUESTION 114
Which Element of Waste best describes 'the unnecessary movement of materials and goods'?

A. Overprocessing
B. Inventory
C. Motion
D. Conveyance

Correct Answer: D
Section:

QUESTION 115
A Belt rearranged the location of the parts inventory for a rework station locating the most often used parts to be within hand reach of the repair person. This rearrangement resulted in quicker repair times by eliminating one of seven major elements of waste which is the Waste of _____.

A. Motion
B. Conveyance
C. Inventory
D. Waiting

Correct Answer: A
Section:

QUESTION 116
The Japanese born function of a Kanban event utilizes a specific, step-by-step approach meant to bring about major changes to a process.

A. True
B. False

Correct Answer: B
Section:

QUESTION 117
The primary objective in removal of waste is to improve the Order Production Cycle where the time from _____ to the time of receipt of payment is compressed.

A. Shift start
B. Product development
C. Receipt of an order
D. New fiscal year

Correct Answer: C
Section:

QUESTION 118
Handling of warranty returns, process improvement team meetings and rework to meet customer expectations are all examples of business costs that are classified as _____ .

A. Nuisance
B. Non-value Add
C. Necessary
D. Unavoidable

Correct Answer: B
Section:

QUESTION 119
At the very initiation of a project a Belt must develop a concise _____ that states at a high level the area of concern and why it is important this issue be improved.

A. Business Case
B. Project Doctrine
C. Management Justification
D. Process Owner Disclosure

Correct Answer: A
Section:

QUESTION 120
The English words used for the 5S's are Sorting, Straightening, _____ , _____ and Sustaining. (Note: There are 2 correct answers).

A. Shaping
B. Shining

C. Standardizing
D. Signing

Correct Answer: B, C
Section:

QUESTION 121
An example of the waste of mismanaged Inventory is _____.

A. Capital costs of money
B. Value decrease from aged inventory
C. Cost of storage space
D. All of these answers are correct

Correct Answer: D
Section:

QUESTION 122
In a Fishbone Diagram the 6M's stand for Methods, _____, Machine, Man, Mother Nature and Materials.

A. Measurements
B. Merger
C. Management
D. Medical

Correct Answer: A
Section:

QUESTION 123
The most appropriate type of FMEA for a product before going into manufacturing is a _____ FMEA

A. Design
B. Consumer
C. Survey
D. Test Process

Correct Answer: A
Section:

QUESTION 124
Which one of the listed tools is frequently used to help drill down to possible causes once a Fishbone Diagram is constructed?

A. 3 When Analysis
B. Skeleton Diagnostic
C. Ishikawa Diagram
D. 5 Why Analysis

Correct Answer: D
Section:

QUESTION 125
One of the primary deliverables from performing a SIPOC is to begin to understand which inputs have the greatest affect on the _____ outputs.

A. Management's desired
B. Supplier delivered
C. Process operator
D. Customer most valued

Correct Answer: D
Section:

QUESTION 126
Two of the key deliverables for the Measure Phase are a robust description of the process and its flow and an assessment of the Management System.

A. True
B. False

Correct Answer: B
Section:

QUESTION 127
A valuable tool to use during the Measure Phase to show material and information flow throughout an entire process is the _____ .

A. Value Stream Map
B. FMEA
C. Pareto Chart
D. Standard Operating Procedure

Correct Answer: A
Section:

QUESTION 128
Which of the items listed do not define what an X-Y Diagram is?

A. Created for every project
B. Based on team's collective opinions
C. Updated whenever a parameter is changed
D. Used to show each step in a process
E. A living document throughout project lifecycle

Correct Answer: D
Section:

QUESTION 129

The two types of data that are to be used in Statistical Analysis are Attribute and Variance.

A. True
B. False

Correct Answer: B
Section:

QUESTION 130
Early in a project a Belt will want to begin to identify and evaluate risk factors for the subject process and will therefore begin building a(n) _____.

A. SIPOC
B. FMEA
C. Business Case
D. Team charter

Correct Answer: B
Section:

QUESTION 131
Data that can be measured on a continuum and has meaningful decimal subdivisions are _____ data.

A. Continuous
B. Surplus
C. Discrete
D. Variable

Correct Answer: A
Section:

QUESTION 132
Of the various types of data shown which is NOT representative of Variable Data.

A. Child's height is 4 foot 3 inches
B. Three employees wore hard hats
C. Car burned 2.7 gallons of gasoline
D. Train was going 140 kilometers per hour

Correct Answer: B
Section:

QUESTION 133
All the data points that represent the total set of information of interest is called the _____ .

A. Population
B. Sample
C. Frame

D. Spread

Correct Answer: A
Section:

QUESTION 134
A Belt working in a supply chain environment has to make a decision to change suppliers of critical raw materials for a new product upgrade. The purchasing manager is depending on the Belt's effort requiring that the average cost of an internal critical raw material component be less than or equal to $4,200 in order to stay within budget. Using a sample of 35 first article components, a Mean of the new product upgrade price of $4,060, and a Standard Deviation of $98 was estimated. In order to increase the Long Term Z value to 4, what is the maximum long term variation in pricing the Belt can accept for his upgraded critical raw material component?

A. $20
B. $35
C. $70
D. $110

Correct Answer: B
Section:

QUESTION 135
Sally and Sara sell flower pots at their garage sale. Sally motivates Sara mentioning that they will sell a minimum of 15 pots per day if the outside temperature exceeds 60o F. From a sample, whose population is assumed to follow a Normal Distribution, taken for 30 days at 60 degrees or more an average of 13.6 pots per day were sold with a Standard Deviation of 0.7 pots. For the sales accomplished above, what test would validate if they met their requirements?

A. F Test
B. Test for Equal Variance
C. Chi Square Test
D. One-Sample t-Test

Correct Answer: D
Section:

QUESTION 136
Sally and Sara sell flower pots at their garage sale. Sally motivates Sara mentioning that they will sell a minimum of 15 pots per day if the outside temperature exceeds 60o F. From a sample, whose population is assumed to follow a Normal Distribution, taken for 30 days at 60 degrees or more an average of 13.6 pots per day were sold with a Standard Deviation of 0.7 pots. The statistical Degrees of Freedom for this example are?

A. 1
B. 29
C. 30
D. 31
E. 2

Correct Answer: B
Section:

QUESTION 137
Sally and Sara sell flower pots at their garage sale. Sally motivates Sara mentioning that they will sell a minimum of 22 pots per day if the outside temperature exceeds 60o F. From a sample, whose population is assumed to follow a Normal Distribution, taken for 30 days at 60 degrees or more an average of 18.2 pots per day were sold with a Standard Deviation of 0.9 pots. What is the Z value for this sales process?

A. 1.23
B. 1.62
C. 2.11
D. 4.22

Correct Answer: D
Section:

QUESTION 138
The relationship between a response variable and one or more independent variables is investigated and modeled by use of which of these?

A. X-Y Matrix
B. Baldridge Assessment
C. Critical X's Definition
D. Analysis of Variance (ANOVA)

Correct Answer: D
Section:

QUESTION 139
An ANOVA used across many dependent variables could increase the Beta risk.

A. True
B. False

Correct Answer: B
Section:

QUESTION 140
A Non-parametric Test should be used if just one distribution is not Normal out of the two or more gathered.

A. True
B. False

Correct Answer: A
Section:

QUESTION 141
The Mann-Whitney test is a powerful test and is unique to situations from which of the choices listed? (Note: There are 2 correct answers).

A. Testing the identity of two populations
B. Focuses on equality of the Median of the two populations
C. Less powerful than the traditional ''t-test''
D. More widely applicable than the traditional ''t-test''

Correct Answer: B, D
Section:

QUESTION 142
Assessing process proportion as opposed to evaluating a process with respect to a set target can be done using one or more of these. (Note: There are 2 correct answers).

A. Process proportion equals some desired value
B. Process proportion equals some value range
C. Target is current
D. When we deal with Attribute type data
E. Proportion of the tail is equal

Correct Answer: A, D
Section:

QUESTION 143
For the data shown here which statement(s) are true? (Note: There are 2 correct answers).

Grade A	Grade B	Grade C
0.917	1.1	0.63
0.68	0.173	4.17
1.74	0.24	0.6
0.3	0.67	0.84
0.33	6.94	0.22
4.13		

A. With 95% confidence, we cannot conclude if the samples are from three Normal Distributions
B. With greater than 95% confidence, we conclude the samples are from Non-normal Distributions
C. If we wanted to compare the Central Tendencies of these three samples we would use the one way ANOVA test
D. If we wanted to compare the Central Tendencies of these three samples we could use Mood's Median test
E. If we wanted to compare the Central Tendencies of all three samples we could use the Mann-Whitney test

Correct Answer: B, D
Section:

QUESTION 144
Following process modifications, the Null Hypothesis states that no improvement to the process has occurred. If we discover the Null Hypothesis Test was rejected when it was false that would be a(n) _____.

A. Type I Error
B. Type II Error
C. Type III Error
D. Alpha Error

Correct Answer: B
Section:

QUESTION 145
If the results from a Hypothesis Test are located in the 'Region of Doubt' area, what can be concluded?

A. Rejection of the Alpha

B. We fail to reject the Null Hypothesis
C. The test was conducted improperly
D. We reject the Null Hypothesis

Correct Answer: D
Section:

QUESTION 146
When conducting a Hypothesis Test using Continuous Data the proper sample size is influenced only by the extent to which we need to assess a Difference to be detected but not the inherent variation in the process.

A. True
B. False

Correct Answer: B
Section:

QUESTION 147
Statistical Difference is the magnitude of difference or change required to distinguish between a true difference, brought about by change or improvement, and one that could have occurred by chance.

A. True
B. False

Correct Answer: A
Section:

QUESTION 148
To be an effective Lean Six Sigma practitioner one must understand the difference between _____.

A. ANOVA and the Analysis of Variance
B. Nonparametric tests and tests of Non-normal Data
C. Practical and Statistical significance
D. F-test and test of variances of 2 samples

Correct Answer: C
Section:

QUESTION 149
The validity of the decision made with Hypothesis Testing is dependent upon all of the following except _____.

A. Beta risk
B. Range of data
C. Alpha risk
D. Sample size

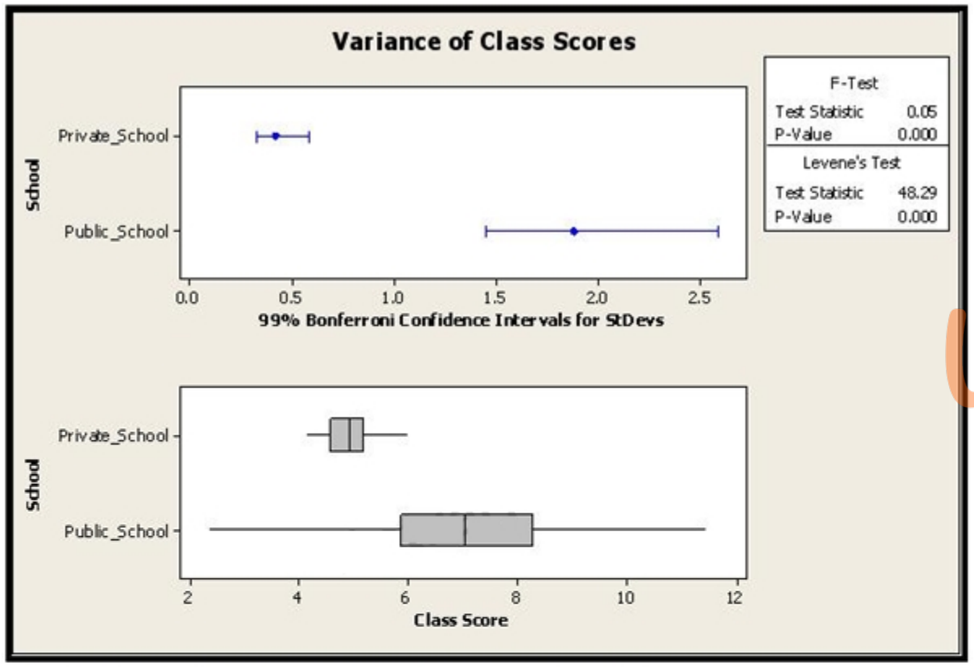
Correct Answer: B
Section:

QUESTION 150
To establish a sample size that will allow the proper overlap of distributions we do which of these?

A. Multiply Alpha by 1.75
B. Calculate one minus Beta
C. Calculate Beta plus 2
D. Multiply Beta by 3

Correct Answer: B
Section:

QUESTION 151
From the variance F-test shown above, which of these conclusions is/are valid?



Test for Equal Variances: Class Score versus School

99% Bonferroni confidence intervals for standard deviations

School	N	Lower	StDev	Upper
Private_School	50	0.32753	0.42210	0.58233
Public_School	50	1.45338	1.87303	2.58404

F-Test (Normal Distribution)
Test statistic = 0.05, p-value = 0.000

A. The variance between the class score distribution is not significantly different

B. This test applies only to Normal Distributed data at 99 % confidence
C. The variance between the class score distribution is significantly different
D. There are not enough data points to make any statistical conclusions

Correct Answer: C
Section:

QUESTION 152
Time is always the metric on the horizontal scale of a(n) _____ Chart.

A. Pareto
B. Xbar
C. Multi-Vari
D. NP

Correct Answer: C
Section:

QUESTION 153
On a _____ one can see a pattern from the graphed points such that conclusions can be drawn about the largest family of Variation.

A. Multi-Vari Chart
B. Weighted Scale
C. X-Y Matrix
D. Poisson Chart

Correct Answer: A
Section:

QUESTION 154
For a batch manufacturing process, while assessing short term process variation, which variation category(ies) should one need to focus on? (Note: There are 2 correct answers).

A. Variation within consecutive pieces
B. Variation among consecutive batches
C. Variation among groups of pieces
D. Variation among the completed product

Correct Answer: A, B
Section:

QUESTION 155
When the Inputs, X's, for your process are Normally Distributed about the Mean, the Outputs, Y's, will be Normally Distributed.

A. True
B. False

Correct Answer: B

Section:

QUESTION 156
Some of the sources for different types of error that can be quantified using Statistical Analysis are which of these?

A. Error in sampling
B. Bias in sampling
C. Error in measurement
D. All of the above

Correct Answer: D
Section:

QUESTION 157
For a Normal Distribution as samples size increases the Range in Mean and Standard Deviation decrease relative to the Mean and Standard Deviation of the population.

A. True
B. False

Correct Answer: A
Section:

QUESTION 158
From this list select the best example of Bias in Sampling.

A. Testing the completeness of cooking a cake but the testers cannot agree on how to measure internal temperature
B. Testing the sharpness of a razor blade while the sample of 500 are from the same model razor
C. Testing the weight of participants at a wrestling event and only measuring those who finished second or better
D. Testing a hand-held GPS models for durability using samples only from Nokia Model P120

Correct Answer: C
Section:

QUESTION 159
Accuracy can be assessed in several ways and a fairly accurate means of measurement is visual comparison.

A. True
B. False

Correct Answer: B
Section:

QUESTION 160
With Measurement System Analysis we are concerned with two issues that impact the potential variability of the data. They are _____.

A. Precision and Accuracy
B. Reliability and Repeatability

C. Error and Spread
D. Sensitivity and Deflection

Correct Answer: A
Section:

QUESTION 161
Measurement _____ is defined as the difference between the observed and the expected values for a given set of data.

A. Bias
B. Linearity
C. Range
D. Breadth

Correct Answer: A
Section:

QUESTION 162
A _____ problem in the Measurement System suggests that there is a lack of consistency in the measurement over time.

A. Linearity
B. Bias
C. Stability
D. Magnitude

Correct Answer: C
Section:

QUESTION 163
In a good Measurement System the most variation will be with part-to-part measurements. What should you do if the majority of variation is associated with the Gage R&R assuming the gage is technically capable?

A. Focus on fixing the Repeatability and Reproducibility of the measurement device
B. Purchase a new machine
C. Focus on trimming the Part-to-Part variation
D. Run another MSA test with the machine

Correct Answer: A
Section:

QUESTION 164
An operator checks that all boxes being packed contain enough products to fill the box. However, each box getting filled has a different number of products in it. This is a Reproducibility problem, not a Repeatability problem.

A. True
B. False

Correct Answer: B
Section:

QUESTION 165
Appropriate measures means that measurements are _____.

A. Representative
B. Sufficient
C. Contextual
D. Relevant
E. All of these answers are correct

Correct Answer: E
Section:

QUESTION 166
What aspects of Measurement Systems Analysis (MSA) studies are applicable when the process used to measure does not damage the part?

A. Destructive variable gage R&R and Crossed Study
B. Destructive variable gage R&R and Nested Study
C. Nondestructive variable gage R&R and Crossed Study
D. Nondestructive variable gage R&R and Nested Study

Correct Answer: D
Section:

QUESTION 167
Which item(s) listed would impact the Process Capability for a process with a continuous output? (Note: There are 4 correct answers).

A. Shape of process data distribution (e.g. Normal Distribution)
B. Process Technology
C. Process Standard Deviation
D. Presence of Special Causes or solely Common Causes
E. Seasonal variation in process

Correct Answer: A, C, D, E
Section:

QUESTION 168
The reported Cpk for a process with an average of 98 units, a spread of 16 units and upper and lower specification limits of 115 and 90 units would be?

A. 0.5
B. 0.75
C. 1.00
D. 1.25

Correct Answer: C
Section:

QUESTION 169

For Attribute Data, Process Capability is defined as the average proportion of nonconforming products.

A. True
B. False

Correct Answer: A
Section:

QUESTION 170
When we compare short-term and long-term Capability which of these is true?

A. Cp is better for the short term
B. Both short-term and long-term performance is alike
C. Performance tends to improve over time
D. Cp is better for the long-term

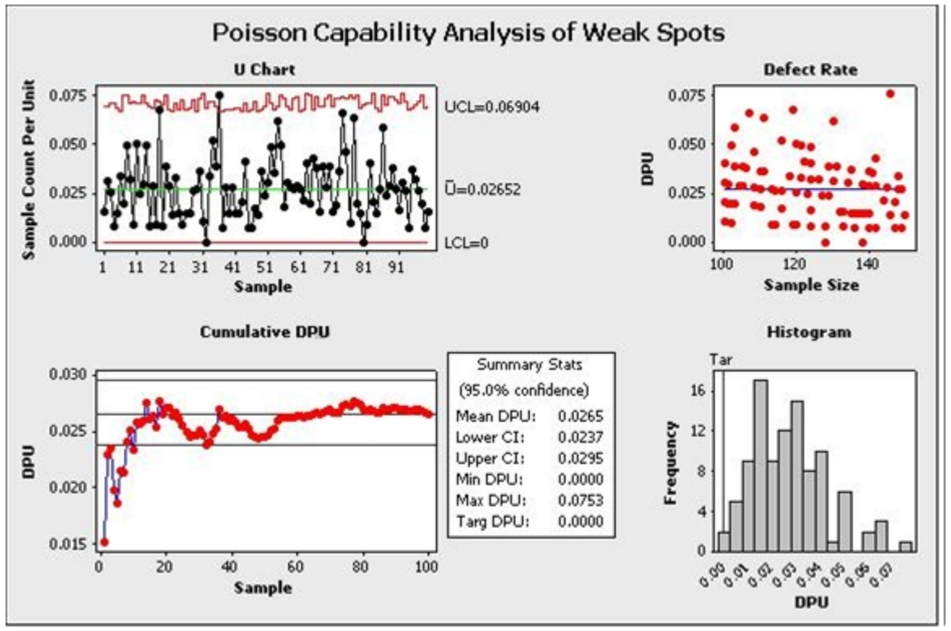
Correct Answer: A
Section:

QUESTION 171
What is the Ppk of a process with a spread of 24 units, an average of 68, an upper limit of 82 and a lower limit of 54?

A. 1.68
B. 2.00
C. 4.00
D. 4.42

Correct Answer: C
Section:

QUESTION 172
Which statements are correct about the advanced Capability Analysis shown here? (Note: There are 3 correct answers).



A. This is a Poisson Capability Analysis
B. The average DPU with 95% confidence is between 0.024 and 0.0295
C. The DPU does not seem to vary depending on sample size
D. The process shows only one instance of being out of control statistically so we have confidence in the estimated DPU of this process
E. The maximum DPU in one observation was nearly 0.0753

Correct Answer: B, C, E
Section:

QUESTION 173
The Greek letter ''sigma'' is used by mathematicians to signify _____.

A. Curve Width
B. Numerical Average
C. Standard Deviation
D. Data Spread

Correct Answer: C
Section:

QUESTION 174
Much of the Six Sigma methodology is used to identify and remove causes for _____.

A. Process Variation
B. Material Costs
C. Excess Inventory

D. Lost Sales

Correct Answer: A
Section:

QUESTION 175
When variation is removed from the output of a process then the process customer can have more confidence in the experience that results from the process.

A. True
B. False

Correct Answer: A
Section:

QUESTION 176
The distance between the Mean of a data set and the Point of Inflection on a Normal curve is called the _____.

A. Curve Spread
B. Standard Deviation
C. Numerical Average
D. Data Breadth

Correct Answer: B
Section:

QUESTION 177
One of the foundations of Lean Six Sigma is the concept that the output of a process (Y) is influenced by the process inputs (X's) and is commonly shown as which formula?

A. Y = Z(X2)
B. Y = f(X3)
C. Y = f(Xn)
D. Y = g(X+ 1.5)

Correct Answer: C
Section:

QUESTION 178
Those people who have a interest in the outputs of a process are known as _____.

A. Stakeholders
B. Senior management
C. Co-workers
D. Process owners

Correct Answer: A
Section:

QUESTION 179
A Process Map is created in order that a Belt can _____.

A. Follow the product to the end
B. Get the line people's names correct
C. Capture all the activities comprising the process
D. Manage the input inventory delivery schedule

Correct Answer: C
Section:

QUESTION 180
Customers make their decisions based on Features, Integrity (of the seller) Delivery and _____?

A. Color
B. Expense
C. Season
D. None

Correct Answer: B
Section:

QUESTION 181
Sally bought a blender from her local appliance store. When she changed blades the blender would not function. For the manufacturer this would be categorized as what type of cost?

A. Internal Failure Costs
B. External Failure Costs
C. Prevention Costs
D. Appraisal Costs

Correct Answer: B
Section:

QUESTION 182
Cost of Poor Quality (COPQ) can be classified as Visible Costs and Hidden Costs. Which of these items is a Visible Cost?

A. Lost Customer Loyalty
B. Time Value of Money
C. Returns
D. Late Delivery

Correct Answer: C
Section:

QUESTION 183
A Belt has determined that the inventory of repair parts at a rework station can be reduced by 45%. According to Cost of Poor Quality (COPQ) definitions inventory reduction would be considered _____.

A. Soft Savings
B. COPQ efficiency
C. Median Savings
D. Hard Savings

Correct Answer: D
Section:

QUESTION 184
When one speaks of 20% of something contributing 80% of the affect they are referring to what is known as the _____.

A. Shewhart Example
B. Connection Principle
C. Balance Equation
D. Pareto Principle

Correct Answer: D
Section:

QUESTION 185
Using this data calculate the percentage of DPU.
Data: 763 defects, 18,000 units.

A. 2.12
B. 3.42
C. 4.24
D. 5.72

Correct Answer: C
Section:

QUESTION 186
Calculate the Rolled Throughput Yield of this process using this data.
Data: unit input: 1215, unit output: 1180, defects repaired: 184, scrap: 42

A. 80.85%
B. 81.40%
C. 82.23%
D. 84.96%

Correct Answer: B
Section:

QUESTION 187
''A calculated time frame that matches customer demand'' is a definition of what Lean Principles term?

A. Value Stream

B. Kaizen event
C. Takt time
D. Kanban

Correct Answer: C
Section:

QUESTION 188
Which of these are examples of business metrics or Key Performance Indicators commonly referred to as KPI's?

A. Cycle Time
B. Defects
C. No. of Units Reworked
D. Labor Hours
E. All of these answers are correct

Correct Answer: E
Section:

QUESTION 189
As a means of measuring the effects on other areas of a process as a result of changes in the primary metric we also define and track _____.

A. Parallel process metrics
B. Secondary metrics
C. Tertiary metrics
D. Industry standards

Correct Answer: B
Section:

QUESTION 190
What dollar amount of savings would a project show if it reduced your outstanding Accounts Receivable by $0.9 million dollars to $3.5 million total and your organization's marginal cost of capital was 5.7%?

A. $49,250
B. $51,300
C. $117,500
D. $202,424

Correct Answer: B
Section:

QUESTION 191
Handling of warranty returns, process improvement team meetings and rework to meet customer expectations are all examples of business costs that are classified as _____ .

A. Nuisance
B. Non-value Add
C. Necessary

D. Unavoidable

Correct Answer: B
Section:

QUESTION 192
The Japanese born function of a Kaizen event utilizes a specific, step-by-step approach meant to bring about major changes to a process.

A. True
B. False

Correct Answer: B
Section:

QUESTION 193
The primary objective in removal of waste is to improve the Order Production Cycle where the time from _____ to the time of receipt of payment is compressed.

A. Shift start
B. Product development
C. Receipt of an order
D. New fiscal year

Correct Answer: C
Section: