LSSBB Practice Exam

1. Special cause variation is
   a. A system issue
   b. Stable
   c. Random
   d. Changes over time

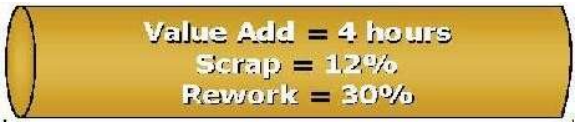
2. The box on a Boxplot contains what % of the data?
   a. 25%
   b. 50%
   c. 75%
   d. 100%

3. What is the elapsed time from completion of one type of task to beginning of work on another type of task?
   a. Setup time
   b. Takt time
   c. Wait time
   d. Changeover time

4. Throughput is often defined as:
   a. WIP / Exit Rate
   b. Exit Rate
   c. WIP
   d. Frequency

5. What is the Process Cycle Efficiency of the following process?
   a. 17.25%
   b. 5.79%
   c. 8.77%
   d. 1.33%

6. Which of the following is primarily from the Voice of the Customer?



Lead Time = 69 hours

   a. Quality
   b. Cost
   c. Speed
   d. All of the above

7. The SIPOC Chart:
   a. Helps to identify the customers, suppliers and outputs
   b. Starts by first defining process specifications
   c. Is used to define non-value added steps
   d. None of the above

8. Process / Value Stream Maps:
   a. Look only at the value add aspects of a product through the complete process
   b. Are used daily to schedule the customer orders through the process
   c. Show if the process is in control
   d. Are valuable for describing the current situation

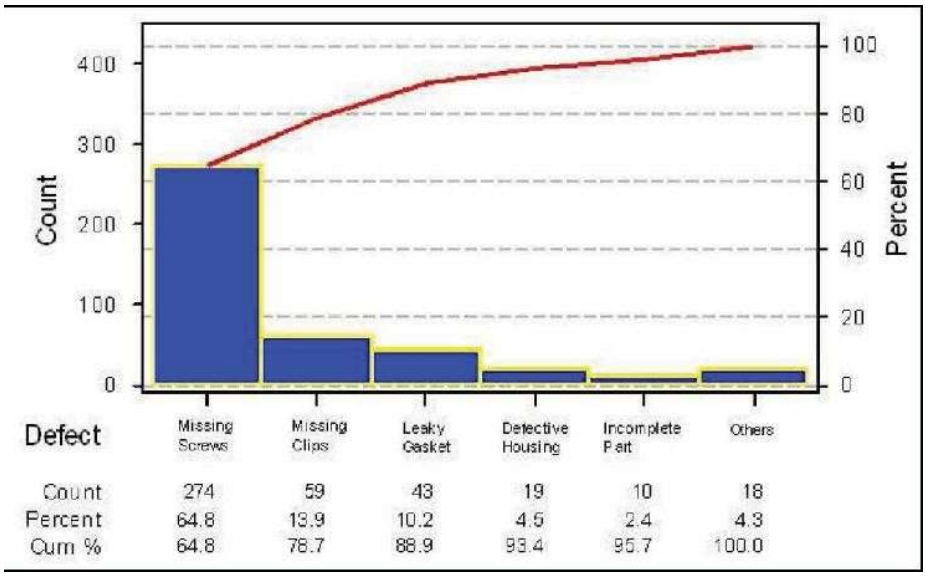


Figure 1

9. From the Pareto Chart in Figure 1, 'Missing Clips' account for what percent of the defects?
   a. 59%
   b. 78.7%
   c. 64.8%
   d. 13.9%

10. What basic tool would you most logically use to supplement brainstorming to prioritize ideas?
   a. Value Stream Map
   b. Efficiency Diagram
   c. Nominal Group Technique
   d. All of the above

11. The control limits on a control chart are:
   a. Determined from real customer specifications
   b. Boundaries that result from the process itself
   c. Estimated using process experts
   d. Derived from all of the above

12. What type of Control Chart would be used to track defects?
    a. IMR
    b. P
    c. C
    d. NP
13. What process capability ratio would you use to determine if the process performance potentially can fit within the range of the upper and lower specification limits (process centering is not an issue)
    a. C_{px}
    b. C_p
    c. C_{pr}
    d. Cpk

14. A C_{pk} value less than zero indicates that most of the data points fall:
    a. Close to the mean (target)
    b. Outside the specification limits
    c. Within the 3 sigma range
    d. Within the spec limits

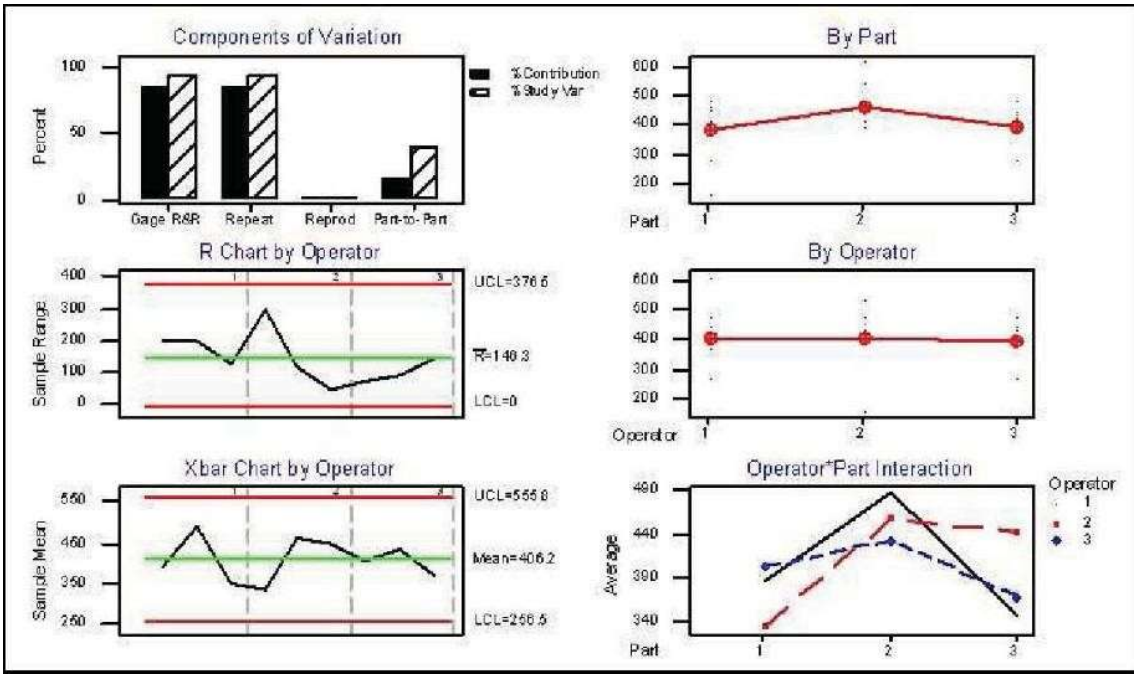


Figure 2

15. The Gage R&R variability considered to be unacceptable and a signal that the measurement system should be corrected or replaced is:
    a.Less than 50%
    b. 20%
    c. Over 30%
    d. Anything equal to or less than 5%

16. The Takt Rate can be described as:
    a. The operation time at the Time Trap
    b. Number of units to process divided by Net Process Time Available
    c. Helps to identify constraints (any operation or process that cannot produce to the Takt Rate)
    d. The rhythm of process improvement

17. Based upon the Gage R&R graph in Figure 2, what best describes the results of the study?
    a. Reproducibility is the main source of Gage variation
    b. Part-to-part variation is large compared to Gage R&R
    c. This measurement system is capable
    d. The measurement system is not capable

18. An example of a Type II error is:
    a. I have discovered something that really is not here
    b. I have missed a significant event
    c. Taking action when no action was necessary
    d. When an innocent person is convicted

19. The value of the 'power of a test' is:
    a. One minus the alpha level
    b. When a Gage R&R test result proves unacceptable to marginal
    c. One minus the beta level
    d. Beta Risk increases as Alpha increases

20. Which of the following statement(s) describe the interpretation of the p-value in a statistical test?
    a. If we reject the null hypothesis, the p-value is the probability of being wrong
    b. If we reject the null hypothesis, the p-value is the probability of making a Type I error
    c. If we don't want alpha to be more than 0.05, then we simply accept the alternate hypothesis when the p-value is 0.05 or less
    d. All of the above

21. The following is true about a Rapid Improvement Event:
    a. Part time resources
    b. No data collection required
    c. Scope is determined during the Event
    d. Bias for Action

22. Complete the C&E Matrix and determine which process step has the most impact on the outputs.

	Arrive at Scheduled Time	Arrive with proper equipment	Dressed properly	Delivered via correct mode	**Process outputs**
	5	4	4	2	**<<<Importance**
Process Step	**--------- Correlation of Input to Output --------**				**Total**
Patient Scheduled	9	3	0	3	
Attendant Assigned	9	0	0	0	
Attendant Arrives	9	0	0	0	
Obtains Equipment	1	9	0	1	
Transport Patient	9	0	0	0	

    a. Patient Scheduled
    b. Attendant Assigned
    c. Attendant Arrives
    d. Obtains Equipment
    e. Transport Patient

23. The major ranking criteria in an FMEA are:
    a. Effect, Cause and Controls
    b. Potential Causes and Recommended Actions
    c. Severity, Occurrence, and Detection
    d. Failures, Mistakes, Errors and Accidents

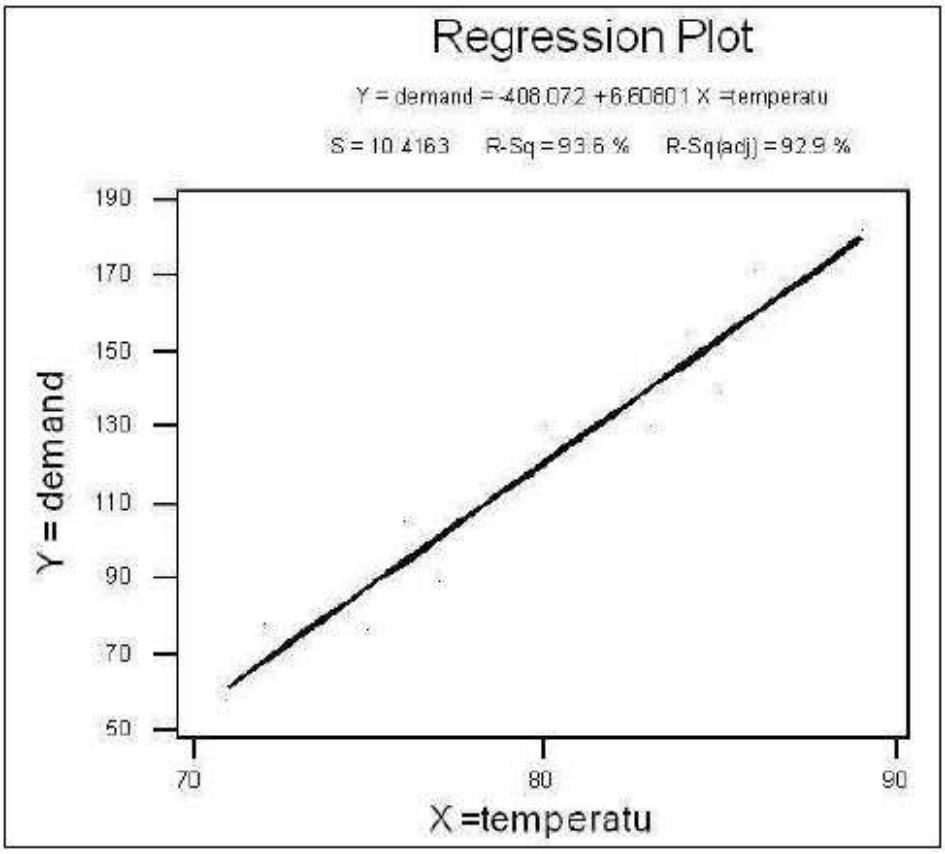


Figure 3

24. From the regression information in Figure 3, what is the demand if the temperature reaches 85 degrees?
    a. 92.6
    b. 96.1
    c. 184.2
    d. 153.6

25. When would you use Multiple Regression Analysis?
    a. When you have one predictor variable
    b. When you have more than one dependent variable
    c. When you have more than one independent variable
    d. None of the above

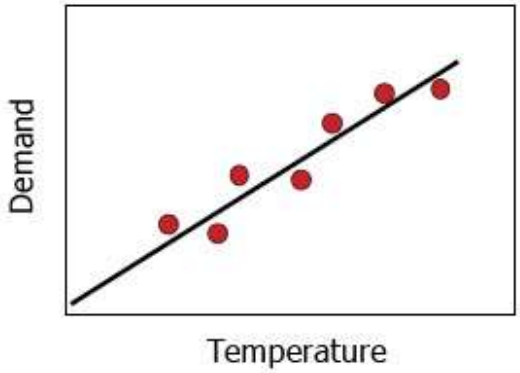


Figure 4

26. Using Pearson's Correlation Coefficient to identify if a relationship exists between two sets of data, what would the 'r' value be in the graph in Figure 4?
    a. Negative
    b. Positive
    c. Zero
    d. Cannot determine from graph

27. What would you conclude from the following ANOVA table?

One-way ANOVA: Durability versus Carpet

Analysis of Variance for Durability

Source	DF	SS	MS	F	P
Carpet	3	111.6	37.2	2.60	0.101
Error	12	172.0	14.3		
Total	15	283.6			

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
1	4	14.483	3.157	(-------*-------)
2	4	9.735	3.566	(-------*--------)
3	4	12.808	1.506	(--------*-------)
4	4	17.005	5.691	(-------*-------)

Pooled StDev = 3.786

10.0 15.0 20.0

    a. At an Alpha Risk of 5%, there IS a statistical significance in the factor "Carpet".
    b. At an Alpha Risk of 5%, there is NOT a statistical significance in the factor "Carpet"
    c. The Table of 95% confidence intervals contradicts the ANOVA table p-value at a 5% Alpha Risk
    d. None of the above.

28. ANOVA looks at what sources of variation?
    a. Partial, total, outside limits
    b. Total, outside limits
    c. Total, between within
    d. Only within the source of correlation

29. The governing principle of Work Control Systems is that:
    a. Quality Control manages the process
    b. Start Rate = Exit Rate
    c. No data should be gathered
    d. Exits do not equal throughput in a process

30. Complexity is found in many areas of business. Which one or more of the following are considered ways in which complexity, once identified, can be reduced?
    a.Standardization
    b. Value Optimizing
    c. Lean Six Sigma Improvements
    d. All of the above

31. A Replenishment Pull System exists for part #4638772A and a trigger point needs to be established. Identify the trigger point using the following data.

Demand = 7 parts per day
Safety Stock = 10 parts Order Interval = 5 days Vendor Lead Time = 10 days

    a. 45 parts
    b. 70 parts
    c. 105 parts
    d. 80 parts

32. Based upon the data in previous question, Question 31, what is the Max Kanban (Max Loop) quantity for the purchased part?
    a.115 parts
    b. 80 parts
    c. 35 parts
    d. 105 parts
    e. None of the above

33. When should a Replenishment Pull System be used for a given part?
    a. Unstable process or environment
    b. High variability of demand
    c. Repetitive environment
    d. Depends on the Process Cycle Efficiency percentage (lower the better)

34. When should a Rapid Improvement Event be performed?
    a. To get employees involved in waste elimination
    b. For driving quick hit value
    c. For a focused 3 to 5 day event
    d. All of the above

35. Name the 5Ss in sequential order.
    a. Sort, Set in order, Shine, Standardize, Sustain
    b. Sustain, Set in order, Standardize, Sort, Shine
    c. Shine, Set in Order, Sort, Shine, Standardize, Sustain
    d. Set in order, Shine, Sustain, Standardize, Sort

36. Serial (Internal) setup time is:
    a. Activity that must be performed while the process or equipment is operating (up)
    b. Activity that must be performed while the process or equipment is not operating (down)
    c. Activity that occurs while the operation is producing only good parts
    d. Activity that increases Process Cycle Efficiency of the operation

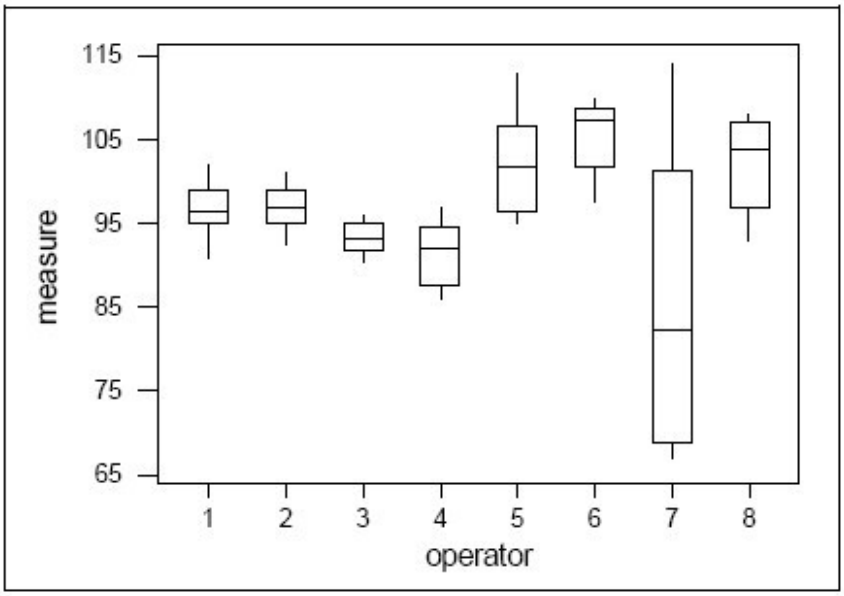


Figure 4

37. Which three operators appear to be most consistent in performance graphed in Figure 4.
    a.5, 6, 8
    b. 3, 5, 7
    c. 4, 5, 6
    d. 1, 2, 3

38. ABC Parts Stratification:
    a. Divides inventory into three groups for control
    b. Identifies parts by size
    c. Is used to focus efforts on value
    d. Both a. and c.

39. A full factorial DOE with 4 factors and 2 levels will require how many runs?
    a. 8
    b. 20
    c. 32
    d. 16

40. A designed experiment is the manipulation of what types of factors?
    a. Screening
    b. Controllable (independent variables)
    c. Response (dependent variables)
    d. Noise

41. What is one of the main advantages of the best practice "Process Flow Improvement"?
    a. Shorter cycle time and improved communication
    b. Decreasing the Process Cycle Efficiency of the process
    c. Gathering of data for statistical analysis
    d. Decreasing the Process Cycle Effectiveness percentage

42. What is a method which makes it very difficult or impossible to produce defective work?
    a. Final test
    b. Customer inspection
    c. Poka Yoke
    d. Self checks

43. What enables the team to provide a better solution with fewer surprises?
    a. Statistical sampling
    b. Cause and Effect Diagram
    c. Pilot
    d. Gage R&R

44. When performing a Regression Analysis, multicolinearity refers to:
    a. The fact that two predictors are related
    b. Data points that appear to be "glued together" on a control chart
    c. Multicolinearity is not an issue in Regression Analysis
    d. None of the above

45. When comparing a product to a standard, pass or fail classification, what type of control chart would be most appropriate?
    a.IMR Control Chart
    b. XbarR Control Chart
    c. P Chart
    d. M Chart

46. Which of the following is not a measure of dispersion?
    a. Standard deviation
    b. Mean
    c. Variance
    d. Range

47. As the sample size increases…
    a. The population mean decreases
    b. The population standard deviation decreases
    c. The standard deviation for the distribution of the sample mean increases
    d. The standard deviation for the distribution of the sample means (SE Mean) decreases

48. A Type II error is defined to be the probability of :
    a. Producer risk
    b. Beta risk
    c. Alpha risk
    d. None of the above

49. What describes the actions required at each phase of the process to assure the process outputs will be in a state of control? a. Control Charts
    b. Control Plans
    c. Mistake Proofing
    d. FMEA

50. The median of an ordered set of data is the value that represents:
    a. The middle or the approximate middle value of the data set
    b. The most frequently observed value
    c. The mean of the squared deviations of the values from the mean
    d. The arithmetic average of the data values