1. Which of the following mentioned standard Probability density functions is applicable to discrete Random Variables?

   (A) Gaussian Distribution
   (B) Poisson Distribution
   (C) Rayleigh Distribution
   (D) Exponential Distribution

2. What is the area under a conditional Cumulative density function?

   (A) 0
   (B) Infinity
   (C) 1
   (D) Changes with CDF

3. When do the conditional density functions get converted into the marginally density functions?

   (A) Only if random variables exhibit statistical dependency
   (B) Only if random variables exhibit statistical independency
   (C) Only if random variables exhibit deviation from its mean value
   (D) If random variables do not exhibit deviation from its mean value

4. What would be the probability of an event 'G' if H denotes its complement, according to the axioms of probability?

   (A) P (G) = 1 / P (H)
   (B) P (G) = 1 – P (H)
   (C) P (G) = 1 + P (H)
   (D) P (G) = P (H)

5. A variable that can assume any value between two given points is called

   (A) Continuous random variable
   (B) Discrete random variable
   (C) Irregular random variable
   (D) Uncertain random variable

6. Out of the following values, which one is not possible in probability?

   (A) $P(x) = 1$
   (B) $\sum \times P(x) = 3$
   (C) $P(x) = 0.5$
   (D) $P(x) = -0.5$

7. If $E(x) = 2$ and $E(z) = 4$, then $E(z - x) = ?$

   (A) 2
   (B) 6
   (C) 0
   (D) Insufficient data

8. In a Binomial Distribution, if 'n' is the number of trials and 'p' is the probability of success, then the mean value is given by

   (A) np
   (B) n
   (C) p
   (D) $np(1 - p)$

9. In a Binomial Distribution, if p, q and n are probability of success, failure and number of trials respectively then variance is given by

(A) np (B) npq

(C) np^2q (D) npq^2

10. For larger values of 'n', Binomial Distribution

(A) loses its discreteness (B) tends to Poisson Distribution

(C) stays as it is (D) gives oscillatory values

11. Binomial Distribution is a

(A) Continuous distribution (B) Discrete distribution

(C) Irregular distribution (D) Not a Probability distribution

12. The mean and the variance for gamma distribution are

(A) $E(x) = 1/\lambda,\ Var(x) = \alpha/\lambda^2$ (B) $E(x) = \alpha/\lambda,\ Var(x) = 1/\lambda^2$

(C) $E(x) = \alpha/\lambda,\ Var(x) = \alpha/\lambda^2$ (D) $E(x) = \alpha/\lambda,\ Var(x) = \alpha\lambda^2$

13. Sum of n independent Exponential random variables (λ) results in

(A) Uniform random variable (B) Binomial random variable

(C) Gamma random variable (D) Normal random variable

14. The shape of the Normal Curve is

(A) Bell Shaped (B) Flat

(C) Circular (D) Spiked

15. For a standard normal variate, the value of mean is?

(A) ∞ (B) 1

(C) 0 (D) not defined

16. The area under a standard normal curve is

(A) 0 (B) 1

(C) ∞ (D) not defined

17. Skewness of Normal distribution is

(A) Negative (B) Positive

(C) 0 (D) Undefined

18. In Normal distribution, the highest value of ordinate occurs at

(A) Mean (B) Variance

(C) Extremes (D) Same value occurs at all points

19. In Standard normal distribution, the value of mode is

(A) 2 (B) 1

(C) 0 (D) Not fixed

20. A mobile conversation follows a exponential distribution $f(x)=(1/3)e^{-x/3}$. What is the probability that the conversation takes more than 5 minutes?

(A) $e^{-5/3}$ (B) e^{-15}

(C) $5e^{-15}$ (D) $e^{-5}/3$

21. A random variable X has an exponential distribution with probability distribution function is given by

$f(x)=3e^{-3x}$ for $x>0=0$ otherwise

Find probability that X is not less than 2.

(A) e^{-3} (B) $e^{-6}-3$

(C) e^{-6} (D) $e^{-6}-1$

22. Consider a random variable with exponential distribution with $\lambda=1$. Compute the probability for $P(X>3)$.

(A) e^{-3} (B) e^{-1}

(C) e^{-2} (D) e^{-4}

23. Let X be a random variable with probability distribution function $f(x)=0.2$ for $|x|<1$

= 0.1 for $1<|x|<4$

= 0 otherwise

The probability $P(0.5<x<5)$ is

(A) 0.3 (B) 0.5

(C) 0.4 (D) 0.8

24. Runs scored by batsman in 5 one day matches are 50, 70, 82, 93, and 20. The standard deviation is

(A) 25.79 (B) 25.49

(C) 25.29 (D) 25.69

25. Find median and mode of the messages received on 9 consecutive days 15, 11, 9, 5, 18, 4, 15, 13, 17.

(A) 13, 6 (B) 13, 18

(C) 18, 15 (D) 15, 16

26. If E denotes the expectation the variance of a random variable X is denoted as?

(A) $(E(X))^2$ (B) $E\left(X^2\right)-(E(X))^2$

(C) $E\left(X^2\right)$ (D) $2E(X)$

27. X is a variate between 0 and 3. The value of $E\left(X^2\right)$ is

(A) 8 (B) 7

(C) 27 (D) 9

28. The random variables X and Y have variances 0.2 and 0.5 respectively. Let $Z = 5x - 2y$. The variance of Z is?

(A) 3 (B) 4

(C) 5 (D) 7

29. Rajesh receives emails that consists of 18% spam of those emails. The spam filter is 93% reliable i.e., 93% of the mails it marks as spam are actually a spam and 93% of spam mails are correctly labelled as spam. If a mail marked spam by her spam filter, determine the probability that it is really spam.

(A) 50% (B) 84%

(C) 39% (D) 63%

30. Mangoes numbered 1 through 18 are placed in a bag for delivery. Two mangoes are drawn out of the bag without replacement. Find the probability such that all the mangoes have even numbers on them?

(A) 43.7% (B) 34%

(C) 6.8% (D) 9.3%

31. If the values taken by a random variable are negative, the negative values will have

(A) Positive probability

(B) Negative Probability

(C) May have negative or positive probabilities

(D) Insufficient data

32. A random variable that assumes a finite or a countably infinite number of values is called

(A) Continuous random variable (B) Discrete random variable

(C) Irregular random variable (D) Uncertain random variable

33. A random variable that assume a infinite or a uncountably infinite number of values is called

(A) Continuous random variable (B) Discrete random variable

(C) Irregular random variable (D) Uncertain random variable

34. If $\sum P(X) = k^2 - 8$ then, the value of k is?

(A) 0 (B) 1

(C) 3 (D) Insufficient data

35. If $P(X) = 0.5$ and $x = 4$, then $E(x) = ?$

(A) 1 (B) 0.5

(C) 4 (D) 2

36. In a discrete probability distribution, the sum of all probabilities is always?

(A) 0 (B) Infinite

(C) 1 (D) Undefined

37. The covariance of two independent random variable is

(A) 1 (B) 0

(C) – 1 (D) Undefined

38. In random experiment, observations of random variable are classified as

(A) Events (B) Composition

(C) Trials (D) Functions

39. The expectation of a random variable $X(E(X))$ can be written as

(A) $\ (\ frac\{d\}\{dt\}[M_X(t)](t=0)\ \)$

(B) $\ (\ frac\{d\}\{dx\}[M_X(t)](t=0)\ \)$

(C) $\ \left(\ frac\{d\wedge 2\}\{dt^2\}[M_X(t)](t=0)\ \right)$

(D) $\ \left(\ frac\{d\wedge 2\}\{dx^2\}[M_X(t)](t=0)\ \right)$

40. What is the mean and variance for standard normal distribution?

(A) Mean is 0 and variance is 1 (B) Mean is 1 and variance is 0

(C) Mean is 0 and variance is ∞ (D) Mean is ∞ and variance is 0

41. Find the mean of tossing 8 coins.

(A) 2 (B) 4

(C) 8 (D) 1

42. The mean of hypergeometric distribution is

(A) $n*k/n-1$ (B) $n*k-1/N$

(C) $n-1*k/N$ (D) $n*k/N$

43. The Variance of hypergeometric distribution is given as

(A) $n*k*(N-k)*(N-1)/\left[N^2*(N-1)\right]$ (B) $n*k*(N-k)*(N-n)/\left[N^2*(N-k)\right]$

(C) $n*k*(N-1)*(N-n)/\left[N^2*(N-1)\right]$ (D) $n*k*(N-k)*(N-n)/\left[N^2*(N-1)\right]$

44. Find the Expectation of a Hypergeometric Distribution such that the probability that a 4-trial hypergeometric experiment results in exactly 2 successes, when the population consists of 16 items.

(A) 1/2 (B) 1/4

(C) 1/8 (D) 1/3

45. Let A and B be two events such that the occurrence of A implies occurrence of B, But not vice-versa, then the correct relation between $P(A)$ and $P(B)$ is?

(A) $P(A) < P(B)$ (B) $P(B) \geq P(A)$

(C) $P(A) = P(B)$ (D) $P(A) \geq P(B)$

46. Suppose 5 men out of 100 men and 10 women out of 250 women are colour blind, then find the total probability of colour blind people. (Assume that both men and women are in equal numbers.)

(A) 0.45 (B) 0.045

(C) 0.05 (D) 0.5

47. Let there be two newly launched phones A and B. The probability that phone A has good battery life is 0.7 and the probability that phone B has good battery life is 0.8. Then find the probability that a phone has a good battery life.

(A) 0.65 (B) 0.75

(C) 0.85 (D) 0.45

48. Find the number of rectangles and squares in an 8 by 8 chess board respectively.

(A) 296, 204 (B) 1092, 204

(C) 204, 1092 (D) 204, 1296

49. Find the number of ways of arranging the letters of the words DANGER, so that no vowel occupies odd place.

(A) 36 (B) 48

(C) 144 (D) 96

50. In a colony, there are 55 members. Every member posts a greeting card to all the members. How many greeting cards were posted by them?

(A) 990 (B) 890

(C) 2970 (D) 1980

51. Normal Distribution is applied for

(A) Continuous Random Distribution (B) Discrete Random Variable

(C) Irregular Random Variable (D) Uncertain Random Variable

52. In systematic sampling, population is 240 and selected sample size is 60 then sampling interval is

(A) 240 (B) 60

(C) 4 (D) 0.25

53. The method of selecting a desirable portion from a population which describes the characteristics of whole population is called as

(A) sampling (B) segregating

(C) dividing (D) implanting

54. If the distribution of sample and population changes then the mean of Sampling distribution must be equal to

(A) standard deviation of population (B) variance of population

(C) sample of population (D) mean of population

55. The cluster sampling, stratified sampling or systematic samplings are types of

(A) direct sampling (B) indirect sampling

(C) random sampling (D) non random sampling

56. The selected clusters in a clustering sampling are known as

(A) elementary units (B) primary units

(C) secondary units (D) proportional units

57. What does the central limit theorem state?

(A) if the sample size increases sampling distribution must approach normal distribution

(B) if the sample size decreases then the sample distribution must approach normal distribution

(C) if the sample size increases then the sampling distribution much approach an exponential distribution

(D) if the sample size decreases then the sampling distribution much approach an exponential distribution

58. The difference between the sample value expected and the estimates value of the parameter is called as?

(A) bias (B) error

(C) contradiction (D) difference

59. In which of the following types of sampling the information is carried out under the opinion of an expert?

(A) quota sampling (B) convenience sampling

(C) purposive sampling (D) judgement sampling

60. Which of the following is a subset of population?

(A) distribution (B) sample

(C) data (D) set

61. The sampling error is defined as

(A) difference between population and parameter

(B) difference between sample and parameter

(C) difference between population and sample

(D) difference between parameter and sample

62. Selection of a football team for FIFA World Cup is called as

(A) random sampling (B) systematic sampling

(C) purposive sampling (D) cluster sampling

63. $E(X) = \lambda$ is used for which distribution?

(A) Binomial distribution (B) Poisson's distribution

(C) Bernoulli's distribution (D) Laplace distribution

64. Find the arithmetic mean of the set of data: 9,11,10,10,5,15 and 10

(A) 11 (B) 1

(C) 10 (D) 13

65. Calculate the variance of the given data set: 4,7,6,3,7,3

(A) 2 (B) 4

(C) 6 (D) 8

66. The random variables of A and B have variances 0.4 and 0.6, respectively and $K = 4A - 2B$. Find the value of K

(A) 2.2 (B) 4.4

(C) 6.6 (D) 8.8

67. Variance of a constant 'x' is

(A) 0 (B) $x/2$

(C) x (D) 1

68. If A and B are two events such that $P(a) = 0.2$, $P(b) = 0.6$ and $P(A/B) = 0.2$ then the value of $P(A/\sim B)$ is

(A) 0.2 (B) 0.5

(C) 0.8 (D) 1/3

69. Suppose a person has 8 red, 5 green, 12 orange, and 15 blue balls. Test the null hypothesis that the colors of the balls occur with equal frequency. What is the Chi Square value you get?

(A) 5.6 (B) 5.68

(C) 5.86 (D) 5.8

70. If $A \subset B$ then?

(A) $P(A) > P(B)$ (B) $P(A) \geq P(B)$

(C) $P(B) = P(A)$ (D) $P(A) = P(B)$

71. If *A* is a perfect subset of *B* and $P(a < Pb)$, then $P(B - A)$ is equal to

(A) $P(a)/P(b)$ (B) $P(a)P(b)$

(C) $P(a) + P(b)$ (D) $P(b) - P(a)$

72. If 40% of boys opted for maths and 60% of girls opted for maths, then what is the probability that maths is chosen if half of the class's population is girls?

(A) 0.5 (B) 0.6

(C) 0.7 (D) 0.4

73. The probability that person *A* completes all the tasks assigned is 50% and that of person *B* is 20%. Find the probability that all the tasks are completed.

(A) 0.15 (B) 0.25

(C) 0.35 (D) 0.45

74. If $P(B/A) = p(b)$, then $P(A \cap B)$ =

(A) $p(b)$ (B) $p(a)$

(C) $p(b) \cdot p(a)$ (D) $p(a) + p(b)$

75. Two unbiased coins are tossed. What is the probability of getting at most one head?

(A) 1/2 (B) 1/3

(C) 1/6 (D) 3/4

76. If *A* and *B* are two events, then the probability of exactly one of them occurs is given by

(A) $P(A \cap B) + P(A \cap B)$ (B) $P(A) + P(B) + 2P(A)P(B)$

(C) $P(A) + P(B) - 2P(A)P(B)$ (D) $P(A) + P(B) - P(A \cap B)$

77. For two events *A* and *B*, if $P(B) = 0.5$ and $P(A \cup B) = 0.5$, then $P(A \mid B)$ = ?

(A) 0.5 (B) 0

(C) 0.25 (D) 1

78. Suppose we draw eight cards from a pack of 52 cards. What is the probability of getting less than three spades?

(A) 0.985 (B) 0.785

(C) 0.685 (D) 0.585

79. The variable that assigns a real number value to an event in a sample space is called

(A) Random variable (B) Defined variable

(C) Uncertain variable (D) Static variable

80. Consider selecting 6 cards from a pack of cards without replacement. What is the probability that 3 of the cards will be black?

(A) 0.3320 (B) 0.3240

(C) 0.4320 (D) 0.5430

81. Find the Variance of a Hypergeometric Distribution such that the probability that a 6-trial hypergeometric experiment results in exactly 4 successes, when the population consists of 10 items.

(A) 14.4 (B) 144

(C) 1.44 (D) 0.144

82. Suppose we draw 4 cards from a pack of 52 cards. What is the probability of getting exactly 3 aces?

(A) 0.9999 (B) 0.9997

(C) 0.0009 (D) 0.0007

83. If $P(x) = 0.5$ and $x = 4$, then $E(x)$ = ?

(A) 1 (B) 0.5

(C) 4 (D) 2

84. A page is selected at random from a book. The probability that the digit at units place of the page number chosen is less than 7 is

(A) 3/10 (B) 7/10

(C) 3/9 (D) 7/9

85. A survey determines that in a locality, 33% go to work by Bike, 42% go by Car, and 12% use both. The probability that a random person selected uses neither of them is?

(A) 0.29 (B) 0.37

(C) 0.61 (D) 0.75

86. The weight of persons in a state is a

(A) Continuous random variable (B) Discrete random variable

(C) Irregular random variable (D) Not a random variable

87. Previous probabilities in Bayes Theorem that are changed with help of new available information are classified as

(A) independent probabilities (B) posterior probabilities

(C) interior probabilities (D) dependent probabilities

88. A sample was formed consisting of 8 students from a total of 56 students for certain task. Find the sampling fraction of the population of students.

(A) 1/7 (B) 7

(C) 49 (D) 1/49

89. Find the value of standard error $\dot{X}$ in a sampling distribution without replacement. Given that the standard deviation of the population of 100 items is 25.

(A) 3 (B) 4

(C) 2 (D) 5

90. Find the standard error of population proportion *p* for sampling with replacement. The population proportion is 0.5 and size of sample is 4.

(A) 0.5 (B) 0.25

(C) 0.225 (D) 0.375

91. Consider a set of 18 samples from a standard normal distribution. We square each sample and sum all the squares. The number of degrees of freedom for a Chi Square distribution will be?

(A) 17 (B) 18

(C) 19 (D) 20

92. What is the mean of a Chi Square distribution with 6 degrees of freedom?

(A) 4 (B) 12

(C) 6 (D) 8

93. A bag contains 80 chocolates. This bag has 4 different colors of chocolates in it. If all four colors of chocolates were equally likely to be put in the bag, what would be the expected number of chocolates of each color?

(A) 12 (B) 11

(C) 20 (D) 9

94. Which of these distributions is used for a testing hypothesis?

(A) Normal Distribution (B) Chi-Squared Distribution

(C) Gamma Distribution (D) Poisson Distribution

95. A statement made about a population for testing purpose is called?

(A) Statistic (B) Hypothesis

(C) Level of Significance (D) Test-Statistic

96. If the assumed hypothesis is tested for rejection considering it to be true is called?

(A) Null Hypothesis (B) Statistical Hypothesis

(C) Simple Hypothesis (D) Composite Hypothesis

97. A hypothesis which defines the population distribution is called?

(A) Null Hypothesis (B) Statistical Hypothesis

(C) Simple Hypothesis (D) Composite Hypothesis

98. The rejection probability of Null Hypothesis when it is true is called as?

(A) Level of Confidence (B) Level of Significance

(C) Level of Margin (D) Level of Rejection

99. The point where the Null Hypothesis gets rejected is called as?

(A) Significant Value (B) Rejection Value

(C) Acceptance Value (D) Critical Value

100. If the Critical region is evenly distributed then the test is referred as?

(A) Two tailed (B) One tailed

(C) Three tailed (D) Zero tailed

101. Which of the following is defined as the rule or formula to test a Null Hypothesis?

(A) Test statistic (B) Population statistic

(C) Variance statistic (D) Null statistic

102. Type 1 error occurs when?

(A) We reject H_0 if it is True

(B) We reject H_0 if it is False

(C) We accept H_0 if it is True

(D) We accept H_0 if it is False

103. The probability of Type 1 error is referred as?

(A) $1-\alpha$ (B) β

(C) α (D) $1-\beta$

104. Alternative Hypothesis is also called as?

(A) Composite Hypothesis (B) Research Hypothesis

(C) Simple Hypothesis (D) Null Hypothesis

105. What is the assumption made for performing the hypothesis test with T distribution?

(A) The distribution is non-symmetric

(B) The distribution has more than one modal class

(C) The distribution has a constant variance

(D) The distribution follows a normal distribution

106. If a hypothesis is rejected at 0.6 Level of Significance then

(A) it will be rejected at any level

(B) it must be rejected at 0.5 level

(C) it may be rejected at 0.5 level

(D) it cannot be rejected at 0.5 level

107. In a two tailed test when a Null Hypothesis is rejected for a True Alternative Hypothesis then it has

(A) Type 1 error (B) Type 2 error

(C) No error (D) Many errors

108. In a hypothesis test, what does the *p* value signify?

(A) Smallest level of significance for rejection of Null Hypothesis

(B) Largest level of significance for rejection of Null Hypothesis

(C) Smallest level of significance for acceptance of Null Hypothesis

(D) Largest level of significance for acceptance of Null Hypothesis

109. The Test Statistic for a Hypothesis testing is given by the formula

(A) Sample-Population/Standard Error

(B) Sample statistic-Parameter/Standard Error

(C) Sample mean-Population mean/Population standard deviation

(D) Statistic-E(statistic)/Variance

110. The range of Level of Significance lies between

(A) $-\infty$ and 0 (B) $-\infty$ and ∞

(C) 0 and ∞ (D) 0 and 1

111. The effect of rejection of a hypothesis with decrease in sample size

(A) Decreases (B) Increases

(C) Remains constant (D) Fluctuates

112. A paired T test consists of n pairs of observations. What is the number of degrees of freedom of the test?

(A) $2n-1$ (B) $2n$

(C) $n-1$ (D) n

113. The independent values in a set of values of a test is called as?

(A) Degrees of freedom (B) Test Statistic

(C) Level of Significance (D) Level of Confidence

114. A T-test sample has 7 pairs of samples. The distribution should contain

(A) 16 degrees of freedom (B) 15 degrees of freedom

(C) 5 degrees of freedom (D) 6 degrees of freedom

115. A Null Hypothesis has Level of Significance 9%. For what values of Level of Significances it will be rejected?

(A) 0.99 (B) 0.009

(C) 0.099 (D) 0.9

116. An orderly set of data arranged in accordance with their time of occurrence is called:

(A) Harmonic Series (B) Time Series

(C) Geometric Series (D) Arithmetic Series

117. Which among the following is not a major component of Time Series?

(A) Regular Component (B) Seasonal Component

(C) Trend Component (D) Cyclical Component

118. According to ———————— "A time series consists of data arranged chronologically".

(A) Yule and Walker (B) Kenneth Arrow

(C) Croxton and Cowdon (D) Adam smith

119. This is not a method of measurement of seasonal variations.

(A) Method of Simple Average

(B) Ratio to Trend Method

(C) Method to Link Relatives

(D) Method of semi-averages

120. The graph of Time Series is

(A) Histogram (B) Pie Chart

(C) Historigram (D) All the above

121. Time-series analysis is based on the assumption that

(A) The data do not exhibit a trend

(B) Random errors are normally distributed

(C) Past patterns in the variable to be forecast will continue unchanged into the future

(D) All the above

122. Depression in business is

(A) Secular trend (B) Cyclical trend

(C) Seasonal trend (D) Irregular trend

123. A time series is unable to adjust the influences like

(A) Long- term influences

(B) Short- term influences

(C) Customs and policy changes

(D) Seasonal changes

124. If the slope of the trend line is positive, it shows

(A) Stagnation (B) Rising trend

(C) Declining trend (D) None of the above

125. Which of the following is not a non-parametric test?

(A) Krushal Wallis test (B) Chi-Square Test

(C) Mann- Whitney Test (D) F- test

126. Fisher's Index number does not satisfy

(A) Unit Test (B) Factor Reversal Test

(C) Circular Test (D) Time Reversal Test

127. In the problem solving process, which among the following is the first step?

(A) Setting Goals (B) Analysing the Problem

(C) Collection of Literature (D) Define the problem

128. In True Experimental design, there is

(A) No use of randomization

(B) Less control on external variables

(C) No control of external variables

(D) Control on external variables by randomization

129. Testing of hypothesis is the branch of

(A) Statistical Inference (B) Statistical Method

(C) Both the above (D) None of the above

130. The mean of the Standard Normal Distribution is ———————— and variance of the standard normal distribution is ————————.

(A) 0, 1 (B) 1, 0

(C) –1, 1 (D) –1, 0

131. The value of correlation co-efficient ranges between

(A) 0 and 1 (B) 1 and 100

(C) –1 and 1 (D) –1 and 0

132. The number of accidents in a particular city in particular year is

(A) Discrete Variable

(B) Continuous variable

(C) Constant

(D) Qualitative variable

133. Contingency Matrix was first used by

(A) Karl Pearson (B) Karl Marx

(C) Karl Peterson (D) Fisher

134. Every Statistic is

(A) Always an estimator (B) Not an estimator

(C) Sometimes an estimator (D) None of the above

135. The alternative hypothesis is also called as

(A) Statistical hypothesis (B) Research hypothesis

(C) Null hypothesis (D) Simple hypothesis

136. A passing student is failed by an examiner, it is an example of

(A) Type -II Error

(B) Type -I Error

(C) Both the above

(D) None of the above

137. Which among the following is not a criterion for a good estimator?

(A) Consistency (B) Efficiency

(C) Biasedness (D) Sufficiency

138. Estimator is a

(A) Process (B) Formula

(C) Final numerical value (D) None of the above

139. The method of Point Estimation is

(A) Method of Maximum Likelihood

(B) Method of moments

(C) Method of Least Square

(D) All the above

140. The mean of a distribution is 20 and the standard deviation is 5. What is the value of variance coefficient?

(A) 20 % (B) 25 %

(C) 30 % (D) 40 %

141. If the difference between mean and median is 24, then what will be the difference between mean and mode?

(A) 12 (B) 8

(C) 48 (D) 72

142. Root Mean Square of all deviations is

(A) Geometric mean (B) Arithmetic mean

(C) Standard deviation (D) Mean deviation

143. The Standard deviation of 5, 6, 4 and 2 is

(A) 2.2 (B) 2.1

(C) 1.2 (D) 1.7

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

(A) Acceptance region (B) Rejection region

(C) Both the above (D) None of the above

145. Non-parametric analogue of one-way ANOVA is

(A) Median test (B) Wilcoxon Rank Sum test

(C) Mann Whitnney U Test (D) Kruskal Wallis test

146. The expectation of the number of heads when n identical unbiased coins are tossed

(A) n (B) $n/2$

(C) $n/4$ (D) $2n$

147. In time series analysis, link relatives remove the influence of

(A) Cyclic variation (B) Trend

(C) Irregular variation (D) Seasonal variation

148. The average preferred for index numbers is

(A) Harmonic mean (B) Arithmetic mean

(C) Absolute mean (D) Geometric mean

149. Systematic sampling means

(A) Selection of *n* units situated at equal distances

(B) Selection of *n* largest units

(C) Selection of *n* continuous units

(D) Selection of *n* middle units in a sequence

150. Which of the following graph is used to locate the Median of the given data?

(A) Histogram (B) Pie Diagram

(C) Cumulative frequency curve (D) Frequency Polygon

151. A chi-Square distribution with 10 degree of freedom has a variance of value

(A) 10 (B) 20

(C) 5 (D) 40

152. Which is not a Nominal Scale?

(A) Religion (B) Post

(C) Gender (D) Temperature

153. If the Mean < Mode, the skewness is

(A) Negative (B) Positive

(C) Zero (D) None of these

154. Which among the following is correct for Parametric Test?

(A) The distribution is arbitrary

(B) Uses the median value for the central tendency

(C) Makes assumption about the population

(D) Does not require previous knowledge about the population

155. If the mean, median and mode lie in the centre of the curve, the distribution is known as

(A) Right Skewed (B) Left Skewed

(C) Chi Square (D) Normal

156. If the sample size is increased, the sampling error is

(A) Increased (B) Decreased

(C) Constance (D) None of the above

157. Among the following, which sampling is based on equal probability?

(A) Simple Random sampling (B) Systematic Sampling

(C) Probability Sampling (D) Stratified Random Sampling

158. Homogenous subsets in the sampling are called

(A) Sample Sizes (B) Strata

(C) Clusters (D) Samples

159. The measure of respective sharpness of the curve, in the frequency distribution is known as

(A) Skewness (B) Kurtosis

(C) Mode (D) None of the above

160. The functional relationship between two variables is seen in

(A) Positive Correlation (B) Negative Correlation

(C) Spurious Correlation (D) Regression

161. What does ANOVA calculate in regression line?

(A) Z - score (B) Chi - Square

(C) t - score (D) F - ratio

162. Which among the following is true for ANCOVA?

(A) It uses partial correlation principles

(B) It transforms quasi-experiment into a true experiment

(C) It has two dependent variables

(D) It controls variance at the time of structuring research design

163. When the experimental material is divided into two homogenous blocks, the preferred experimental design is

(A) Completely Randomized Design (B) Randomized Block Design

(C) Latin Square Design (D) Split Plot Design

164. The repetition of the treatment under investigation is known as

(A) Randomization (B) Local Control

(C) Multiplication (D) Replication

165. The design appropriate for Laboratory Experiments is

(A) Completely Randomized Design (B) Randomized Block Design

(C) Latin Square Design (D) Split Plot Design

166. The non-parametric test used for two independent samples is

(A) T - test (B) Z - test

(C) F - test (D) Mann Whitney U test

167. Chi- Square test for goodness of fit and independence of attributes come under

(A) Parametric tests (B) Non - parametric tests

(C) Both the above (D) None of the above

168. When there are several factors with different levels to be experimented simultaneously with the same level of precision, which design is most appropriate?

(A) CRD (B) LSD

(C) SPD (D) Factorial Scheme

169. For the comparison of two correlated samples under non-parametric alternative to paired F test is

(A) Z – test

(B) Mann – Whitney U Test

(C) Wilcoxon signed Rank Test

(D) Kruskal – Wallis H test

170. Sampling errors are present only in

(A) Population Survey (B) Census Survey

(C) Sample Survey (D) All the above

171. When the co-efficient of skewness is zero, the distribution is

(A) L shaped (B) J shaped

(C) Symmetrical (D) Asymmetrical

172. The most appropriate design when all factors are not of equal importance on experimentation

(A) Split Plot Design (B) Latin Square Design

(C) Strip Plot Design (D) Augmented Design

173. The process not needed in experimental research is

(A) Controlling (B) Observation

(C) Reference Collection (D) Manipulation and replication

174. Which of the following is common in all true experimental and quasi experimental research?

(A) Control group (B) Randomization

(C) Pre testing (D) Post testing

175. The ———————— sum of square measures the variability of the sample treatment means around the overall mean.

(A) Error (B) Treatment

(C) Interaction (D) Control

176. When ranking combined data in a Wilcoxon signed rank test, the data that receives a rank of 1 is the?

(A) Lowest value (B) Highest value

(C) Middle Value (D) Value can vary

177. The spearman rank correlation coefficient is

(A) Correlation measure based on the average of data items

(B) Correlation measure based on rank ordered data from two variables

(C) Association between two variable in which one is dependent on another

(D) All the above

178. The labelling of parts as defective or nondefective is an example of

(A) Ordinal data (B) Ration data

(C) Interval data (D) Nominal data

179. The mean of binomial distribution is

(A) nq (B) pq

(C) np (D) None of the above

180. In Binomial distribution, each trial results in ———————— possible outcomes.

(A) One (B) Two

(C) Three (D) Four

181. 100 bulbs are found to be defective in a lot of 5000 bulbs. What is the probability that at the most 3 bulbs are defective in a box of 100 bulbs?

(A) 0.2571 (B) 0.4571

(C) 0.6571 (D) 0.8571

182. The appropriate test to the Randomness of a sample is

(A) Wilcoxson Signed Rank Test

(B) Median Test

(C) Run Test

(D) Sign Test

183. Wilcoxson Signed Rank Test is

(A) Used to compare two samples

(B) Alternative to one sample t-test

(C) Used to determine whether the median is equal to standard value

(D) All the above

184. ———————— is applied to the construction of analysis-specific likelihood ratios.

(A) Wald Wolfowitz run test

(B) Wal's sequential probability ratio test

(C) Cramer Rao inequality

(D) Neymann - Pearson lemma

185. Ordinary sign test utilizes

(A) Weibull distribution (B) Gamma distribution

(C) Binomial distribution (D) Poisson distribution

186. An estimator is said to be sufficient for a parameter, if

(A) It contains all the information in the sample regarding the parameters

(B) The variance of the estimator is less

(C) The mathematical expectation of the estimator is equal to the parameter

(D) It contains parameter

187. In which of the following parametric distribution, the mean and variance does not exist

(A) Polya's distribution (B) Cauchy distribution

(C) Negative Binomial Distribution (D) Normal Distribution

188. Which provides a most powerful test of simple null hypothesis against a simple alternative hypothesis?

(A) Chapman Robbins Inequality

(B) Likelihood Ratio test

(C) Neymann Pearson lemma

(D) Factorization theorem

189. The skewness of a binomial distribution will be zero, if

(A) $P < \frac{1}{2}$ (B) $P = \frac{1}{2}$

(C) $P > \frac{1}{2}$ (D) $P < q$

190. ESS in RBD as compared to CRD using the same material is

(A) Not comparable (B) Equal

(C) Less (D) More

191. The value of power function at a parameter point is called the ———————— at that point.

(A) Power of the test
(B) Power efficiency
(C) Type II error
(D) Size of the test

192. A uniformly most powerful test among the class of unbiased test is known as

(A) Minimax test
(B) Minimax unbiased test
(C) Optimum biased test
(D) Uniformly most powerful unbiased test

193. For Binomial distribution $n = 10$ and $p = 0.6$, $E(X^2)$ is

(A) 32.6
(B) 38.4
(C) 10
(D) 6

194. A consistent estimator should have the following characteristic

(A) Asymptotically clear
(B) Asymptotically sufficient
(C) Asymptotically unbiased
(D) None of the above

195. Neyman Pearson Lemma guarantees to provide maximum power of test for

(A) Large Size of critical region
(B) Variable size of critical region
(C) Small size of critical region
(D) Fixed size of critical region

196. A loss function will be

(A) Function of statistic (B) Function of parameter

(C) Function of variance (D) Function of error

197. Bayes risk is

(A) An average Risk

(B) Maximum Risk

(C) Minimum Risk

(D) An expected Risk

198. An factorial experiment in which all factor occur at same number of levels is called

(A) Symmetrical factorial experiment

(B) Square experiment

(C) Circular experiment

(D) Square and symmetrical experiment

199. Which among the following design is not useful, when the experimental unites are heterogenous?

(A) LSD (B) RCBD

(C) GLSD (D) CRD

200. RCBD is easy to adjust for

(A) Large values (B) Very small values

(C) Outliners (D) Missing observation

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ROUGH WORK

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