Total Quality Management

1. _____ is not a process tools for TQM systems

A. process flow analysis
B. histograms
C. plier
D. control charts

View answer
Correct answer: (C)
plier

2. Processes that operate with "six sigma quality" over the short term are assumed to produce long-term defect levels below _____ defects per million opportunities (DPMO).

A. 2
B. 2.4
C. 3
D. 3.4

View answer
Correct answer: (D)
3.4

3. Inspection, scrap, and repair are examples of _____

A. internal costs
B. external costs
C. costs of dissatisfaction
D. societal costs

View answer
Correct answer: (A)
internal costs

4. _____ are used in six sigma

A. black belt
B. green belt
C. both black belt and green belt
D. none of the Above

View answer

Correct answer: (C)
both black belt and green belt

5. Customers are primarily concerned with _____

A. Communication, courtesy, and credibility of the sales person
B. Competence, courtesy, and security of the sales person
C. Competence, responsiveness, and reliability of the sales person
D. Communication, responsiveness, and cleverness of the sales person

View answer
Correct answer: (A)
Communication, courtesy, and credibility of the sales person

6. Assured quality is necessary for building customer confidence.

A. correct
B. correct to some extent
C. correct to great extent
D. incorrect

View answer
Correct answer: (A)
correct

7. _____ is about supplying customers with what they want when they want it.

A. JUT
B. HET
C. JAT
D. JIT

View answer
Correct answer: (D)
JIT

8. _____ are the areas that will be covered by the organization's processes

A. process areas
B. product Areas
C. private areas
D. preset areas

View answer

Correct answer: (A)
process areas

9. All of the following costs are likely to decrease as a result of better quality except _____

A. customer dissatisfaction costs
B. inspection costs
C. maintenance costs
D. warranty and service costs

View answer
Correct answer: (C)
maintenance costs

10. "Quality is defined by the customer" is

A. An unrealistic definition of quality
B. A user-based definition of quality
C. A manufacturing-based definition of quality
D. A product-based definition of quality

View answer
Correct answer: (B)
A user-based definition of quality

11. TQM stands for _____

A. Total Quality Management
B. Total Quantity Management
C. Total Qualitative Management
D. To question management

View answer
Correct answer: (A)
Total Quality Management

12. After E.deming, who is considered to have the greatest impact in quality management?

A. Kauro Ishikawa
B. Joseph M. Juran
C. W.E. Deming
D. Genichi Tagucchi

View answer
Correct answer: (B)
Joseph M. Juran

13. Deming's 4 step cycle for improvement is_____

A. plan, do, check, act
B. schedule, do, act, check
C. do, act, check, monitor
D. plan, control, act, sustain

View answer
Correct answer: (A)
plan, do, check, act

14. In Six Sigma, a _____ is defined as any process output that does not meet customer specifications

A. error
B. cost
C. quality
D. defect

View answer
Correct answer: (D)
defect

15. Plan-do-study-act cycle is a procedure to _____

A. Overall improvement
B. Continuous improvement
C. Permanent improvement
D. Immediate improvement

View answer
Correct answer: (B)
Continuous improvement

16. Quality practices must be carried out _____

A. at the start of the project
B. throuout the life of the project
C. at the end of the project
D. no neeed to carry out quality practices

View answer
Correct answer: (B)
throuout the life of the project

17. ———— are the charts that identify potential causes for particular quality problems.

A. Control Chart
B. Flow chart
C. Cause and Effect Diagram
D. Pareto chart

View answer
Correct answer: (C)
Cause and Effect Diagram

18. Quality circles work best if employees are initially trained in _____

A. Group dynamics
B. Motivation principles
C. Communications
D. All of the three. (Not sure)

View answer
Correct answer: (D)
All of the three. (Not sure)

19. Quality Trilogy includes

A. Quality planning
B. quality improvement
C. quality control
D. All the three

View answer
Correct answer: (D)
All the three

20. production issues should be addressed early

A. correct (not sure)
B. correct to some extent
C. correct to great extent
D. incorrect

View answer
Correct answer: (A)
correct (not sure)

21. inspection is part of the _____

A. quality control (not sure)
B. Quality Planning
C. Quality improvement
D. Quality circle

View answer
Correct answer: (A)
quality control (not sure)

22. QFD stands for _____

A. Quantity for deployment
B. Quality for deployment
C. Quality function deployment
D. Quality for decision

View answer
Correct answer: (C)
Quality function deployment

23. reliability is the degree to which a unit of equipment performs its intended function under _____ for _____ of time.

A. specified conditions; specified period
B. any condition; specified period
C. specified conditions; all periods
D. any condition; any period

View answer
Correct answer: (A)
specified conditions; specified period

24. Kaizen is a _____ process, the purpose of which goes beyond simple productivity improvement.

A. weekly
B. daily
C. monthly
D. annual

View answer
Correct answer: (B)
daily

25. elements of quality management system are _____

A. organizational structure
B. responsibilities
C. procedures
D. all the three (not sure)

View answer
Correct answer: (D)
all the three (not sure)

26. At the time of making a purchase agreement with a vendor, what is important to mention about inspection?

A. the characteristics of the product that are to be inspected
B. the tolerances that would be allowed
C. the reputation of the vendor
D. a & b both (not sure)

View answer
Correct answer: (D)
a & b both (not sure)

27. "Poka-yoke" is the Japanese term for _____

A. Card
B. Fool proof
C. Continuous improvement
D. Fishbone diagram

View answer
Correct answer: (B)
Fool proof

28. Based on his 14 Points, Deming is a strong proponent of _____

A. inspection at the end of the production process
B. an increase in numerical quotas to boost productivity
C. looking for the cheapest supplier
D. training and knowledge

View answer
Correct answer: (D)
training and knowledge

29. A fishbone diagram is also known as a ._____

A. cause-and-effect diagram
B. poka-yoke diagram
C. Kaizen diagram
D. Taguchi diagram

View answer
Correct answer: (A)
cause-and-effect diagram

30. According to Deming most of the problems are related to systems and it is the responsibility of the management to improve the systems

A. correct
B. correct to some extent
C. correct to great extent
D. Taguchi

View answer
Correct answer: (A)
correct

31. A maturity model can be used as a benchmark for comparison and as an aid to understanding

A. TRUE
B. FALSE
C. depends
D. can't say

View answer
Correct answer: (A)
TRUE

32. fourteen points framework for quality and productivity improvement was suggested by _____

A. Crosby
B. Ishikawa
C. Deming

D. Juran

View answer
Correct answer: (C)
Deming

33. Juran's Quality trilogy emphasizes the roles of quality planning, quality control and _____

A. Quality Definition
B. Quality enhancement
C. Quality improvement
D. quality maintenance

View answer
Correct answer: (C)
Quality improvement

34. Quality Circles members are _____

A. Paid according to their contribution to quality
B. External consultants designed to provide training in the use of Quality tools
C. Always machine operators
D. None of the three.

View answer
Correct answer: (D)
None of the three.

35. Identify the cost not likely to reduce as a result of better quality.

A. Maintenance costs
B. Inspection costs
C. Scrap costs
D. Warranty and service costs

View answer
Correct answer: (A)
Maintenance costs

36. Costs of dissatisfaction, repair costs, and warranty costs are elements of cost in the _____

A. Taguchi Loss Function
B. Pareto Chart

C. ISO 9000 Quality Cost Calculator
D. Process Chart

View answer
Correct answer: (A)
Taguchi Loss Function

37. Kaizen is a Japanese term meaning _____

A. continuous improvement
B. Just-in-time (JIT)
C. a fishbone diagram
D. setting standards

View answer
Correct answer: (A)
continuous improvement

38. Quality management includes forming and directing a team of people to achieve a qualitative goal within an effective cost and time frame that results in _____

A. a project completed in shortest possible time.
B. a product or service that conforms to the required specifications.
C. an award-winning product that brings public recognition to the project
D. an innovative project that establishes qualification of the project team

View answer
Correct answer: (B)
a product or service that conforms to the required specifications.

39. establishing measurements based on customer needs for optimizing product design is known as _____

A. Quality planning
B. quality improvement
C. quality control
D. Quality planning (Actual answer is Quality planning roadmap)

View answer
Correct answer: (D)
Quality planning (Actual answer is Quality planning roadmap)

40. DMAIC is _____

A. develop, multiply, analyze, improve, check

B. define, muliply, analyze, improve, control
C. define, measure, analyze, improve, control
D. define, manufacture, analyze, improve, control

View answer
Correct answer: (C)

41. Quality fulfills a need or expectation that is:

A. Explicitly stated
B. Implied
C. Legally required
D. All of the above

View answer
Correct answer: (D)
All of the above

42. The taste of burgers across all McDonald outlets should be same. This is an example of _____.

A. Sensory critical to quality Characteristic
B. Physical critical to Quality Characteristic
C. Time Orientation critical to Quality Characteristic
D. None of the above

View answer
Correct answer: (A)
Sensory critical to quality Characteristic

43. Check Sheet is used during _____ stage of DMAIC.

A. Define
B. Measure
C. Analyze
D. Improve

View answer
Correct answer: (B)
Measure

44. _____ is the set of activities that ensures the quality levels of products and services are properly maintained and that supplier and customer quality issues are properly resolved.

A. Quality Assurance
B. Quality Planning
C. Quality Control
D. Quality Management

View answer
Correct answer: (A)
Quality Assurance

45. Presence of _____ after every stage of DMAIC allows for review of project and incorporation of suggestions.

A. Review gate
B. Toll gate
C. Decision gate
D. None of the above

View answer
Correct answer: (B)
Toll gate

46. The Toyota Production System is based on two pillars namely _____ and _____.

A. Kaizen, Six Sigma
B. Lean, Six Sigma
C. Just in Time, Jidoka
D. Just in Time, Kaizen

View answer
Correct answer: (C)
Just in Time, Jidoka

47. Which of the following is not a target of Total Quality Management:

A. Customer Satisfaction
B. Reducing manpower
C. Continuous Cost Reduction
D. Continuous Operational Improvement

View answer
Correct answer: (B)
Reducing manpower

48. Let there be a data set {200,201,202,203,204,205,206,207,208}. This data set can be represented using stem and leaf where the _____ is 20 and the _____ is {0,1,2,3,4,5,6,7,8}.

A. Stem, Leaf
B. Leaf, Stem
C. Tree, Stem
D. Tree, Leaf

View answer
Correct answer: (A)
Stem, Leaf

49. A _____ diagram shows the location of defects in any unit. This diagram is used in the analyse step of DMAIC.

A. Affinity
B. Relations
C. Defect Concentration
D. Scatter

View answer
Correct answer: (C)
Defect Concentration

50. The _____ is used to identify what might go wrong in a plan under development.

A. Pareto Chart
B. PDPC
C. Arrow Diagram
D. Matrix Diagram

View answer
Correct answer: (B)
PDPC

51. The defect concentration diagram can be used in the _____ stage of the DMAIC.

A. Define
B. Measure
C. Analyze
D. Improve

View answer
Correct answer: (C)
Analyze

52. The taste of the burger can be categorized as good or bad This is an example of which type of data:

A. Variable
B. Attribute
C. Cannot be determined
D. None of the above

View answer
Correct answer: (A)
Variable

53. For a given sample size (n) and number of defects acceptable ©, the Average Total Inspection (of units) should _____ with increase in N (lot size).

A. Increase
B. Decrease
C. Remain Constant
D. None of the above

View answer
Correct answer: (A)
Increase

54. The pattern of continuous movement in one direction in a control chart is termed as:

A. Mixture
B. Cyclic Pattern
C. Trend
D. Stratification

View answer
Correct answer: (C)
Trend

55. Juran's quality management philosophy is based on three pillars namely planning, control and _____.

A. Implementation
B. Improvement

C. Monitor
D. Design

View answer
Correct answer: (B)
Improvement

56. For a point in the control chart to be out of control, it must lie

A. Above UCL or Below LCL
B. Between Central Line and LCL
C. Between Central Line and UCL
D. None of the above

View answer
Correct answer: (A)
Above UCL or Below LCL

57. X bar should never be interpreted when:

A. R chart shows out of control points
B. X bar chart shows out of control points
C. The process mean is not known
D. None of the above

View answer
Correct answer: (A)
R chart shows out of control points

58. The average run length can be defined as:

A. The beta risk for an x bar chart
B. The expected number of samples taken before any shift in process quality is detected
C. The number of samples used in the construction of x bar chart
D. The number of items per sample

View answer
Correct answer: (B)
The expected number of samples taken before any shift in process quality is detected

59. Consider the first method of p bar estimation where each sample is of varying size. If the 3rd sample has p bar =.01, and the sample size of the 3rd sample is 10, what will be the upper control limit for the 3rd sample?

A. .5
B. .6
C. .1 ((p bar + 3* √p bar*(1-p bar)/n) is a measure of the upper control limit)
D. None of the above

View answer
Correct answer: (C)

.1 ((p bar + 3* √p bar*(1-p bar)/n) is a measure of the upper control limit)

60. A major assumption for p chart is that all units produced are _____.

A. Independent
B. Dependent
C. None of the above
D. Cannot be determined

View answer
Correct answer: (A)
Independent

61. Apart from Poisson distribution, another distribution that can be applied to events data is:

A. Normal Distribution
B. Geometric Distribution
C. Lognormal Distribution
D. Continuous Distribution

View answer
Correct answer: (B)
Geometric Distribution

62. Which of the following is not true regarding when to select a p, c or u chart:

A. The process is a complex assembly operation and product quality is measured in terms of the occurrence of nonconformities, successful or unsuccessful product function, and so forth.
B. Process control is necessary, but measurement data cannot be obtained.
C. A historical summary of process performance is necessary.
D. Destructive testing (or such other expensive testing procedures) is required.

View answer

Correct answer: (D)
Destructive testing (or such other expensive testing procedures) is required.

63. The dimension of reliability is concerned with:

A. How easy it is to repair the product
B. How long does the product last
C. Will the product do the intended job
D. How often does the product fail

View answer
Correct answer: (D)
How often does the product fail

64. From a consumer perspective quality is determined by _____ while from a producers perspective quality is determined by _____.

A. Variability, Cost
B. Cost, Price
C. Price, Cost
D. Cost, Variability

View answer
Correct answer: (C)
Price, Cost

65. The probability distribution function corresponding to tossing of a coin will be a:

A. Probability Density function
B. Probability Mass function
C. Probability Measurement function
D. Probability Cumulative Function

View answer
Correct answer: (B)
Probability Mass function

66. While the first generation of Six sigma focused on _____, the third generation of six sigma focused on _____.

A. Variability reduction, creating value
B. Variability reduction, improved business performance
C. Creating value, Improved business performance
D. None of the above

View answer
Correct answer: (A)
Variability reduction, creating value

67. The standard normal distribution has mean= _____ and standard deviation= _____.

A. 1,0
B. 0,1
C. 0,0
D. 1,1

View answer
Correct answer: (B)
0,1

68. A _____ chart can be used to identify the most frequently occurring defect.

A. Pareto
B. Ishikawa
C. Histogram
D. Scatter

View answer
Correct answer: (A)
Pareto

69. The main aim of QFD is to

A. Listen to the voice of customer
B. Lower cost
C. Reduce errors
D. Reduce supplier defect

View answer
Correct answer: (A)
Listen to the voice of customer

70. Average Total Inspection is defined as:

A. Average of rejected lots and accepted lots
B. Average number of units inspected per lot
C. Average of rejected Lots
D. Average of accepted Lots

View answer
Correct answer: (B)
Average number of units inspected per lot

71. R charts are used for controlling _____ of a process.

A. Central Tendency
B. Dispersion
C. None of the above
D. Both a and b

View answer
Correct answer: (B)
Dispersion

72. If the Average outgoing Quality is plotted against the Incoming Fraction Defective, the Average Outgoing Quality Limit is the _____ point.

A. Highest
B. Lowest
C. Middle
D. Cannot be determined

View answer
Correct answer: (A)
Highest

73. For the above table, what is the value corresponding to the central line for the x bar chart?

A. 10.08
B. 10.05
C. 9.89
D. 9.78

View answer
Correct answer: (A)
10.08

74. The x bar chart monitors:

A. Between sample variability
B. Within sample variability
C. Instantaneous variability
D. Natural variability

View answer
Correct answer: (A)
Between sample variability

75. In case someone is interested in process standard deviation, he should construct the _____ chart.

A. X bar
B. R chart
C. S chart
D. None of the above

View answer
Correct answer: (C)
S chart

76. If data for MR chat shows non-normality, it is better to determine the control limits for the individuals control chart based on the _____ of the correct underlying distribution.

A. Percentage
B. Percentiles
C. Rank
D. Mean

View answer
Correct answer: (B)
Percentiles

77. A sample of size 10 contains 50 non-conformities. The average number of non-conformities is:

A. 7
B. 4
C. 5 (50/10 i.e. total non-conformities/sample size)
D. 1

View answer
Correct answer: (C)
5 (50/10 i.e. total non-conformities/sample size)

78. When the number of defects is low, which of the following is true:

A. We should use c or u chart
B. Most samples will have non-zero defects

C. Create a time between occurrence control chart
D. None of the above

View answer
Correct answer: (C)
Create a time between occurrence control chart

79. Bias reflects the:

A. The differences in observed accuracy and/or precision experienced over the range of measurements made by the system.
B. The difference between observed measurements and a "true" value obtained from a master or gold standard
C. Different levels of variability in different operating regimes, resulting from warm-up effects, environmental factors, inconsistent operator performance
D. None of the above

View answer
Correct answer: (B)
The difference between observed measurements and a "true" value obtained from a master or gold standard

80. If variability of a product decreases, its quality _____

A. remains unchanged
B. decreases
C. increases
D. may increase or decrease

View answer
Correct answer: (C)
increases

81. The focal point of all quality control should be:

A. Price focus
B. Cost Focus
C. Customer Focus
D. Manufacturing Focus

View answer
Correct answer: (C)
Customer Focus

82. The key process input variables (KPIV) and key process output variables are developed during the _____ phase.

A. Define
B. Analyze
C. Measure
D. Improve

View answer
Correct answer: (C)
Measure

83. An unbiased dice is rolled once. The probability of getting a number greater than 4 is:

A. ¼
B. 1/6
C. ½
D. 1/3

View answer
Correct answer: (D)
1/3

84. Which of the following statement is false:

A. Important step of strategic quality management is identification of those dimensions in which the organization will compete
B. Selection of suppliers should be based on quality, schedule, and cost, rather than on cost alone
C. All of the individuals in the organization must have an understanding of the basic tools of quality improvement
D. Manufacturing Unit should be the unit focusing on Quality Improvement among all units in an organization

View answer
Correct answer: (D)
Manufacturing Unit should be the unit focusing on Quality Improvement among all units in an organization

85. Cause and Effect Diagram can be used in the _____ and _____ step of DMAIC.

A. Define, Measure
B. Analyze, Control

C. Analyze, Improve
D. Define, Improve

View answer
Correct answer: (C)
Analyze, Improve

86. Which of the following is false regarding when acceptance sampling is useful:

A. When testing is destructive
B. When 100% inspection cost is very low
C. When there are potentially serious product liability risk
D. When 100% inspection is not technically feasible

View answer
Correct answer: (B)
When 100% inspection cost is very low

87. Let p0 be the incoming fraction defective and p1 be the outgoing fraction defective (Assume both p1 and p0 is greater than 0). If rectifying inspection is performed then:

A. P0<p1
B. P1<p0
C. None of the above
D. Cannot be determined

View answer
Correct answer: (B)
P1<p0

88. A company wants to measure the length of a fan as a part of its quality control exercise. The type of data collected will be:

A. Variable
B. Attribute
C. Cannot be determined
D. None of the above

View answer
Correct answer: (B)
Attribute

89. If only _____ causes of variation are present, the output of a process forms a distribution that is table over time and is predictable.

A. Assignable
B. Non-Random
C. Natural
D. Cannot be said

View answer
Correct answer: (C)
Natural

90. For an x bar chart, β risk can be defined as:

A. The probability of detecting the shift in process mean from μ_o (in control value) to μ_1
B. The probability of not detecting the shift in process mean from μ_0 (in control value) to μ_1
C. The probability of detecting the shift in process range from μ_0 (in control value) to μ_1
D. The probability of not detecting the shift in process range from μ_0 (in control value) to μ_1

View answer
Correct answer: (B)

The probability of not detecting the shift in process mean from μ_0 (in control value) to μ_1

91. Consider that for a process s bar (average standard deviation of 50 samples each of size 4) is found to be 10.04. The value of c4 (corresponding to sample size of .4) is .92. What is the estimated value of process standard deviation?

A. 10.91 (s bar/ c4 is an unbiased estimator of standard deviation)
B. 11.89
C. 12.67
D. 9.67

View answer
Correct answer: (A)
10.91 (s bar/ c4 is an unbiased estimator of standard deviation)

92. The basic assumption of calculating the control limits based on average sample size (for a p chart) will _____ from/as those previously observed.

A. Greatly differ
B. Will be exactly the same

C. Not greatly differ
D. None of the above

View answer
Correct answer: (C)
Not greatly differ

93. The g chart is the control chart for:

A. Average number of events
B. Total number of events
C. Mean number of events
D. None of the above

View answer
Correct answer: (B)
Total number of events

94. Attribute charts may be used when:

A. Several characteristics can be jointly measured
B. When one particular quality characteristic is of importance
C. Specific information like process mean is required
D. None of the above

View answer
Correct answer: (A)
Several characteristics can be jointly measured

95. The thickness of the blade of a fan is specified to lie between 4 cm and 6 cm. The length of the blades must lie between 10 cm and 20 cm. A fan blade randomly selected from a sample of 100 blades has a thickness of 5cm and a length of 21cm. The number of defect(s) the blade has is _____.

A. One
B. Two
C. There is no defect
D. Three

View answer
Correct answer: (A)
One

96. The probability of getting a multiple of 2 on throwing a dice once is:

A. 1/6
B. ¼
C. ½
D. 1/3

View answer
Correct answer: (A)
1/6

97. Inspection of incoming/outgoing items is an example of _____.

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

View answer
Correct answer: (B)
Appraisal Cost

98. Four basic characteristics of an optimal process are:

A. Economy, efficiency, control, quality
B. Quality, Improvement, efficiency, productivity
C. Economy, efficiency, productivity, cost
D. Economy, efficiency, productivity, quality

View answer
Correct answer: (D)
Economy, efficiency, productivity, quality

99. _____ diagram is used for identifying potential relationship between two variables.

A. Pareto
B. Ishikawa
C. Histogram
D. Scatter

View answer
Correct answer: (D)
Scatter

100. Lots for acceptance sampling should be _____ and _____.

A. Homogeneous, Large
B. Heterogeneous, Small
C. Homogeneous, Small
D. Heterogeneous, Large

View answer
Correct answer: (A)
Homogeneous, Large

101. The roof of house of quality shows the interrelationship between:

A. Functional Requirements
B. Design Attributes
C. Service Process
D. Manufacturing Process

View answer
Correct answer: (B)
Design Attributes

102. X bar charts are uses to control the _____ of a process.

A. Dispersion
B. Central tendency
C. None of the above
D. Both a and b

View answer
Correct answer: (B)
Central tendency

103. Given that for the three samples, the value of R bar is .66 and value of d2 corresponding to three is1.128, what is the estimated standard deviation?

A. .43
B. .67
C. .58
D. .75

View answer
Correct answer: (C)
.58

104. In phase 1 of control chart usage, if a point is outside the control limits and some assignable cause is found for the point, then we should:

A. Discard the point but do not recalculate control limits
B. Discard the point and recalculate the control limit
C. Do not discard the point
D. Cannot be determined

View answer
Correct answer: (B)
Discard the point and recalculate the control limit

105. Given L=3 and p=.03, estimate the sample size that can be used for construction of a p chart.

A. 534
B. 321
C. 123
D. 291 ((1-p)*L2/p gives us an estimate of sample size)

View answer
Correct answer: (D)

291 ((1-p)*L2/p gives us an estimate of sample size)

106. The chart used for tracking number non-conforming is:

A. P
B. Np
C. X bar
D. None of the above

View answer
Correct answer: (B)
Np

107. For a c chart, the OC curve plots the _____ against _____.

A. Probability of Type 2 error, true mean number of defects
B. Probability of Type 1 error, true mean number of defects
C. Probability of Type 1 error, true total number of defects
D. Probability of Type 2 error, true total number of defects

View answer
Correct answer: (A)
Probability of Type 2 error, true mean number of defects

108. Identification of customers and listening to the Voice of Customer (VoC) are a part of:

A. Quality Assurance
B. Quality Planning
C. Quality Control and Improvement
D. Quality Execution

View answer
Correct answer: (B)
Quality Planning

109. Ease of repair is associated with _____ dimension of quality.

A. Serviceability
B. Performance
C. Durability
D. Perceived Quality

View answer
Correct answer: (A)
Serviceability

110. SIPOC diagram, used for understanding the flow in a process is used in _____ stage of DMAIC.

A. Define
B. Measure
C. Analyze
D. Improve

View answer
Correct answer: (A)
Define

111. Two major components of fitness of use are Quality of Design and _____.

A. Quality of Conformance
B. Quality of Service
C. Quality of Specification
D. Quality of Manufacturing

View answer
Correct answer: (A)
Quality of Conformance

112. For new product development, the chosen methodology should be

A. DMADV
B. DMAIC
C. Structured Design Methodology
D. DMIE

View answer
Correct answer: (A)
DMADV

113. In DMAIC, redesigning of process to either remove bottlenecks or to reduce waste takes place in the _____ stage.

A. Define
B. Measure
C. Improve
D. Control

View answer
Correct answer: (C)
Improve

114. The critical path method determines the _____ path from the beginning to the end of the project.

A. Shortest
B. Quickest
C. Longest
D. Middle

View answer
Correct answer: (C)
Longest

115. The Operating characteristic curve shows the relationship between the probability of acceptance (on y axis) and _____ (on x axis).

A. Proportion defective
B. Proportion acceptable
C. Number of lots
D. Size of lot

View answer

Correct answer: (A)
Proportion defective

116. In a double sampling plan, let d1 be the number of defects in the first sample and d2 be the number of defects in the second sample. Let c2 be the acceptance number for both samples. The condition for rejection is:

A. D1+d2<c2
B. D1+d2>c2
C. D1∗d2>c2
D. D1∗d2<c2

View answer
Correct answer: (B)
D1+d2>c2

117. While random variability in a system can be removed by _____, non-random variability requires _____.

A. Operator or management action, Improvement in the system
B. Improvement in the system, operator or management action
C. Statistical Quality Control, Quality Checks
D. None of the above

View answer
Correct answer: (B)
Improvement in the system, operator or management action

118. The concept of rational sub group means that subgroups or samples be selected such that if assignable causes are present the chances for differences between subgroups will be _____.

A. minimized
B. maximized
C. neutralized
D. optimized

View answer
Correct answer: (B)
maximized

119. Q-Q plot is used to check:/p>

A. Normality of the dataset
B. Number of defects

C. Process mean
D. Process standard deviation

View answer
Correct answer: (A)
Normality of the dataset

120. The OC curve provides a measure of the _____ of the control chart.

A. Sensitivity
B. Duality

View answer
Correct answer: (A)
Sensitivity

121. Which of the following is not a type of attribute chart?

A. P chart
B. C chart
C. U char
D. X bar chart

View answer
Correct answer: (D)
X bar chart

122. The thickness of aluminum sheet is specified to be of 6±2 mm. The Upper Specification Limit and Lower Specification Limit for the sheet are:

A. 4mm, 8mm
B. 8mm, 4mm
C. 6mm, 8mm
D. 4mm, 6mm

View answer
Correct answer: (B)
8mm, 4mm

123. Failure Mode and Effects Analysis, which prioritizes different sources of error, is used in _____ stage.

A. Define
B. Measure
C. Improve

D. Analyze

View answer
Correct answer: (D)
Analyze

124. In a six sigma improvement project the least experienced individuals are:

A. Green Belt
B. Black belts
C. Red Belts
D. Master Black Belts

View answer
Correct answer: (A)
Green Belt

125. The _____ diagram starts with one item which then branches of into two or more items. This diagram is used to breakdown broad categories into finer levels of detail.

A. Affinity
B. Tree
C. Relations
D. Matrix

View answer
Correct answer: (B)
Tree

126. Lot tolerance percent defective (LTPD) is a level of lot quality specified by the _____.

A. Consumer
B. Producer
C. Supplier
D. Sampling Plan

View answer
Correct answer: (A)
Consumer

127. Machine wear and tear is _____ source of variation.

A. Random

B. Natural
C. Assignable
D. Cannot be determined

View answer
Correct answer: (C)
Assignable

128. Pattern in control charts which show the tendency to cluster around central line is termed as:

A. Stratification
B. Mixture
C. Cyclic pattern
D. Shift in process level

View answer
Correct answer: (A)
Stratification

129. When output product of several sources is fed into a common stream, the pattern of the control chart expected is:

A. Stratification
B. Trend
C. Mixture
D. Cyclic Pattern

View answer
Correct answer: (C)
Mixture

130. A fan blade is specified by length and thickness. While sampling, it was found that for one particular blade, the length was non-conforming while the thickness was as per specifications. Should the blade be considered non-conforming for construction of a p chart?

A. Yes
B. No

View answer
Correct answer: (A)
Yes

131. Consider that for a particular process, the p has shifted to .4 and the process has gone out of control. The corresponding value of beta is found to be .3356. The value of Average Run Length is:

A. 2.5
B. 1.5 ((1/1-beta) provides us with average run length)
C. 1.0
D. 2.7

View answer
Correct answer: (B)
1.5 ((1/1-beta) provides us with average run length)

132. Consider for a process in control, the value of alpha is .0015. What is the value of the average run length?

A. 666 (1/alpha gives us an estimate of average run length)
B. 555
C. 444
D. None of the above

View answer
Correct answer: (A)
666 (1/alpha gives us an estimate of average run length)

133. Identify the charts which might give an indication of process going out of control (before the process has actually changed)

A. X bar and c
B. P and c
C. R and u
D. X bar and R

View answer
Correct answer: (D)
X bar and R

134. The four phases of the Shewart cycle are:

A. Plan, Do, Scan, Implement
B. Plan , Act , Do, Control
C. Plan, Do, Act, Check
D. Implement, Design, Control, Plan

View answer

Correct answer: (C)
Plan, Do, Act, Check

135. For a process which is six sigma complaint, the percentage of products within specifications is:

A. 95.20%
B. 99.73%
C. 99.10%
D. 96.78%

View answer
Correct answer: (B)
99.73%

136. Mistake proofing of process is done in the _____ stage of DMAIC.

A. Define
B. Measure
C. Improve
D. Control

View answer
Correct answer: (C)
Improve

137. In _____ step of Quality Function Deployment, product or service requirements are collected and analysed through techniques like market research.

A. Identify Customer Attributes
B. Identify Design Attributes / Requirements
C. Conduct an Evaluation of Competing Products.
D. Evaluate Design Attributes and Develop Targets

View answer
Correct answer: (A)
Identify Customer Attributes

138. For a double sampling plan the probability of acceptance on the combined samples is calculated as:

A. Maximum of probability of acceptance of first and second sample
B. Product of probability of acceptance of first and second sample
C. Average of probability of acceptance of first and second sample
D. Sum of probability of acceptance of first and second sample

View answer
Correct answer: (D)
Sum of probability of acceptance of first and second sample

139. _____ can be defined as small subset of a lot.

A. Defect
B. Fraction Acceptable
C. Sample
D. Acceptance Number

View answer
Correct answer: (C)
Sample

140. If the value of D4 = 2.547, D3=0, then what is the UCL and LCL for the R chart?

A. UCL=1.5, LCL=.4
B. UCL= 1.2, LCL=.2
C. UCL=1.5, LCL=0
D. UCL=1.6, LCL=0

View answer
Correct answer: (D)
UCL=1.6, LCL=0

141. Process capability ratio is expressed as:

A. USL+LSL/6σ
B. USL-LSL/6σ
C. USL-LSL/3σ
D. USL-LSL/σ

View answer
Correct answer: (B)
USL-LSL/6σ

142. Which of the following is the correct combination of specifications while designing a control chart:

A. Sample size, Frequency of sampling, specification limit
B. Sample size, Frequency of sampling, Number of defects
C. Sample size, Specification limit, process standard deviation
D. Sample size, Process mean, specification limit

View answer
Correct answer: (A)
Sample size, Frequency of sampling, specification limit

143. For a c chart, the LCL comes out to be -.7. The value of LCL that should be used is:

A. -.7
B. 0
C. 1
D. None of the above

View answer
Correct answer: (B)
0

144. For a Poisson distribution:

A. The mean is greater than the variance
B. The mean is less than variance
C. The mean is equal to the variance
D. Cannot be determined

View answer
Correct answer: (C)
The mean is equal to the variance

145. Effective quality control results in:

A. Increase in customer satisfaction
B. Lower cost
C. None of the above
D. Both a and b

View answer
Correct answer: (D)
Both a and b

146. Effective quality improvement can be instrumental in:

A. Increasing productivity
B. Reducing cost
C. Both a and b
D. None of the above

View answer
Correct answer: (C)
Both a and b

147. Typically in a cause and effect diagram, the _____ is used for classification of causes in the service industry.

A. 5Ms
B. 8Ps
C. 5Ss
D. 6Ps

View answer
Correct answer: (C)
5Ss

148. Producers risk can be defined as:

A. The probability of rejecting a good lot
B. The probability of accepting a bad lot
C. The probability of accepting a good lot
D. The probability of rejecting a bad lot

View answer
Correct answer: (A)
The probability of rejecting a good lot

149. In critical path method, earliest start is the:

A. The largest Earliest Finish leading to that task
B. The smallest Earliest Finish leading to that task
C. Average of Earliest Finish leading to that task
D. Whenever the task can start

View answer
Correct answer: (A)
The largest Earliest Finish leading to that task

150. Which of the following is not a use of arrow diagram:

A. Determining the best schedule for the entire project
B. Potential Scheduling problem and solution
C. Calculate critical path of the project
D. Identifying defects in a process

View answer
Correct answer: (D)
Identifying defects in a process

151. For an ideal OC curve the probability of acceptance for lot fraction defective less than .01 is _____.

A. Equal to 1
B. Less than 1
C. Greater than 1
D. 0

View answer
Correct answer: (A)
Equal to 1

152. Factory A produces 100 pieces of wooden legs used in manufacturing tables in 1 hour. The factory in total works for 3 hours. The quality manager decided to check the quality of the output by measuring the length of the legs (in cms). He decides to collect three samples (one for each hour). The sample size for each sample is fixed at 5. The data collected is present in the following table:

	Leg 1	Leg 2	Leg 3
Sample 1	10.2	10.5	9.8
Sample 2	10.4	9.9	10.1
Sample 3	9.9	9.8	10.2

What is the mean and range of leg length in sample 1?

A. Mean=10.3;Range=.3
B. Mean=10.1;Range=.8
C. Mean=10.2;Range=.6
D. Mean=9.9;Range=.5

View answer
Correct answer: (B)
Mean=10.1;Range=.8

153. If we want to detect small process shifts using x bar chart, we should use a sample size of:

A. Less than 5
B. 5-10
C. 10-15

D. 15-25

View answer
Correct answer: (D)
15-25

154. The parameters of s^2 chart is specified using:

A. Normal Distribution
B. Geometric Distribution
C. Binomial Distribution
D. Chi-square distribution

View answer
Correct answer: (D)
Chi-square distribution

155. The focal point of all quality control should be:

A. Price focus
B. Cost Focus
C. Customer Focus
D. Manufacturing Focus

View answer
Correct answer: (C)
Customer Focus

156. Failure Mode and Effects Analysis, which prioritizes different sources of error, is used in _____ stage.

A. Define
B. Measure
C. Improve
D. Analyze

View answer
Correct answer: (D)
Analyze

157. Which of the following is the correct combination of specifications while designing a control chart?

A. Sample size, Frequency of sampling, specification limit
B. Sample size, Frequency of sampling, Number of defects

C. Sample size, Specification limit, process standard deviation
D. Sample size, Process mean, specification limit

View answer
Correct answer: (A)
Sample size, Frequency of sampling, specification limit

158. The South African government is concerned about the high incidence of HIV/AIDS in South Africa. They wish to estimate the true number of people in South Africa who are HIV positive. A random sample of 5000 people were tested and 1980 of them were HIV positive. What is the statistic?

A. The 5000 people sampled
B. All the people in South Africa
C. Impossible to calculate from the given information
D. The 1980 people sampled who were HIV positive

View answer
Correct answer: (D)
The 1980 people sampled who were HIV positive

159. The thickness of aluminum sheet is specified to be of 6±2 mm. The Upper Specification Limit and Lower Specification Limit for the sheet are:

A. 4mm, 8mm
B. 8mm, 4mm
C. 6mm, 8mm
D. 4mm, 6mm

View answer
Correct answer: (B)
8mm, 4mm

160. In case someone is interested in process standard deviation, he should construct the _____ chart.

A. X bar
B. R chart
C. S chart
D. None of these

View answer
Correct answer: (C)
S chart

161. Suppose box A contains 4 red and 5 blue coins and box B contains 6 red and 3 blue coins. A coin is chosen at random from the box A and placed in box B. Finally, a coin is chosen at random from among those now in box B. What is the probability a blue coin was transferred from box A to box B given that the coin chosen from box B is red?

A. 15/29
B. 14/29
C. 1/2
D. 7/10

View answer
Correct answer: (A)
15/29

162. The value of Var(3 - 4X) is:

A. 5120 / 9
B. 1280 / 81
C. 5120 / 81
D. 1280 / 9

View answer
Correct answer: (C)
5120 / 81

163. A multiple-choice test has 30 questions. There are 4 choices for each question. A student who has not studied for the test decides to answer all the questions randomly by guessing the answer to each question. Which of the following probability distributions can be used to calculate the student's chance of getting at least 20 questions right?

A. Exponential
B. Normal
C. Poisson
D. Binomial

View answer
Correct answer: (D)
Binomial

164. Which of the following is NOT true about the standard error of a statistic?

A. The standard error measures, roughly, the average difference between the statistic and the population parameter.

B. The standard error is the estimated standard deviation of the sampling distribution for the statistic.
C. The standard error can never be a negative number.
D. The standard error increases as the sample size(s) increases.

View answer
Correct answer: (D)
The standard error increases as the sample size(s) increases.

165. A two-tailed test is one where:

A. results in only one direction can lead to rejection of the null hypothesis
B. negative sample means lead to rejection of the null hypothesis
C. results in either of two directions can lead to rejection of the null hypothesis
D. no results lead to the rejection of the null hypothesis

View answer
Correct answer: (C)
results in either of two directions can lead to rejection of the null hypothesis

166. The chi-square test can be too sensitive if the sample is:

A. very small
B. very large
C. homogeneous
D. predictable

View answer
Correct answer: (B)
very large

167. The treatment mean square (MSTR), Mean Square Error (MSE). If the true means of the k populations are equal, then MSTR/MSE should be:

A. more than 1.00
B. a positive number close to 1.00
C. a positive number close to 0.00
D. a negative value between 0.00 and - 1.00

View answer
Correct answer: (B)
a positive number close to 1.00

168. The error deviations within the residual sum of squares (SSE) statistic measure distances:

A. within groups
B. between groups
C. between each value and the grand mean
D. none of these

View answer
Correct answer: (A)
within groups

169. In one-way ANOVA, which of the following is used within the F-ratio as a measurement of the variance of individual observations?

A. The Sum of Square of Treatments (SSTR)
B. The Treatment Mean Square (MSTR)
C. The Residual Sum of Squares (SSE)
D. The Mean Sum of Squares (MSE)

View answer
Correct answer: (C)
The Residual Sum of Squares (SSE)

170. You obtained a significant test statistic when comparing three treatments in a one-way ANOVA. In words, how would you interpret the alternative hypothesis H(a)?

A. All three treatments have different effects on the mean response.
B. Exactly two of the three treatments have the same effect on the mean response.
C. At least two treatments are different from each other in terms of their effect on the mean
D. response.
E. None of these

View answer
Correct answer: (C)
At least two treatments are different from each other in terms of their effect on the mean response.

171. Two factors are said to interact when

A. the simple main effects of one factor are not homogeneous across all levels of the other.
B. the simple main effects of one factor are homogeneous across the levels of the other.
C. there are neither main effects nor simple main effects.
D. there are no main effects.

View answer
Correct answer: (A)
the simple main effects of one factor are not homogeneous across all levels of the other.

172. How many dependent variables does a two-way ANOVA have?

A. One
B. Two
C. Three
D. Four

View answer
Correct answer: (A)
One

173. A simple experimental design with two levels of an independent variable cannot

A. detect a curvilinear relationship between variables.
B. detect a monotonic relationship.
C. reveal a positive relationship.
D. show a negative relationship outcome.

View answer
Correct answer: (A)
detect a curvilinear relationship between variables.

174. If a researcher planned to have 20 participants in each condition of a 2 x 3 independent groups factorial design, how many participants would be needed for this experiment?

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

View answer
Correct answer: (D)
120

175. What are the factors in a factorial design?

A. the independent variables
B. the dependent variables
C. the organismic variables

D. the experimental variables

View answer
Correct answer: (A)
the independent variables

176. In a factorial design, a main effect is the _____.

A. the combined effect of the independent variables on the dependent variable
B. interaction effect of the independent variables and their effect on the dependent
C. the effect of each independent variable on the dependent variable
D. interaction of the independent variables

View answer
Correct answer: (C)
the effect of each independent variable on the dependent variable

177. During experimental design, a variable is defined as:

A. Treatment
B. Factor
C. Variance
D. None of these

View answer
Correct answer: (B)
Factor

178. A researcher conducted a 2 x 2 completely repeated measures factorial design and planned 15 participants in each condition. How many participants would be required to conduct this experiment?

A. 15
B. 30
C. 45
D. 60

View answer
Correct answer: (A)
15

179. For question 09 - 15, consider the model with the two factors, each at two levels:

A. 40

B. 20
C. 10
D. 5

View answer
Correct answer: (A)
40

180. In a 3 x 3 factorial design, how many conditions are there in the experiment?

A. 2
B. 3
C. 6
D. 9

View answer
Correct answer: (D)
9

181. What is the Sum of Squares of Number of Fertilizers (B)?

A. 6.075
B. 39.48
C. 7.19
D. 3.89

View answer
Correct answer: (C)
7.19

182. What is the degree of freedom of B?

A. 1
B. 2
C. 3
D. 4

View answer
Correct answer: (B)
2

183. A serious problem can occur in multiple regression analysis if an important variable is omitted from the list of independent variables. This can lead to

A. unbiased least squares estimators.

B. biased least squares estimators.
C. a biased estimator of the variance.
D. All of these

View answer
Correct answer: (B)
biased least squares estimators.

184. What does the Adjusted R squared value tells us?

A. The Adjusted R squared value tells us if there is a positive relationship
B. The Adjusted R squared value tells us if there is a significant difference
C. The Adjusted R squared value tells us if there is a significant relationship
D. The Adjusted R squared value tells us how much of the variance in the dependent variable can be accounted for by the independent variable

View answer
Correct answer: (D)
The Adjusted R squared value tells us how much of the variance in the dependent variable can be accounted for by the independent variable

185. _____ is the set of activities that ensures the quality levels of products and services are properly maintained and that supplier and customer quality issues are properly resolved.

A. Quality Assurance
B. Quality Planning
C. Quality Control
D. Quality Management

View answer
Correct answer: (A)
Quality Assurance

186. The South African government is concerned about the high incidence of HIV/AIDS in South Africa. They wish to estimate the true number of people in South Africa who are HIV positive. A random sample of 5000 people were tested and 1980 of them were HIV positive. What is the parameter of interest?

A. The number of people in South Africa
B. The 5000 people sampled
C. The number of people in South Africa who are HIV positive
D. The 1980 people sampled who were HIV positive

View answer

Correct answer: (C)
The number of people in South Africa who are HIV positive

187. An advertising executive is studying television-viewing habits of married men and women during prime time hours. On the basis of past viewing records, the executive has determined that during prime time, husbands are watching television 40% of the time. It has also been determined that when the husband is watching television, 40% of the time the wife is also watching. When the husband is not watching television, 30% of the time the wife is watching television. Find the probability that the wife is watching television in prime time.

A. 0.36
B. 0.35
C. 0.34
D. 0.32

View answer
Correct answer: (C)
0.34

188. Student's t-test is applicable only when:

A. $n \leq 30$ and σ is known
B. $n > 30$ and σ is unknown
C. $n = 30$ and σ is known
D. All of these

View answer
Correct answer: (A)
$n \leq 30$ and σ is known

189. A result is called "statistically significant" whenever

A. The null hypothesis is true.
B. The alternative hypothesis is true.
C. The p-value is less or equal to the significance level.
D. The p-value is larger than the significance level.

View answer
Correct answer: (C)
The p-value is less or equal to the significance level.

190. The _____ sum of squares measures the variability of the observed values around their respective treatment means.

A. treatment
B. error
C. interaction
D. total

View answer
Correct answer: (B)
error

191. What must you include when reporting an ANOVA?

A. Standard deviations, Degrees of freedom, Means, F statistic, P value
B. Standard deviations, Means, F statistic, P value
C. Standard deviations, Degrees of freedom, Means, F statistic
D. Degrees of freedom, F statistic, P value

View answer
Correct answer: (A)
Standard deviations, Degrees of freedom, Means, F statistic, P value

192. As variability due to chance decreases, the value of F will

A. increase
B. stay the same
C. decrease
D. can't tell from the given information

View answer
Correct answer: (A)
increase

193. When conducting an ANOVA, the F-Value calculated from the data will always fall within what'range?

A. between negative infinity and infinity
B. between 0 and 1
C. between 0 and infinity
D. between 1 and infinity

View answer
Correct answer: (C)
between 0 and infinity

194. Two factors are said to be orthogonal when:

A. they are correlated, that is, they cannot vary independently
B. there are equal numbers of participants in all groups
C. they are uncorrelated, that is, they vary independently
D. there is a single control group, with which all the other groups can be compared

View answer
Correct answer: (C)
they are uncorrelated, that is, they vary independently

195. If we add together the sums of squares for the simple main effects of one factor at all the different levels of another factor, we shall obtain:

A. The interaction sum of squares for the complete experiment
B. The main effect sum of squares for the second factor, plus the sum of squares for its interaction with the first factor
C. The main effect sum of squares for the first factor
D. The main effect sum of squares for the first factor, plus the sum of squares for its interaction with the second factor

View answer
Correct answer: (D)
The main effect sum of squares for the first factor, plus the sum of squares for its interaction with the second factor

196. In a factorial design, a main effect is the _____.

A. the combined effect of the independent variables on the dependent variable
B. interaction effect of the independent variables and their effect on the dependent variable
C. the effect of each independent variable on the dependent variable
D. interaction of the independent variables

View answer
Correct answer: (C)
the effect of each independent variable on the dependent variable

197. You have carried out a Kruskal-Wallis test. There are significant differences between the three groups you are testing. How might you conduct your pairwise comparisons?

A. Use the Mann Whitney test
B. Use the Wilcoxon test
C. Use a t-test
D. None of the above. Post hoc analyses cannot be carried out with non parametric data

View answer
Correct answer: (A)
Use the Mann Whitney test

198. A 2 X 2 factorial

A. is essentially two designs that have been combined into a single study.
B. contains four factors.
C. does not have enough factors to show interactions.
D. is extremely difficult to interpret if interactions are found.

View answer
Correct answer: (A)
is essentially two designs that have been combined into a single study.

199. In factorial designs, the number of times a condition is noted is called:

A. Randomization
B. Factorization
C. Replication
D. None of These

View answer
Correct answer: (C)
Replication

200. A factorial design is one in _____

A. Only one independent variable is studied to determine its effect on the dependent variable
B. Only two independent variables are simultaneously studied to determine their independent and interactive effects on the dependent variables
C. Two or more independent variables are simultaneously studied to determine their independent and interactive effects on the dependent variable
D. Two dependent variables are studied to determine their interactive effects

View answer
Correct answer: (C)
Two or more independent variables are simultaneously studied to determine their independent and interactive effects on the dependent variable

201. What is the Interaction between memory and cache (MIPS)?

A. 40
B. 20

C. 10
D. 5

View answer
Correct answer: (D)
5

202. A researcher is conducting a 3 x 2 factorial experiment. In variable 1 participants are randomly assigned to one of 3 conditions. In variable 2 participants respond to both levels of the independent variable. Which of the following best describes this study?

A. it is an independent groups design
B. it is a repeated measures group design
C. it is a mixed factorial design
D. it is a simple main effect design

View answer
Correct answer: (C)
it is a mixed factorial design

203. Dr. AB is conducting a 2 x 3 factorial experiment. He is interested in the impact of college major and study method on exam performance. He found that study method effected exam performance regardless of the participants' major. Which of the following is true?

A. Dr. AB found a main effect for study method.
B. Dr. AB found a main effect for college major.
C. Dr. AB found a significant interaction between college major and study method.
D. There is not enough information provided to answer this question.

View answer
Correct answer: (A)
Dr. AB found a main effect for study method.

204. What is the value at the position of (III)?

A. 0.04
B. 0.85
C. 0.15
D. 0.033

View answer
Correct answer: (B)
0.85

205. What are residuals?

A. Residuals are the differences between the observed and expected dependent variable scores
B. Serendipitous findings
C. Extreme scores
D. Uncontrolled variables

View answer
Correct answer: (A)
Residuals are the differences between the observed and expected dependent variable scores

206. Which of the following statement is true?

A. Only factor A is significant; factor B and the two-factor interaction are not significant.
B. Only factor B is significant; factor A and the two-factor interaction are not significant.
C. Only the two-factor interaction is significant; factor A and factor B are not significant.
D. Factor A and factor B is significant; the two-factor interaction is not significant.

View answer
Correct answer: (B)
Only factor B is significant; factor A and the two-factor interaction are not significant.

207. What is the purpose of a simple linear regression?

A. To predict scores on a dependent variable from scores on a single independent variable
B. To predict scores on an independent variable from scores on a single dependent variable
C. To predict scores on an independent variable from scores on multiple dependent variables
D. To predict scores on a dependent variable from scores on multiple independent variables

View answer
Correct answer: (A)
To predict scores on a dependent variable from scores on a single independent variable

208. An unbiased dice is rolled once. The probability of getting a number greater than 4 is:

A. 1/4
B. 1/6
C. 1/2
D. 1/3

View answer
Correct answer: (D)
1/3

209. Attribute charts may be used when:

A. Several characteristics can be jointly measured
B. When one particular quality characteristic is of importance
C. Specific information like process mean is required
D. None of these

View answer
Correct answer: (A)
Several characteristics can be jointly measured

210. Two events, A and B, are said to be mutually exclusive if:

A. $P(A \mid B) = 1$
B. $P(B \mid A) = 1$
C. $P(A \cap B) = 1$
D. $P(A \cap B) = 0$

View answer
Correct answer: (D)
$P(A \cap B) = 0$

201. Assume the cholesterol levels in a certain population have mean $\mu = 200$ and standard deviation $\sigma = 24$. The cholesterol levels for a random sample of $n = 9$ individuals are measured and the sample mean x-bar is determined. What is the z-score for a sample mean $x = 180$?

A. -3.75
B. -2.50
C. -0.83
D. 2.50

View answer
Correct answer: (D)
-2.50

202. In hypothesis testing, a Type 2 error occurs when

A. The null hypothesis is not rejected when the null hypothesis is true.
B. The null hypothesis is rejected when the null hypothesis is true.
C. The null hypothesis is not rejected when the alternative hypothesis is true.
D. The null hypothesis is rejected when the alternative hypothesis is true.

View answer
Correct answer: (C)
The null hypothesis is not rejected when the alternative hypothesis is true.

203. Student's t-statistic is applicable in case of:

A. Equal number of samples
B. Unequal number of samples
C. Small samples
D. All of the above

View answer
Correct answer: (D)
All of the above

204. Which of the following assumptions must be met to use an ANOVA?

A. There is only one dependent variable
B. The data must be normally distributed
C. There is homogeneity of variance
D. All of these

View answer
Correct answer: (D)
All of these

205. Which of the following is an assumption of one-way ANOVA comparing samples from three'or more experimental treatments?

A. All the response variables within the k populations follow Normal distributions.
B. The samples associated with each population are randomly selected and are independent from all other samples.
C. The response variable within each of the k populations has equal variances.
D. All of the above.

View answer
Correct answer: (D)
All of the above.

206. When conducting a one-way ANOVA, the _____ the between-treatment variability is when compared to the within-treatment variability, the _____ the F-Value calculated from the data will tend to be.

A. smaller, larger
B. smaller, smaller
C. larger, larger
D. smaller, larger

View answer
Correct answer: (B)
smaller, smaller

207. You carried out an ANOVA on a preliminary sample of data. You then collected additional data from the same groups; the difference being that the sample sizes for each group were increased by a factor of 10, and the within-group variability has decreased substantially. Which of the following statements is NOT correct?

A. The degrees of freedom associated with the error term has increased
B. The degrees of freedom associated with the treatment term has increased
C. The Residual Sum of Squares (SSE) has decreased
D. The F-Value calculated from the data (F-Value) has changed

View answer
Correct answer: (B)
The degrees of freedom associated with the treatment term has increased

208. In the two-factor, between subjects (or two-way) ANOVA:

A. the three F tests always have the same power to reject the null hypothesis.
B. the test for an interaction always has more power than the test for a main effect.
C. the power of the F test is not necessarily increased by having larger samples.
D. the three F tests do not always have the same power to reject the null hypothesis.

View answer
Correct answer: (D)
the three F tests do not always have the same power to reject the null hypothesis.

209. A _____ effect(s) analysis examines mean differences at each level of the independent variable.

A. main
B. simple main
C. interaction

D. simple interaction

View answer
Correct answer: (B)
simple main

210. Factorial designs allow us to study both _____ effects of the independent variables on the dependent variables.

A. main and interactive
B. dependent and independent
C. symbiotic and dichotomous
D. rank order and correlation

View answer
Correct answer: (A)
main and interactive

231. A researcher conducted a 2 x 2 completely repeated measures factorial design and planned 15 participants in each condition. How many participants would be required to conduct this experiment?

A. 15
B. 30
C. 45
D. 60

View answer

232. Consider two factors A and B, each with two levels. If there is no interaction between these two factors, the difference in the response variable between the two levels of factor A would be _____ the difference between the two levels of factor B.

A. unrelated to
B. equal to
C. half
D. twice

View answer
Correct answer: (B)
equal to

233. Dr. RNS conducted a _____ factorial design to examine the effects of music and room temperature on participant's memory. Participants were randomly

assigned to study a list of nonsense words either listening or not listening to music in either a warm or cold room.

A. 1 x 2
B. 2 x 4
C. 2 x 2
D. 4 x 4

View answer
Correct answer: (B)
2 x 2

234. In factorial designs, the response produced when the treatments of one factor interact with the treatments of another in influencing the response variable is known as

A. the main effect
B. interaction
C. replication
D. none of these

View answer
Correct answer: (B)
interaction

235. What is the Variation due to Cache?

A. 84%
B. 76%
C. 19%
D. 5%

View answer
Correct answer: (C)
19%

236. A three-way interaction is said to occur when:

A. All three possible two-way interactions, plus main effects of all three factors, are present in the data
B. There are simple main effects of each factor at every level of either of the other two factors
C. The simple interactions between two factors are not homogeneous across all levels of the third factor
D. All three possible two-way interactions are present in the data

View answer
Correct answer: (C)
The simple interactions between two factors are not homogeneous across all levels of the third factor

237. What is the value at the position of (V)?

A. 0.85
B. 0.15
C. 0.97
D. 0.33

View answer
Correct answer: (D)
0.33

238. The standard error of regression is

A. the square root of the variance of the error term
B. an estimate of the square root of the variance of the error term
C. the square root of the variance of the dependent variable
D. the square root of the variance of the predictions of the dependent variable

View answer
Correct answer: (D)
the square root of the variance of the predictions of the dependent variable

239. What is the purpose of a multiple regression?

A. To predict scores on a dependent variable from scores on a single independent variable
B. To predict scores on an independent variable from scores on a single dependent variable
C. To predict scores on an independent variable from scores on multiple dependent variables
D. To predict scores on a dependent variable from scores on multiple independent variables

View answer
Correct answer: (C)
To predict scores on a dependent variable from scores on multiple independent variables

240. A _____ chart can be used to identify the most frequently occurring defect.

A. Pareto
B. Ishikawa
C. Histogram
D. Scatter

View answer
Correct answer: (A)
Pareto

231. Two events, A and B, are said to be independent if:

A. $P(A \cap B) = P(A).P(B)$
B. $P(A \cap B) = P(A) + P(B)$
C. $P(A \mid B) = P(B)$
D. $P(B \mid A) = P(A)$

View answer
Correct answer: (A)
$P(A \cap B) = P(A).P(B)$

232. The value of E[X] is:

A. 52/18
B. 28/9
C. 52/9
D. 28/18

View answer
Correct answer: (C)
52/9

233. A null hypothesis is rejected if the value of a test statistic lies in the:

A. Rejection region
B. Acceptance region
C. Both (a) and (b)
D. Neither (a) nor (b)

View answer
Correct answer: (A)
Rejection region

234. The chi-square goodness-of-fit test can be used to test for:

A. significance of sample statistics

B. difference between population means
C. normality
D. probability

View answer
Correct answer: (C)
normality

235. What do ANOVA calculate?

A. Z-scores
B. F ratios
C. Chi square
D. T-scores

View answer
Correct answer: (B)
F ratios

236. To determine whether the test statistic of ANOVA is statistically significant, it can be compared to a critical value. What two pieces of information are needed to determine the critical value?

A. Sample size, number of groups
B. Mean, sample standard deviation
C. Expected frequency, obtained frequency
D. MSTR The treatment mean square (MSTR), Mean Square Error (MSE)

View answer
Correct answer: (A)
Sample size, number of groups

237. In a study, subjects are randomly assigned to one of three groups: control, experimental A, or experimental B. After treatment, the mean scores for the three groups are compared. The appropriate statistical test for comparing these means is:

A. the correlation coefficient
B. chi square
C. the t-test
D. the analysis of variance

View answer
Correct answer: (D)
the analysis of variance

238. If the F-Value calculated from the data is 0.9, the result is statistically significant

A. Always
B. Sometimes
C. Never
D. Illogical Question

View answer
Correct answer: (C)
Never

239. Which statement is true of an experiment of factorial design?

A. Independence or orthogonality is unaffected by the sizes of the participant samples in the various treatment combinations.
B. There are always at least two control groups.
C. Control over an independent variable is achieved by orthogonal variation with respect to the other independent variables.
D. There is always a single control group.

View answer
Correct answer: (C)
Control over an independent variable is achieved by orthogonal variation with respect to the other independent variables.

240. What would the levels of the independent variables be for a two-way ANOVA investigating the effect of four different treatments for depression and gender?

A. 4 and 1
B. 2
C. 4 and 2
D. 6

View answer
Correct answer: (C)
4 and 2

241. In ANOVA, a factor is defined as the:

A. dependent variable.
B. independent variable.
C. Both (a) and (b)
D. None of these

View answer

Correct answer: (A)
independent variable.

242. A 2 X 2 factorial design

A. is called a one-way ANOVA.
B. results in a four-cell matrix.
C. cannot yield interactions.
D. must include an organismic independent variable.

View answer
Correct answer: (B)
results in a four-cell matrix.

243. The critical path method determines the _____ path from the beginning to the end of the project.

A. Shortest
B. Quickest
C. Longest
D. Middle

View answer
Correct answer: (C)
Longest

244. Two events, A and B, are said to be independent if:

A. $P(A \cap B) = P(A).P(B)$
B. $P(A \cap B) = P(A) + P(B)$
C. $P(A \mid B) = P(B)$
D. $P(B \mid A) = P(A)$

View answer
Correct answer: (A)
$P(A \cap B) = P(A).P(B)$

245. Which of the following distributions is suitable to model the length of time that elapses before the first employee passes through the security door of a company?

A. Exponential
B. Normal
C. Poisson
D. Binomial

View answer
Correct answer: (A)
Exponential

246. A null hypothesis is rejected if the value of a test statistic lies in the:

A. Rejection region
B. Acceptance region
C. Both (a) and (b)
D. Neither (a) nor (b)

View answer
Correct answer: (A)
Rejection region

247. Smaller p-values indicate more evidence in support of:

A. the null hypothesis
B. the alternative hypothesis
C. the quality of the researcher
D. further testing

View answer
Correct answer: (B)
the alternative hypothesis

248. Analysis of variance is a statistical method of comparing the _____ of several populations.

A. standard deviations
B. variances
C. means
D. proportions

View answer
Correct answer: (C)
means

249. If the Mean Square Error MSE of an ANOVA for six treatment groups is known, you can compute

A. degrees of freedom, df1
B. the standard deviation of each treatment group
C. the pooled standard deviation
D. all answers are correct

View answer
Correct answer: (C)
the pooled standard deviation

250. In a study, subjects are randomly assigned to one of three groups: control, experimental A, or experimental B. After treatment, the mean scores for the three groups are compared. The appropriate statistical test for comparing these means is:

A. the correlation coefficient
B. chi square
C. the t-test
D. the analysis of variance

View answer
Correct answer: (D)
the analysis of variance

251. If the F-Value calculated from the data is 5.0, the result is statistically significant

A. Always
B. Sometimes
C. Never
D. Illogical Question

View answer
Correct answer: (B)
Sometimes

252. Two factors are said to interact when

A. the simple main effects of one factor are not homogeneous across all levels of the other.
B. the simple main effects of one factor are homogeneous across the levels of the other.
C. there are neither main effects nor simple main effects.
D. there are no main effects.

View answer
Correct answer: (A)
the simple main effects of one factor are not homogeneous across all levels of the other.

253. Which of these characterizes a factorial design?

A. One in which there is a single independent variable.
B. One in which there is more than one independent variable
C. One in which the researcher wants to investigate the interactions between variables
D. Both B and C

View answer
Correct answer: (D)
Both B and C

254. What statistic is used to check the significance of the Kruskal-Wallis test?

A. Mean rank
B. Partial
C. t-value
D. Chi squared

View answer
Correct answer: (D)
Chi squared

255. What is the appropriate statistical test for a factorial design?

A. the Modes test
B. ANOVA
C. t-test
D. chi-square

View answer
Correct answer: (B)
ANOVA

256. Give the F test for the interaction effect of factors A and B.

A. $F = (SS_{AB}B)/MSE$
B. $F = (SS_A)/MSE + (SS_B)/MSE$
C. $F = (MS_A)/MSE + (MS_B)/MSE$
D. $F = (MS_AB)/MSE$

View answer
Correct answer: (D)

$F = (MS_AB)/MSE$

257. The Kruskal-Wallis is based upon the _____ test.

A. Pearson's r
B. Wilcoxon
C. Mann Whitney
D. Friedman

View answer
Correct answer: (C)
Mann Whitney

258. In a factorial experiments, we

A. test one factor at a time
B. cannot estimate interactions
C. test all possible combination of factor levels are tested
D. all of these

View answer
Correct answer: (C)
test all possible combination of factor levels are tested

259. What is the Variation due to Memory?

A. 84%
B. 76%
C. 19%
D. 5%

View answer
Correct answer: (B)
76%

260. In a factorial design, a(an) _____ between independent variables indicates that the effect of one independent variable is different at different levels of the other independent variable.

A. main effect
B. factorial effect
C. interaction
D. moderation

View answer
Correct answer: (C)
interaction