AU AUCET- 1997

(1)

PART- A

1. The Reciprocal of the Standard error gives —— of the Sample.
   (a) Accuracy (b) Precision (c) Variance (d) Consistancy

2. Quastionnaire to be filled by the ——
   (a) Respondent (b) Interviewer (c) Surveyor (d) Statistical Assistant

3. —— is involved in both the Census and Sample Survey.
   (a) Standard error (b) Experimental error (c) Sampling error (d) Non-Sampling error

4. The Standard Error of an unbiased estimate of population total under SRSWOR is ——
   (a) $\sqrt{\frac{N-n}{N}} \cdot \frac{S}{\sqrt{n}}$ (b) $\sqrt{\frac{N(N-n)}{n}} \cdot S$
   (c) $\frac{N-n}{Nn} \cdot S^2$ (d) $\frac{N(N-n)}{n} \cdot S^2$

5. If the Sample size n is Small Compared with population size N, then finite population correction tends to
   (a) 0 (b) 1 (c) ∞ (d) $-\infty$

6. In SRSWOR an unbiased estimate of $Var(\bar{p})$ is ——
   (a) $\frac{N-n}{N} \cdot \frac{pq}{n-1}$ (b) $\frac{N-n}{n} \cdot \frac{pq}{N-1}$
   (c) $\frac{N-n}{Nn} \cdot pq$ (d) $\frac{N-n}{Nn} \cdot PQ$

7. With usual notation

(a) $Var(\bar{y})_{Ran} \geq Var(\bar{y})_{prop} \geq Var(\bar{y})_{opt}$

(b) $Var(\bar{y})_{Ran} \leq Var(\bar{y})_{prop} \leq Var(\bar{y})_{opt}$

(c) $Var(\bar{y})_{opt} \leq Var(\bar{y})_{Ran} \leq Var(\bar{y})_{prop}$

(d) $Var(\bar{y})_{prop} \leq Var(\bar{y})_{Ran} \leq Var(\bar{y})_{opt}$

8. Sampling Interval of defined as ——

(a) $\frac{n}{N}$ (b) $\frac{N}{n}$ (c) $1-\frac{n}{N}$ (d) $1-\frac{N}{n}$

9. With usual notation Systematic Sampling is more efficient than SRSWOR if

(a) $\rho > \frac{1}{nk-1}$ (b) $\rho < \frac{1}{nk-1}$ (c) $\rho < \frac{-1}{(nk-1)}$ (d) $\rho > -\frac{1}{(nk-1)}$

10. If the population consists of a linear trend, then

(a) $V(\bar{y})_{St} \leq V(\bar{y})_{Sy} \leq V(\bar{y})_{Ran}$

(b) $V(\bar{y})_{St} \leq V(\bar{y})_{Ran} \leq V(\bar{y})_{Sy}$

(c) $V(\bar{y})_{Sy} \leq V(\bar{y})_{St} \leq V(\bar{y})_{Ran}$

(d) $V(\bar{y})_{Sy} \leq V(\bar{y})_{Ran} \leq V(\bar{y})_{St}$

11. Analysis of Variance was due to

(a) R.A. Fisher (b) F. Yates (c) E.S. Pearson (d) Karl Pearson

12. A test for the homogeneity of Several means of populations

(a) t-test (b) χ^2-test (c) Median test (d) ANOVA Test

13. A theorem used in the Analysis of Variance is ——

(a) Fisher – Neyman Factorization theorem

(b) Neyman – Pearson lemma

(c) Cochran theorem

(d) Additive theorem on Probability

14. An absolute experiment

(a) Sampling design (b) Design of Experiment

(c) Probabilistic experiment (d) Deterministic Experiment

15. If σ^2 be the Error variance per unit and Experiment if replicated r times, then the Precision of the experimental design is ——

(a) $\frac{1}{\sigma^2}$ (b) $\frac{r}{\sigma^2}$ (c) $\frac{\sigma^2}{r}$ (d) $\frac{\sigma}{\sqrt{r}}$

16. When the Experimental material is homogeneous, an appropriate design to be used is

(a) C.R.D (b) R.B.D (c) L.S.D (d) 2^2 – Factorial Design

17. An estimate of a missing yield, in a Randomized block design with r blocks and t – treatments is

(a) $\frac{rB' + tT' - G'}{(r-1)(t-1)}$ (b) $\frac{rB' + tT' - 2G'}{(r-1)(t-1)}$

(c) $\frac{rB' + tT' - G'}{(r-1)(t-2)}$ (d) $\frac{rB' + tT' - G'}{(r+1)(t-1)}$

18. Total number of Possible Latin Square of order 3x3 is ——

(a) 6 (b) 9 (c) 3 (d) 12

- The degree of freedom for the ANOVA TABLE from L.S.D with 'm' treatments of

(a) $(m-1)^2$ (b) $(m-1)(m-2)$ (c) $(m-1)$ (d) (m^2-2)

20. A design, in which local control principle is used in two directions

(a) C.R.D (b) R.B.D (c) L.S.D (d) 2^2 - Factorial design

21. From theoretical considerations, ——— is the most appropriate average to be used in the construction of Index numbers.

(a) Arithmetic Mean (b) Median (c) Mode (d) Geometric Mean

22. Arithmetic Mean of Laspeyre's and paasche's Index numbers gives ——— Index number.

(a) Marshall - Edgeworth (b) Fisher

(c) Drobish - Bowley (d) Walsh

23. Index number which shows a downward bias is ———

(a) Laspeyre Index number (b) paasche's Index number

(c) Fisher Index number (d) Marshall - Edgeworth Index number.

24. ——— Index number formula satisfies Time Reversal Test.

(a) Laspeyre (b) Marshall - Edgeworth (c) paasche (d) Walsh

25. Circular Test is satisfied by ———

(a) Laaspeyre's Index number (b) paasche's Index number

(c) Fisher Index number (d) Kelly's Index number

If the correlation between price relatives (X), and the quality relatives (Y) is positive then

(a) Laspeyres Index < Paasches Index

(b) Laspeyres Index > Paasches Index

(c) Laspeyres Index = Paasches Index

(d) Laspeyres Index > Fisher Index

27. The cost of living index number under aggregate expenditure Method, is the same as

(a) Laspeyres Index number (b) Paasches Index number

(c) Fisher's Index number (d) Kelly's Index number

28. Graphic representation of time series data is called ___

(a) Histogram (b) ogive (c) Histogram (d) Scatter diagram

29. _____ in a time series may be generally attributed to Business cycle.

(a) Trend (b) Seasonal variations (c) Cyclic variations.

(d) Irregular component

30. _____ method is used to determine trend component of a time series

(a) Simple Averages (b) Link relatives

(c) Ratio to trend (d) Semi Averages

31. A Method of finding seasonal indices is ___

(a) Method of Semi averages (b) Method of Simple averages

(c) Method of moving averages (d) Method of least squares.

of ... the cyclic component of a time series

(a) Harmonic Analysis (b) Method of least Squares

(c) Variate difference Method (d) Link Relatives Method

33. Random component of a time series can be measured by

(a) Link Relative Method (b) Harmonic Analysis

(c) Variate difference Method (d) Ratio to trend Method.

34. _____ if known as pearson's method.

(a) Ratio to trend Method (b) Harmonic Analysis

(c) Variate difference Method (d) Link Relatives Method

35. A form of a Logistic curve, $u_t =$ ——

(a) $1 + e^{a+bt}$ (b) $\frac{k}{1+e^{a+bt}}$ (c) $k\, e^{a+bt}$

(d) $\frac{1}{k \cdot e^{a+bt}}$

36. The technique of control charts pioneered by ——

(a) Sheppard (b) Shewhart (c) Fisher (d) Scheffe

37. Process control can be achieved by ——

(a) Sampling Inspection plans (b) Average quality protection

(c) Acceptance Sampling (d) Control charts.

38. Sampling Inspection plans pioneered by ——

(a) Dodge and Romig (b) Shewhart (c) Sheppard

(d) Fisher

control chart for number of defects —

(a) p-Chart (b) np-Chart (c) c-chart (d) $\bar{x}$-Chart

40. The 3-6 ~~density~~ control limits for p-chart are —

(a) $p \pm 3\sqrt{npq}$ (b) $p \pm 3\sqrt{pq}$ (c) $p \pm 3\sqrt{\frac{pq}{n}}$

(d) $p \pm \sqrt{pq}$

41. A control chart for variable —

(a) $\bar{x}$ - Chart (b) p-chart (c) np-chart (d) c-chart

42. The 3-6 control limits for c-chart are

(a) $\lambda \pm 3\lambda$ (b) $\lambda \pm \sqrt{3\lambda}$ (c) $\lambda \pm 3\lambda^2$ (d) $\lambda \pm 3\sqrt{\lambda}$

43. With usual notations ${}_nP_x =$

(a) $\frac{l_{x+n}}{l_x}$ (b) $\frac{l_x}{l_{x+n}}$ (c) $l_x - l_{x+1}$ (d) $l_x \cdot l_{x+1}$

44. With usual notations, $e_x^0 =$ —

(a) $\frac{l_x}{T_x}$ (b) $T_x - l_x$ (c) $T_x \cdot l_x$ (d) $\frac{T_x}{l_x}$

45. Force of Mortality is defined as —

(a) $\mu_x = \frac{d}{dx} l_x$ (b) $\mu_x = \frac{d}{dx}(\log l_x)$

(c) $\mu_x = -\frac{d}{dx}(\log l_x)$ (d) $\mu_x = -\frac{d}{dx} \log l_x$

46. With usual notations, $e_x =$ —

(a) e_x^0 (b) $\frac{1}{e_x^0}$ (c) $e_x^0 - \frac{1}{2}$ (d) $e_x^0 + \frac{1}{2}$

47. When expectation is unity,

(a) N.R.R > G.R.R (b) N.R.R ≤ G.R.R

(c) N.R.R = G.R.R (d) N.R.R ≥ G.R.R

48. With the usual notations, $\mathring{e}_x$ = ——

(a) $\frac{m_x}{1+m_x}$ (b) $\frac{2m_x}{1+m_x}$ (c) $\frac{m_x}{2+m_x}$ (d) $\frac{2m_x}{2+m_x}$

49. In the usual notations e_x = ——

(a) $\left(\sum_{n=1}^{\omega} l_{x+n}\right) \Big/ l_x$ (b) $\frac{l_x}{\sum_{n=1}^{\omega} l_{x+n}}$

(c) $l_x \cdot \left(\sum_{n=1}^{\omega} l_{x+n}\right)$ (d) $l_x + \sum_{n=1}^{\omega} l_{x+n}$

50. ——— Column is called the 'PIVOTAL COLUMN' ——

(a) $\mathring{e}_x$ (b) l_x (c) T_x (d) e_x^o

PART – B

51. If (X, Y) be a two dimensional Random Variable then $F(-\infty, y)$ = ———

(a) 1 (b) ∞ (c) 0 (d) $F(x)$

52. In the regression analysis, the difference between the observed value and estimated value of a dependent variable is called

(a) Standard error (b) Sampling error

(c) Experimental error (d) Residual

53. If X follows N(0,1) and $Y = X^2$, then the correlation coefficient between X and Y is ——

(a) 1 (b) 0 (c) −1 (d) 0.5

54. Probable Error (P.E) of correlation coefficient 'r' is ——

(a) $0.6745\left(\frac{1-r^2}{\sqrt{n}}\right)$ (b) $0.6754\left(\frac{1-r^2}{n}\right)$

(c) $0.6547.\left(\frac{1-r^2}{\sqrt{n}}\right)$ (d) $0.6745.\left(\frac{1-r^2}{n}\right)$

55. The limits of r^2 are ——

(a) −1 to +1 (b) 0 to+1 (c) $-\infty$ to 0

(d) $-\infty$ to $+\infty$

56. The term 'Regression' was first used by ——

(a) Sir F. Galton (b) R.A. Fisher (c) E.S. pearson

(d) C.R. Rao

57. The two lines of Regression coincide when r = ——

(a) 0 (b) 0.5 (c) −0.5 (d) −1

58. If $b_{yx} > 1$ then

(a) $b_{xy} = 1$ (b) $b_{xy} > 1$ (c) $b_{xy} = 0$ (d) $b_{xy} < 1$

59. The correlation coefficient between observed and estimated value of y is

(a) r^2_{xy} (b) r_{xy} (c) 1 (d) 0

60. Standard error of estimate for linear regression of Y on X is ——

(a) $\sigma_y(1-r^2)$ (b) $\sigma_x\sqrt{1-r^2}$ (c) $1-r^2$ (d) $\sqrt{1-r^2}$

61. The Standard deviation of χ^2 distribution with 'n' degrees of freedom is ——

(a) $\sqrt{2n}$ (b) $2n$ (c) n (d) $\sqrt{n}$

62. The characteristic function of χ^2 distribution is ——

(a) $(1-2t)^{-n/2}$ (b) $(1-2it)^{-n/2}$ (c) $(1+2t)^{-n/2}$

(d) $(1+2t)^{-n}$

63. For a Student t-distribution $\beta_1 =$ ——

(a) 0 (b) 3 (c) 1 (d) ∞

64. For large degrees of freedom, t-distribution tends to

(a) Cauchy distribution (b) Beta distribution

(c) Standard normal distribution

(d) exponential distribution

65. If a statistic t-follows Student t-distribution, then t^2 follows ——

(a) Normal distribution (b) Cauchy distribution

(c) χ^2 distribution (d) F-distribution

66. Suppose $(x_1, x_2 \cdots x_n)$ be a random sample from a Bernoulli population with parameter θ, then unbiased estimator of θ^2 is

(a) $\frac{\Sigma x_i(\Sigma x_i - 1)}{n(n-1)}$ (b) $\frac{\Sigma x_i(\Sigma x_i - 1)}{n}$ (c) $\frac{\Sigma x_i - 1}{n(n-1)}$ (d) $\frac{\Sigma x_i^2}{n}$

... maximum estimator of θ in a uniform distribution over $[0, \theta]$ is

(a) $x_{(1)}$ (b) $x_{(n)}$ (c) $\bar{x}$ (d) $x_{(n)} - x_{(1)}$

68. An unbiased estimator of $e^{-2\lambda}$, where λ is mean parameter of Poisson distribution, is ——

(a) $(-2)^x$ (b) $e^{-\bar{x}}$ (c) $(-1)^x$ (d) $e^{-2\bar{x}}$

69. Under regularity condition $E\left[\frac{\partial \log L}{\partial \theta}\right]^2 =$ ——

(a) $E\left[\frac{\partial^2 \log L}{\partial \theta^2}\right]$ (b) $-E\left[\frac{\partial^2 \log L}{\partial \theta^2}\right]$ (c) $-\left\{E\left(\frac{\partial \log L}{\partial \theta}\right)\right\}^2$ (d) 0

70. The variance of the minimum variance unbiased estimator of σ^2 in $N(0, \sigma^2)$ is

(a) $\frac{\sigma^2}{n}$ (b) $\frac{\sigma^4}{n}$ (c) $\frac{2\sigma^2}{n}$ (d) $\frac{2\sigma^4}{n}$

71. The M.V.B estimator for σ^2 of $N(0, \sigma^2)$ is ——

(a) $\frac{\sum x_i^2}{n-1}$ (b) $\frac{\sum x_i^2}{n}$ (c) $\frac{\sum x_i^2}{n+1}$ (d) $\frac{\sum x_i^2}{n+2}$

72. Rao – Blackwell theorem provides a technique to find ——

(a) Consistent estimator (b) Sufficient estimator
(c) Unbiased estimator (d) MVUB estimator

73. The maximum likelihood estimator of σ^2 in $N(\mu, \sigma^2)$ when μ is known, is ——

(a) $\frac{\sum (x_i - \bar{x})^2}{n}$ (b) $\frac{\sum (x_i - \mu)^2}{n-1}$ (c) $\frac{\sum (x_i - \mu)^2}{n}$

(d) $\frac{\sum (x_i - \bar{x})^2}{n-1}$

74. Suppose Z of a standard normal variable. The value of Z such that $P[-Z < Z < Z] = 0.01$ is

(a) 1.96 (b) 2.58 (c) 1.645 (d) 2.33

75. Suppose moments are ——— estimators of the corresponding population moments.

(a) Consistent (b) Minimum unbiased variance

(c) Efficient (d) Sufficient

76. Probability of Type-I error is

(a) α (b) β (c) $1-\alpha$ (d) $1-\beta$

77. For the unbiased test

(a) $\beta = \alpha$ (b) $\beta > \alpha$ (c) $(1-\beta) < \alpha$ (d) $(1-\beta) \geq \alpha$

78. Probability of rejecting H_0, when it is false is called ———

(a) level of significance (b) power of the test

(c) Critical Region (d) Type-I error

79. large sample tests of significance are based on ———

(a) Normal distribution (b) χ^2- distribution

(c) t- distribution (d) F- distribution

80. Standard deviation of the sampling distribution of statistic is called

(a) Probable error (b) Coefficient of variation

(c) Standard error (d) Sampling error

81. With usual notations, for large samples, the Sample Standard error of Sample Correlation Co-efficient is

(a) $\sqrt{\frac{1-\rho^2}{n}}$ (b) $\frac{1-\rho^2}{n}$ (c) $\sqrt{\frac{1-\rho^2}{n-2}}$ (d) $\frac{1-\rho^2}{\sqrt{n}}$

82. For the large samples, $\sqrt{2\chi^2}$ follows ——

(a) $N(\sqrt{2n}, 1)$ (b) $N(\sqrt{2n-1}, 1)$

(c) $N(2n, 1)$ (d) $N(2n-1, 1)$

83. With usual notations Karl pearson's coefficient of Mean Square Contingency is given by

(a) $\sqrt{\frac{\chi^2}{\chi^2+n}}$ (b) $\sqrt{\frac{1}{\chi^2+N}}$ (c) $\sqrt{\frac{\chi^2}{1+N}}$ (d) $\sqrt{\frac{\chi^2}{N}}$

84. If $\rho = 0$, then $\frac{r}{\sqrt{1-r^2}}\cdot\sqrt{n-2}$ follows

(a) χ^2- distribution with $(n-2)$ d.f

(b) t- distribution with $(n-2)$ d.f

(c) t- distribution with $(n-1)$ d.f

(d) F- distribution with $(1, n-2)$ d.f

85. A test for the equality of two population Variances is ——

(a) Z-test (b) χ^2-test (c) t-test (d) F-test

86. A Non parametric test

(a) t-test (b) Z-test (c) F-test (d) χ^2-test

87. Suppose U denotes the number of runs in the combined ordered sample, For large samples, $E(U) =$ ——

(a) $\frac{2n_1n_2}{n_1+n_2}$ (b) $\frac{2n_1n_2}{n_1+n_2}+1$ (c) $\frac{n_1n_2}{n_1+n_2}$ (d) $\frac{n_1n_2}{n_1+n_2}+1$

88. If the frequencies are large in a (2×2) contingency table with regard to the Median test, then —— may be used for testing H_0 of the Median test.

(a) χ^2-test (b) t-test (c) F-test (d) Z-test

89. Variance of Sign test Statistic is

(a) $\frac{n}{2}$ (b) $2n$ (c) $\frac{n}{4}$ (d) $2n^2$

90. The Mean of Mann–Whitney U-test Statistic is

(a) $\frac{n_1n_2}{2}$ (b) $\frac{n_1n_2(n_1+n_2+1)}{12}$ (c) $\frac{n_1n_2}{12}$ (d) $\frac{n_1+n_2}{12}$

PART–C

91. Sum of the deviations of observations taken from arithmetic mean is

(a) 1 (b) λ_0 (c) 0 (d) $-\lambda_0$

92. Second central Moment of first 'n' natural numbers is

(a) $\frac{n+1}{2}$ (b) $\frac{n^2-1}{12}$ (c) $\frac{n(n+1)}{2}$ (d) $\frac{n(n+1)(2n+1)}{6}$

93. For any discrete distribution ——

(a) S.D < M.D from Mean (b) S.D = M.D from Mean

(c) S.D ≥ M.D from Mean (d) S.D = 0

94: Sheppard's correction for the fourth central moment is.

(a) $\mu_4 - \frac{h^2}{2}\mu_2 + \frac{7}{240}h^4$ (b) $\mu_4 + \frac{h^2}{2}\mu_2$

(c) $\mu_4 - \frac{7}{240}h^4$ (d) $\mu_4 - \frac{h^2}{2} - \frac{7}{240}h^4$

95. For any discrete distribution

(a) $\beta_2 \geq 1$ (b) $\beta_2 = 0$ (c) $\beta_2 = 3$ (d) $\beta_2 > 3$

96. For a symmetric distribution $\beta_2 =$

★ (a) 1 (b) 0 (c) 2e (d) 3

97. If β_1 and β_2 are the pearson's coefficients of Skewness and Kurtosis respectively, then

(a) $\beta_2 > \beta_1 + 1$ (b) $\beta_1 > \beta_2$ (c) $\beta_2 = \beta_1 + 1$ (d) $\beta_1 = \beta_2$

98. For two attributes A_1, A_2

(a) $(A_1, A_2) = (A_1) + (A_2) - N$ (b) $(A_1, A_2) \geq (A_1) + (A_2) - N$

(c) $(A_1, A_2) \leq (A_1) + (A_2) - N$ (d) $(A_1, A_2) = (A_1) + (A_2)$

99. For 'n' attributes, the total number of ultimate class frequencies is

(a) 3^n ★ (b) n^3 (c) n^2 (d) 2^n

100. For 3 attributes, the total number of class frequencies of all orders is

(a) 8 (b) 9 (c) 27 (d) 6

101. A criterion of independence of two attributes A, B is

(a) $\frac{(AB)}{(\alpha)} = \frac{(\alpha B)}{(A)}$ (b) $\frac{(AB)}{(B)} = \frac{(\alpha B)}{(B)}$

(c) $\frac{(AB)}{(A)} = \frac{(\alpha B)}{(\alpha)}$ (d) $\frac{(\alpha B)}{(B)} = \frac{(AB)}{(A)}$

102. The chance that a leap year selected at random will contain 53 Sundays is

(a) $\frac{53}{366}$ (b) $\frac{1}{7}$ (c) $\frac{7}{53}$ (d) $\frac{2}{7}$

103. The number of conditions for Mutual Independent of n-events is

(a) $2^n - n - 1$ (b) 2^n (c) $2^n - n + 1$ (d) $2^n + n - 1$

104. If two dice are thrown, the probability that the sum is neither 7 nor 11 is

(a) $\frac{5}{7}$ (b) $\frac{7}{9}$ (c) $\frac{3}{5}$ (d) $\frac{8}{9}$

105. A problem in Statistics is given to three Students whose chance of Solving it are $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$ respectively. The probability that the problem will be Solved is

(a) $\frac{27}{32}$ (b) $\frac{29}{32}$ (c) $\frac{27}{35}$ (d) $\frac{29}{25}$

106. $P(A \cap \bar{B}) =$ ____

(a) $P(A) + P(A \cap B)$ (b) $P(B) + P(A \cap B)$

(c) $P(A) - P(A \cap B)$ (d) $P(B) - P(A \cap B)$

107. For n events $A_1, A_2, \ldots, A_n$,

(a) $P\left(\bigcap_{i=1}^{n} A_i\right) \geq \sum_{i=1}^{n} P(A_i) - (n-1)$

(b) $P\left(\bigcap_{i=1}^{n} A_i\right) \leq \sum_{i=1}^{n} P(A_i) - (n-1)$

(c) $P\left(\bigcap_{i=1}^{n} A_i\right) \geq \sum_{i=1}^{n} P(A_i) - n$

(d) $P\left(\bigcap_{i=1}^{n} A_i\right) \leq \sum_{i=1}^{n} P(A_i) - n$

$P(\bar{A} \mid \bar{B}) =$ ——

(a) $P(\bar{A})$ (b) $P(\bar{B})$ (c) $P(A)$ (d) $P(B)$

109. If F is distribution function of the random variable X, and if $a > b$, then $P(a < X < b) =$ ——

(a) $F(a) = F(b)$ (b) $F(a)$ (c) $F(b) - F(a)$ (d) $F(b)$

110. Suppose x is random variable with p.d.f $f(x)$ such that $\int_{-L}^{M} f(x)\,dx = \frac{1}{2}$, then M is

(a) Median (b) Arithmatic Mean (c) Mode (d) Range

111. If x and y are two random variables taking real values then

(a) $[E(XY)]^2 \leq E(X^2) \cdot E(Y^2)$

(b) $[E(XY)]^2 \geq E(X^2) \cdot E(Y^2)$

(c) $[E(XY)]^2 \leq E(X) \cdot E(Y)$

(d) $[E(XY)]^2 \geq E(X) \cdot E(Y)$

112. X be a random variable with $P(X=0) = P(X=2) = p$, $P(X=1) = 1-2p$ then $E(X^2) =$ ——

(a) $1-2p$ (b) $1+2p$ (c) $2p$ (d) p^2

113. If F denotes the distribution function of a random variable X, then $\int_0^{\infty} [1-F(x)]\,dx - \int_{-\infty}^{0} F(x)\,dx$ gives

(a) $E(X)$ (b) $E(X^2)$ (c) $V(X)$ (d) $E(X^3)$

114. $E(X-k)^2$ is minimum when, —

(a) $k < E(X)$ (b) $k > E(X)$ (c) $k = E(X)$ (d) $k = E(X^2)$

115. Cheby-Chevy inequality gives $P[|X - E(X)| \geq c]$ —

(a) $\geq \frac{Var(X)}{c^2}$ (b) $\leq \frac{Var(X)}{c^2}$ (c) $\geq \frac{Var(X)}{c}$

(d) $\leq \frac{Var(X)}{c}$

116. The characteristic function of Binomial distribution is

(a) $(q+pe^t)^n$ (b) $(q-pe^t)^n$ (c) $(q-pe^{it})^n$ (d) $(q+pe^{it})^n$

117. Varience of Geometric Distribution is

(a) $\frac{q}{p}$ (b) $\frac{q}{p^2}$ (c) $\frac{q}{2p}$ (d) $\frac{p}{2q}$

118. Sum of the deviation about mean for Normal distribution is

(a) $\frac{2}{3}\sigma$ (b) $\frac{4}{5}\sigma$ (c) $\frac{3}{4}\sigma$ (d) $\frac{1}{5}\sigma$

119. Varience of a Rectangular Distribution over $[a,b]$ is

(a) $\frac{b^2-a^2}{12}$ (b) $\frac{b-a}{12}$ (c) $\frac{b+a}{12}$ (d) $\frac{(b-a)^2}{12}$

120. The Distribution function of a Random Variable x with p.d.f $f(x) = \theta e^{-\theta x}$, $x \geq 0$, $\theta > 0$ is given by

$f(x) =$

(a) $e^{-\theta x}$ (b) $1 - e^{\theta x}$ (c) $1 - e^{-\theta x}$ (d) $e^{\theta x}$

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PART-A

1. A method of collecting Statistical data is Called ——
   (a) Survey (b) Classification (c) Tabulation (d) Design of experiment
2. Investigator fills ——
   (a) Questionaire (b) Schedule (c) Sampling design (d) Statistical table
3. The number of a units in a Sample is always ——
   (a) finite (b) Infinite (c) Finite or Infinite (d) Zero
4. Error involved in editing and tabulation of data is ——
   (a) Standard error (b) Experimental error (c) Sampling error
   (d) Non Sampling error
5. Reliability of an estimate increases with ——
   (a) population size (b) Sample size (c) Standard error
   (d) number of Samples
6. The list of Sampling units is Called ——
   (a) Sample size (b) Sampling design (c) Survey
   (d) Sampling Frame
7. With usual notation Sampling fraction is defined as
   (a) $\frac{n}{N}$ (b) $\frac{N}{n}$ (c) $\frac{N-n}{N}$ (d) $\frac{n-N}{n}$
8. In a SRS (WOR), if the Sampling fraction is negligible then the estimate of Var(p) is ——
   (a) $\frac{N-n}{Nn}pq$ (b) $\frac{N-n}{n(N-1)}pq$ (c) $\frac{pq}{n}$ (d) $\frac{pq}{n-1}$

9. With Usual Notation, $V(\bar{y}_{st}) =$ ——

(a) $\frac{N-n}{n} \sum W_h S_h^2$ (b) $\left(1-\frac{n}{N}\right)\frac{\sum W_h S_h^2}{n}$

(c) $\left(1-\frac{n}{N}\right)\frac{\sum W_h^2 S_h^2}{n}$ (d) $\left(1-\frac{N}{n}\right)\frac{\sum W_h S_h^2}{N}$

10. With Usual Notation if $\rho_{wst}=0$, then —— may be same precision of the corresponding Stratified Random Sample with one unit per Stratum.

(a) Simple Random Sample with replacement

(b) Simple Random Sample without replacement

(c) Systematic Random Sample

(d) Cluster Random Sample

11. The change factor in an ANOVA model is called —

(a) General Mean effect (b) Error factor (c) Correction factor

(d) Treatment

12. Cochran theorem is used in ——

(a) Time Series Analysis (b) S.Q.C (c) ANOVA technique

(d) Vital Statistics.

13. If G denotes grand total and n denotes total number of observations in a one way classified data, then an unbiased estimate of general Mean effect in a ANOVA Model is ——

(a) $\frac{G^2}{n}$ (b) $\frac{G}{n}$ (c) $\frac{G}{n-1}$ (d) $\frac{G^2}{n-1}$

14. The degrees of freedom for Error Sum of Squares in the ANOVA table for a one way classified data with k Set classified of N observations is

(a) $k(N-1)$ (b) $N(k-1)$ (c) $nk-1$ (d) $k-1$

15. Sampling design is ——

(a) Random experiment (b) Probabilistic experiment

(c) Absolute experiment (d) Comparitive experiment

16. A group homogeneous experimental units is called ——

(a) Treatment (b) Plot (c) Replicate (d) Block

17. The efficiency of a design can be increased by

(a) Increasing the number of replications

(b) Decreasing the number of replications

(c) Increasing the number of treatments

(d) Decreasing the number of treatments

18. The efficiency of a design can be increased by exercising the principle of ——

(a) Uniformality trail (b) Randomization (c) Replication

(d) Local control

19. Missing plots do not pose any problem in ——

(a) C.R.D (b) R.B.D (c) L.S.D (d) Factorial design

20. —— is not efficient if the experimental material contains heterogeneous plots.

(a) C.R.D (b) R.B.D (c) L.S.D (d) Factorial design

21. Standard error of the difference between any two treatment means in a C.R.D with n-replications is

(a) $\frac{2\sigma}{n}$ (b) $\frac{2\sigma^2}{n}$ (c) $\frac{2\sigma}{\sqrt{n}}$ (d) $\sqrt{\frac{2\sigma^2}{n}}$

22. Local control principle is exercised in ~~normally~~ one direction in ——

(a) C.R.D (b) R.B.D (c) L.S.D (d) Graeco L.S.D

23. R.B.D is a —— design

(a) Complete block (b) Incomplete block

(c) Missing block (d) Mixed up block

24. Treatments, degrees of freedom for an R.B.D, with t treatments, r blocks and two missing plots is ——

(a) $r-1$ (b) $t-1$ (c) $(t-1)(r-1)$ (d) $(t-1)(r-1)-2$

25. The data for an L.S.D, is ——

(a) 3-way classified data with single observation

(b) 3-way classified data with multiple observation

(c) Complete 3 way classified data

(d) Incomplete 3 way classified data

26. With usual notation, an unbiased estimate of single Missing yields in a L.S.D. is ——

(a) $\frac{t(R+C+T)-G'}{(t-1)(t-2)}$ (b) $\frac{t(R+C+T)-2G'}{(t-1)^2}$

(c) $\frac{t(R+C+T)-2G'}{(t-1)(t-2)}$ (d) $\frac{t(R+C+T)-3G'}{(t-1)^2}$

27. Degrees of freedom for total sum of squares in the ANOVA of L.S.D with m treatments and single missing plot is

(a) m^2-2 (b) $(m-1)(m-2)-1$ (c) $m-2$ (d) $(m-1)(m-2)$

28. Geometric mean is frequently used in the construction of —
(a) Cost of living Index numbers (b) price Index numbers.
(c) Seasonal Indices (d) Vital Indices.

29. ——— Index number Satisfies Circular test.
(a) Laspeyre (b) paashe (c) Fisher (d) Marshall-Edgeworth

30. In the chain based method, link relatives for the current year is ———
(a) $\frac{\text{Current yearly price}}{\text{Base yearly price}}$ (b) $\frac{\text{Current yearly price}}{\text{Previous yearly price}}$
(c) $\frac{\text{Base yearly price}}{\text{Current yearly price}}$ (d) $\frac{\text{Previous yearly price}}{\text{Current yearly price}}$

31. With usual notation, the formula $P_{01} = \frac{\Sigma P_1 V_0}{\Sigma P_0 V_0} \cdot \frac{\Sigma P_1 V_1}{\Sigma P_0 V_1}$ is due to ———
(a) R.A. Fisher (b) F.M. Fisher (c) I. Fisher (d) Kelly

32. ——— Index number Satisfies both Circular and Time reversal tests.
(a) Laspeyre (b) paashe (c) Fisher (d) Marshall-Edgeworth

33. ——— may be used to measure the purchasing power of the rupee.
(a) Consumer price Index number (b) Quality Index number
(c) Fisher Index number (d) Kelly Index number

34. Family budget method is used to construct ———
(a) Consumer price Index number (b) Seasonal Index number
(c) Vital Index number (d) Quantity Index number

35. The operation of linking the two series of indices covering different periods of time is called —
(a) Base shifting (b) Chain Base method (c) Deflation
(d) Splicing

36. An operation of index number to find real wages is —
(a) Splicing (b) Deflation (c) chain base (d) Base Shifting

37. Mathematical tests for ideal index number are due to —
(a) R.A. Fisher (b) I. Fisher (c) Walsh (d) F.M. Fisher

38. If r_{xy} denotes the correlation coefficient between the Price relatives (X) and the quantity relatives (Y), such that $-1 \leq r_{xy} \leq 0$ then
(a) Laspeyre Index number < paasche Index number
(b) Laspeyre Index number = paasche Index number
(c) Laspeyre Index number > Paasche Index number
(d) Laspeyre Index number = 100

39. Histogram is the graphic representation of —
(a) Time series (b) Frequency distribution
(c) Experimented data (d) Group section data

40. Least squares method is used to measure — component of a time series.
(a) Trend (b) Seasonal (c) Cyclic (d) Random

41. Trend can be measured by using —
(a) Simple Average method (b) Semi Average method
(c) Ratio to trend Method (d) Ratio to moving average Method.

42. Residual analysis is used to determine ___ component of a time series

(a) Trend (b) Seasonal (c) cyclic (d) Random

43. Variate difference method is used to determine ___ component of a time series.

(a) Trend (b) Seasonal (c) cyclic (d) Random

44. Control chart for fraction defective is ___

(a) σ-Chart (b) p-chart (c) np-chart (d) C-Chart

45. A control chart for attributes is ___

(a) σ-Chart (b) p-chart (c) $\bar{x}$-chart (d) R-Chart

46. The construction of C$ -Chart is based on ___ distribution.

(a) Poisson (b) Binomial (c) Normal (d) Negative Binomial

47. ___ is used to collect the data for vital statistics.

(a) Sample survey (b) Questionaire (c) Schedule

(d) Registration method

48. A measure of Mortality ___

(a) Total Fertility rate (b) Specific death rate

(c) Gross reproduction Rate (d) Net Reproduction Rate

49. With usual notation q_x = ___

(a) $l_x - l_{x+1}$ (b) $\frac{l_{x+1}}{l_x}$ (c) $\frac{d_x}{l_x}$ (d) $\frac{l_x}{l_{x+1}}$

50. With usual notation $\frac{T_x}{l_x}$ = ___

(a) e^0_x (b) q_x (c) d_x (d) l_x

PART – B

51. If the joint p.d.f of two random variables X and Y is

(a) $P(x,y) = \frac{\lambda^x e^{-\lambda} p^y (1-p)^{x-y}}{}$, $y = 0, 1, 2 \cdots x$, $x = 0, 1, 2 \cdots$

then the Marginal probability distributions of X and Y are ——— and ——— distributions respectively.

(a) Binomial, Poisson (b) Poisson, Binomial

(c) Poisson, Poisson (d) Binomial, Binomial

52. For a Symmetric distribution, all central moments of odd order are ———

(a) Finite (b) Infinite (c) 0 (d) 1

53. With usual notation, if X be a non-negative random variable such that $E(X) = \int_0^\infty (1 - F(x))\, dx$ then $E(X^2) =$ ———

(a) $\int_0^\infty x^2 (1-F(x))\, dx$ (b) $\int_0^\infty 2x (1-F(x))\, dx$

(c) $\int_0^\infty x^2 (1-F(x))^2\, dx$ (d) $\int_0^\infty x (1-F(x))^2\, dx$

54. Compound growth rate can be estimated by fitting a curve of the form ———

(a) $y = a + bx$ (b) $y = a + bx + cx^2$ (c) $y = ab^x$ (d) $y = ax^b$

55. A form of a modified exponential curve is ———

(a) $y = a + b^x$ (b) $y = ae^{bx}$ (c) $y = ab^{cx}$ (d) $y = ab^{c^x}$

56. With usual notation if $\Delta(\log y_x) =$ Constant, then ——— may be fitted to the data.

(a) ~~Straight line~~ Straight line (b) Second degree Parable

(c) Power curve (d) exponential curve

57. Standard error of correlation coefficient based on 'n' pairs of observations is ——

(a) $\frac{1-r^2}{\sqrt{n}}$ (b) $\sqrt{\frac{1-r^2}{n}}$ (c) $\sqrt{\frac{1-r^2}{n-2}}$ (d) $\frac{1-r^2}{n}$

58. If P.E denotes the probable error of r such that $r < P.E$, then it implies.

(a) positive correlation (b) Negative correlation

(c) perfect correlation (d) No correlation

59. $r=0 \Rightarrow$ Two regression lines ——

(a) Coincide (b) perpendicular to each other

(c) parallel to each other (d) Do not exist

60. If two variables x and y are related as $y=a+bx$ then ——

(a) $r=0$ (b) $r^2=0$ (c) $r^3=1$ (d) $r=\pm 1$

61. With usual notation, $b_{xy}\, b_{yx} =$ ——

(a) b_{xy}^2 (b) b_{yx}^2 (c) r_{xy}^2 (d) r_{xy}

62. Regression coefficients are independence of ——

(a) Change of origin only

(b) Change of origin and scale

(c) Change of scale only

(d) correlation coefficient

63. An absolute measure of the relationship between two variables is ——

(a) Correlation coefficient (b) Coefficient of association

(c) Coefficient of variation (d) Regression coefficient

64. Correlation ratio is independent of ——

(a) Change of origin and Scale (b) Change of origin only

(c) Change of Scale only (d) Correlation coefficient

65. With usual notation, ——

(a) $\eta_{yx} = \sigma^2$ (b) $1 - \eta^2_{yx} \geq 1 - \sigma^2$

(c) $1 - \eta^2_{yx} \leq 1 - \sigma^2$ (d) $\eta_{yx} = |\sigma|$

66. If x is uniformally distributed over $(-1, 1)$ and if $y = x^2$ then x and y are ——

(a) positive correlated (b) Negative correlated

(c) perfectly correlated (d) Uncorrelated

67. Mode of χ^2-distribution with 'n' degrees of freedom is ——

(a) n (b) $2n$ (c) $n-1$ (d) $n-2$

68. The M.G.F of a χ^2-distribution with 'n' degrees of freedom is ——

(a) $(1-2t)^{n/2}$ (b) $(1-2t)^{-n/2}$ (c) $(1+2t)^{n/2}$ (d) $(1+2t)^{-n/2}$

69. For a χ^2 distribution with 'n' degrees of freedom

$\beta_2 \to$ ——, When $n \to \infty$.

(a) 0 (b) 1 (c) ∞ (d) 3

70. With usual notation, the M.G.F of a variate $\frac{\chi^2 - n}{\sqrt{2n}}$, for $n \to \infty$ is

(a) $\frac{1}{\sqrt{2\pi}} e^{-t^2/2}$ (b) $e^{-t^2/2}$ (c) $e^{t^2/2}$ (d) $\frac{1}{\sqrt{2\pi}} e^{-\frac{\chi^2}{2}}$

71. Students t-distribution with unit degrees of freedom coincides with ——

(a) Cauchy distribution (b) Normal distribution (c) F-distribution.
(d) Beta-distribution.

72. Mode of F-distribution with (n_1, n_2) degrees of freedom is

(a) $\frac{n_1(n_2-2)}{n_2(n_1+2)}$ (b) $\frac{n_2(n_1-2)}{n_1(n_2-2)}$ (c) $\frac{n_2(n_1-2)}{n_1(n_2+2)}$ (d) $\frac{n_1(n_2-2)}{n_2(n_1-2)}$

73. F-distribution is —— distribution

(a) Positively skewed (b) Negatively skewed (c) Symmetric
(d) Discrete.

74. A limiting form of F-distribution is ——

(a) t-distribution (b) χ^2-distribution (c) Binomial distribution
(d) Beta-distribution.

75. For a random sample from Cauchy distribution with p.d.f $f(x,\mu) = \frac{1}{\pi} \frac{1}{1+(x-\mu)^2}$, $-\infty < x < \infty$, the consistent estimator of population mean μ is ——

(a) Sample mean (b) Sample median (c) Sample mode
(d) Sample standard deviation

76. If t is a consistent estimator of θ, then t^2 is —— estimator of θ.

(a) Consistent (b) unbiased (c) Efficient (d) MVUB

77. with usual notation, ___ is the more efficient biased estimator than sample mean for estimating Population mean

(a) $\frac{\Sigma_i x_i}{n}$ (b) $\frac{\Sigma_i x_i}{n+1}$ (c) $\frac{\Sigma_i x_i}{n-1}$ (d) $\frac{\Sigma_i x_i}{n-2}$

78. The M.L.E of Proportion Parameter of Binomial Population with ___ $P(x,p) = {}^{n}C_x\, p^x (1-p)^{n-x}$, $x = 0,1,\ldots,n$ is ___

(a) $\frac{x}{n}$ (b) $\frac{n-x}{n}$ (c) $\frac{x(x-1)}{n(n-1)}$ (d) $\frac{x-1}{n-1}$

79. If t is an unbiased estimator of Parameter θ, then Rao-Cramer inequality states that ___

(a) $Var(t) \leq \frac{1}{I(\theta)}$ (b) $Var(t) = \frac{1}{I(\theta)}$ (c) $Var(t) \geq \frac{1}{I(\theta)}$

(d) $Var(t) > I(\theta)$

80 The Correlation Coefficient between a most efficient Estimator and any other estimator with Efficiency E is

(a) E (b) E^2 (c) $\frac{1}{E}$ (d) $\sqrt{E}$

81. Minimum Variance unbiased estimator of θ in a uniform distribution over $[0,\theta]$ based on a random sample of size n is ___

(a) $\frac{n+1}{n} x_{(n)}$ (b) $\frac{x_{(n)}}{n}$ (c) $\frac{x_{(n)}}{n+1}$ (d) $\frac{n}{n+1} x_{(n)}$

82. $(-2)^n$ is an unbiased estimator of ___ where λ is a parameter of a Poisson distribution

(a) $e^{-\lambda}$ (b) $e^{-2\lambda}$ (c) $e^{-3\lambda}$ (d) $e^{2\lambda}$

83. In the quality control terminology, Probability of Type II error is known as ___

(a) Producer's risk (b) Consumer's risk (c) Process control (d) Product control.

84. With usual notation, Probability of accepting H_0 when it is true, can be denoted by ___

(a) α (b) β (c) $1-\alpha$ (d) $1-\beta$

85. With usual notation, unbiased critical region implies ___

(a) $1-\alpha \geq \beta$ (b) $1-\alpha \leq \beta$ (c) $\alpha \leq \beta$ (d) $\beta \leq \alpha$

86. If z be a standard normal probability test statistic then $P[|z| \leq 2.58] =$ ___

(a) 0.01 (b) 0.05 (c) 0.95 (d) 0.99

87. With usual notation, Karl pearson's coefficient of mean square contingency is given by ___

(a) $\sqrt{\frac{\phi^2}{N}}$ (b) $\sqrt{\frac{\phi^2}{1+\phi^2}}$ (c) $\sqrt{\frac{\chi^2}{N}}$ (d) $\sqrt{\frac{\chi^2}{1+\chi^2}}$

88. Non-Parametric tests are based on ___

(a) unbiased estimators (b) sufficient statistics

(c) ordered statistics (d) Efficient asymptotic estimators.

89. First for randomness is ——

(a) Run test (b) Randomized test (c) median test (d) Sign test

90. A non parametric test used as an alternative to t-test is

(a) Run test (b) sign test (c) median test (d) Mann-whitney U-test

91. PART-C

91. Sheppard correction for the second central moment is ——

(a) $\mu_2 - \frac{h^2}{12}$ (b) $\mu_2 + \frac{h^2}{12}$ (c) $\mu_2 - \frac{h}{12}$ (d) $\mu_2 + \frac{h}{12}$

92. Moments are independent of ——

(a) change of origin and scale (b) change of origin

(c) chang of scale (d) unit of measurement

93. A measure of Kurtosis is ——

(a) σ (b) ρ (c) γ_1 (d) γ_2

94. with usual notation,

(a) $\gamma_1 = \frac{\mu_3}{\sigma^3}$ (b) $\gamma_1 = -\frac{\mu_3}{\sigma^3}$ (c) $\gamma_2 = \beta_2 + 3$ (d) $\gamma_2 = \frac{\mu_4}{\mu_3^2}$

95. Coefficient skewness in terms of β_1 & β_2 is ——

(a) $\frac{\sqrt{\beta_1}(\beta_2 - 3)}{2(5\beta_2 + 6\beta_1 - 9)}$ (b) $\frac{\sqrt{\beta_1}(\beta_2 + 3)}{2(5\beta_2 + 6\beta_1 + 9)}$

(c) $\frac{\sqrt{\beta_1}(\beta_2 + 3)}{2(5\beta_2 - 6\beta_1 - 9)}$ (d) $\frac{\sqrt{\beta_1}(\beta_2 - 3)}{2(5\beta_2 + 6\beta_1 - 9)}$

96. For a discrete distribution,

(a) $\beta_1 \geq \beta_2$ (b) $\beta_2 \geq \beta_1$ (c) $\beta_2 \leq 0$ (d) $\beta_2 \leq 1$

97. Quantities coefficient of skewness lies between ——

(a) 0 and 1 (b) 0 and ∞ (c) -1 and +1 (d) 0 and 3

98. For 4 attributes the number of positive class frequencies is

(a) 16 (b) 64 (c) 81 (d) 256.

99. classes of highest order are called ——

(a) ultimate classes (b) positive classes (c) negative classes (d) complementary classes

100. with usual notation,

(a) $(A\beta) = (A) + (A\beta)$ (b) $(\alpha B) = (B) + (AB)$

(c) $(\alpha) = N + (A)$ (d) $(\alpha\beta) = N - (A) - (B) + (AB)$

101. A criterian of independence of two attributes A and B is

(a) $\frac{(AB)}{(\beta)} = \frac{(A\beta)}{(B)}$ (b) $\frac{(AB)}{(\alpha)} = \frac{(\alpha B)}{(A)}$ (c) $\left(\frac{AB}{\alpha B}\right) = \left(\frac{A\beta}{\alpha\beta}\right)$

(d) $\left(\frac{AB}{\alpha\beta}\right) = \left(\frac{A\beta}{\alpha B}\right)$

102. with usual notation a relationship between yules coefficient of association and coefficient of colligation is

(a) $Q = \frac{Y}{1+Y^2}$ (b) $Q = \frac{2Y}{1+Y^2}$ (c) $Q = \frac{1}{1+Y^2}$ (d) $\frac{Y}{2+Y^2}$

103. classical definition of probability was due to ——

(a) laplace (b) VonMises (c) Kolomogoror (d) Bayes

104. The probability that a non-leap year selected at random would contain 53 Sundays is ——

(a) $\frac{1}{7}$ (b) $\frac{2}{7}$ (c) $\frac{7}{53}$ (d) $\frac{53}{365}$

105. A bag contains 3 white and 6 blue balls. The Probability that two balls randomly drawn are white and blue is

(a) $\frac{1}{4}$ (b) $\frac{1}{3}$ (c) $\frac{1}{2}$ (d) $\frac{2}{3}$

106. For any two events A and B, $P(\bar{A} \cap B) =$ ——

(a) $P(A) - P(A \cap B)$ (b) $P(B) + P(A \cap B)$ (c) $P(B) - P(A \cap B)$

(d) $P(A) + P(A \cap B)$.

107. The no. of conditions for mutual independence of four events is

(a) 11 (b) 12 (c) 15 (d) 16

108. If A and B are independent then $P(\bar{B}|A) =$

(a) $P(A)$ (b) $P(B)$ (c) $P(\bar{A})$ (d) $P(\bar{B})$

109. Posterior Probabilities can be determined by using —— on Probability.

(a) Addition theorem (b) multiplication theorem

(c) Baye's theorem (d) central limit theorem.

110. A coin tossed $(m+n)$ times. The probability of getting atleast m consecutive heads is ——

(a) $\frac{n+1}{2^{m+1}}$ (b) $\frac{n+2}{2^{m+1}}$ (c) $\frac{n}{2^m}$ (d) $\frac{n+1}{2^m}$

111. If x has P.d.f $f(x) = e^{-x}$, $x > 0$, then the variance of x is given by ——

(a) 0 (b) 1 (c) 2 (d) 3

112. With usual notation $\int_{-\infty}^{x}\int_{-\infty}^{\infty} f(x,y)\,dy\,dx$ gives

(a) Marginal distribution function of y
(b) Marginal distribution function of x
(c) Marginal P.d.f of x
(d) Marginal P.d.f of y

113. With usual notation,

(a) $E(x) \le |E(x)|$ (b) $|E(x)| = E(x)$ (c) $|E(x)| \le E|x|$
(d) $|E(x)| > E(|x|)$

114. If x be a random variable then $V(ax+b) =$ ——

(a) $a^2V(x)+b$ (b) $a^2V(x)$ (c) $aV(x)+b$ (d) $aV(x)$

115. With usual notation,

(a) $V(x) = E[V(x/y)] + V[E(x/y)]$
(b) $V(x) = E[E(x/y)] + V[V(x/y)]$
(c) $V(x) = E[V(x/y)] + V[V(x/y)]$
(d) $V(x) = E[E(x/y)] + V[E(x/y)]$

116. β_1 for the Poisson distribution with parameter λ is

(a) λ (b) $\frac{1}{\lambda}$ (c) $\sqrt{\lambda}$ (d) $\frac{1}{\sqrt{\lambda}}$

117. ——— as a limiting case of the negative Binomial distribution

(a) Binomial distribution (b) Poisson distribution

(c) Geometric distribution (d) Hyper-geometric distribution.

118. Mean deviation about mean of a rectangular distribution on $[a, b]$ is

(a) $\frac{(b-a)^2}{12}$ (b) $\frac{b+a}{2}$ (c) $\frac{b+a}{4}$ (d) $\frac{b-a}{11}$

119. If $X \sim N(\mu, \sigma^2)$ then variance of $\frac{1}{2}\left[\frac{X-\mu}{\sigma}\right]^2$ is ———

(a) 2 (b) 4 (c) $1/4$ (d) $1/2$

120. A continuous distribution whose standard deviation of square root of the mean is ———

a) Poisson distribution b) Gamma distribution

c) Beta distribution d) Exponential distribution

1999. AUCET -- 1999 All

TEST NO. 01.

Part-A

1. A Pre-testing survey is called _____ ( )
   (a) Trial (b) Pilot survey (c) Sample survey (d) Census survey

2. The number of units in a sample is _____ ( )
   (a) Always finite (b) Always infinite (c) Finite (or) Infinite
   (d) Always one.

3. Observational Error is a source of _____ ( )
   (a) Sampling Error (b) Non-sampling Error (c) Relative Error
   (d) Standard Error.

4. The possible sample of size 3 from a population of 5 units in a simple Random sampling with Replacement is _____ ( )
   (a) 60 (b) 10 (c) 125 (d) 243

5. For a perfectly homogeneous population of size N, the required sample size to get the correct results about the population is _____ ( )
   (a) N (b) 1 (c) ∞ (d) None of these.

6. With usual notation, if the sampling fraction is negligible, then an unbiased estimator of variance of $\bar{p}$ in a simple Random Sampling without negligable is _( )
   (a) $\frac{N-n}{N(n-1)} pq$ (b) $\frac{1}{n-1} pq$ (c) $\frac{1}{n} pq$ (d) $\frac{N-n}{Nn} pq$

7. Given a cost function $C = a + \Sigma c_h n_h$, the variance of $\bar{y}_{st}$ is minimum when n_h is proportional to ____ ( )

(a) $\frac{N_h S_h}{\sqrt{c_h}}$ (b) $\frac{N_h S_h^2}{c_h}$ (c) $\sqrt{N_h S_h^2}$ (d) $N_h S_h^2$

8. Gain in efficiency in stratified random sampling over simple random sampling without replacement due to proportional allocation is ____ ( )

(a) $\frac{Var(\bar{y})_{Ran} - Var(\bar{y}_{st})_{prop}}{Var(\bar{y}_{st})_{prop.}}$

(b) $\frac{Var(\bar{y}_{st})_{prop} - Var(\bar{y})_{Ran}}{Var(\bar{y})_{Ran}}$

(c) $\frac{Var(\bar{y})_{Ran} - Var(\bar{y}_{st})_{Ran}}{Var(\bar{y})_{Ran}}$

(d) $\frac{Var(\bar{y})_{Ran}}{Var(\bar{y}_{st})_{prop}}$.

9. With usual notation, in a SRS (WOR), $Var(\bar{y}_n) =$ ____ ( )

(a) $\frac{n-N}{Nn} s^2$ (b) $(1-f)\frac{s^2}{n}$ (c) $\frac{s^2}{n}$ (d) $(1-f)s^2$.

10. Finite Population correction tends to 1 if ____ ( )

(a) Population size is very large
(b) sample size is very large
(c) Population and sample sizes are very small.
(d) Population and Sample sizes are very small.

11. The fundamental Theorem of ANOVA Technique is ____ ( )
(a) Fisher- Neyman Theorem (b) Rao-Blackwell Theorem.
(c) Gauss – Markoff Theorem (d) Neyman-Pearson Theorem.

12. cochran theorem is used in _____ ( )
(a) sampling Theorem (b) Testing of hypothesis.
(c) S.Q.C. (d) ANOVA technique.

13. A Comparitive experiment ( )
(a) Design of Experiment (b) Sampling Design.
(c) Probabilistic Experiment (d) Random Experiment

14. In Design of Experiments, experimental unit is known as _____ ( )
(a) Trial (b) Treatment (c) Plot (d) yield.

15. The Precision of treatment effects in a design of Experiment can be Increased by ( )
(a) Increasing the number of Treatments
(b) Decreasing the number of Replications
(c) Increasing the number of Replications
(d) Decreasing the number of Treatments.

16. Missing plot problem does not arise in _____
(a) C.R.D (b) R.B.D (c) L.S.D (d) Factorial design

17. ~~In C.R.D~~ Local Control Principle is not used in _____
(a) C.R.D (b) R.B.D (c) L.S.D (d) Factorial design

18. In a R.B.D with 6 treatments, each replicated 3 times, then the error degrees of freedom is ——

(a) 5 (b) 2 (c) 17 (d) 10

19. With usual notation, an unbiased estimate of single missing plot in a R.B.D is ——

(a) $\frac{bB'+tT'-G'}{(b-1)(t-1)}$ (b) $\frac{bB'+tT'+G'}{(b-1)(t-1)}$

(c) $\frac{bB'-tT'-G'}{(b-1)(t-1)}$ (d) $\frac{bB'+tT'-G'}{b+t-1}$

20. In a R.B.D, the number of replications is equal to

(a) number of blocks (b) Block size (c) Number of treatments

(d) Number of plots

21. Geometric means of Laspeyre and paasche formula for Index numbers gives —— Index number

(a) Fisher (b) Kelly (c) Marshall-Edgeworth

(d) Drobisch-Bowley

22. —— Index number formula shows upward bias

(a) Laspeyre (b) paasche (c) Fisher (d) Kelly

23. A quality Index number formula

(a) $\frac{\Sigma P_1 Q_0}{\Sigma P_0 Q_0} \times 100$ (b) $\frac{\Sigma P_1 Q_1}{\Sigma P_0 Q_1} \times 100$ (c) $\frac{\Sigma P_1 Q_1}{\Sigma P_0 Q_0} \times 100$

(d) $\frac{\Sigma P_1 Q_1}{\Sigma P_1 Q_0} \times 100$

24. Value Index number formula ——

(a) $\frac{\Sigma P_0 Q_0}{\Sigma P_1 Q_1} \times 100$ (b) $\frac{\Sigma P_p Q_1}{\Sigma P_0 Q_0} \times 100$ (c) $\frac{\Sigma P_1 Q_1}{\Sigma P_1 Q_0} \times 100$

(d) $\frac{\Sigma P_0 Q_p}{\Sigma P_0 Q_0} \times 100$

25. Mathematical test for Index numbers have been suggested with reference to ——

(a) Sampling error (b) Homogeneity error

(c) Standard error (d) formula error

26. Time reversal test was proposed by ——

(a) R.A. Fisher (b) Marshall-Edgeworth (c) I. Fisher

(d) Drobish-Bowley

27. ——— Index number formula Satisfies Factor reversal test

(a) Laspeyre (b) paashe (c) Fisher (d) Marshall-Edgeworth

28. Kelly Index Number formula Satisfies ——

(a) Time reversal test (b) Factor reversal test

(c) Circular test (d) Sign test

29. ——— Index number formula does not Satisfies Unit test.

(a) Simple Aggregate (b) Laspeyre (c) paashe

(d) Weighted Aggregate

30. Histogram is the concept with reference to ——

(a) Index numbers (b) Time series (c) Vital Statistics

(d) S.Q.C

31. A growth curve for time series

(a) Lorenz curve (b) Frequency curve (c) logistic curve

(d) Frequency polygon

32 Random component of time series can be determined by

(a) Simple averages Method (b) Least square method

(c) Link relatives method (d) Variate difference method

33. Cyclic component of a time series can be measured by

(a) Variate Difference method (b) Residual Analysis

(c) Least Squares method (d) Ratio to trend method

34. Control chart for number of defectives is ——

(a) X-chart (b) R-chart (c) p-chart (d) np-chart

35. The Construction p-chart is based on —— distribution.

(a) Binomial (b) Poffion (c) Negative-Binomial

(d) Hyper geometric

36. Product Control can be achieved by ——

(a) Control Charts (b) Sampling Inspection plans

(c) 3σ-limits (d) Specification limits

37. Registration method is used to collect ——

(a) Vital Statistics data (b) Time series data

(c) Business data (d) Industrial data

38. With usual notation e_x = ——

(a) $e_x^\circ + \frac{1}{2}$ (b) $e_x^\circ - \frac{1}{2}$ (c) e_x° (d) $1 + e_x^\circ$

39. With usual notation T_x = ——

(a) $e_x^\circ l_x$ (b) $\frac{e_x^\circ}{l_x}$ (c) $\frac{l_x}{e_x^\circ}$ (d) $e_x^\circ + l_x$

40. ——— method is used to construct Abridged life table

(a) Registration (b) Kings (c) Chandrasekar (d) Sampling

PART — B

41. With usual notation $F(x, -1) =$ ———

(a) 0 (b) 1 (c) 1 (d) -1

42. If the joint p.d.f of two random variables X and Y is

$$P(x,y) = \frac{\lambda^x e^{-\lambda} p^y (1-p)^{x-y}}{y!\,(x-y)!}, \quad \begin{matrix} y = 0,1,2,\ldots x \\ x = 0,1,2,\ldots \end{matrix}$$

then the conditional distribution of Y for given X is ——— distribution

(a) Binomial (b) Poisson (c) Uniform (d) Exponential

43. If the joint p.d.f of (X,Y) is

$$f(x,y) = K e^{-(x+y)}, \quad 0 \le y \le x < \infty$$

$= 0$, elsewhere, then the conditional pdf of X given Y is

(a) e^{-y} (b) e^{-x} (c) $e^{-(x+y)}$ (d) e^{x+y}

44. Normal equations relate to ———

(a) Correlation Analysis (b) Curve fitting

(c) Normal distribution (d) Interval estimation

45. The sum of the residuals is ———

(a) Always positive (b) Always negative (c) One

(d) Zero

46. Double logarithmic paper is used to draw ——

(a) Straight line (b) parabola (c) Experimental curve

(d) power curve

47. With usual notation, if $\Delta^2 y_x$ = Constant, then —— may be fitted to the data.

(a) Straight line (b) parabola (c) experimental curve

(d) power curve

48. A form of logistic curve y_x = ——

(a) $\frac{K}{1+e^{a+bx}}$ (b) e^{a+bx} (c) ae^{bx} (d) $a+b^x$

49. Scatter diagram is used to represent ——

(a) Univariate data (b) Bivariate data

(c) Trivariate data (d) Time series data

50. —— Concept was first introduced by Sir F. Galton.

(a) Correlation (b) Regression (c) estimation

(d) Test of significance

51. If each of two variables x and y takes two values 0, 1 with positive probabilities, then ρ_{xy} = ——

(a) −1 (b) +1 (c) 0 (x, y are independent) (d) ∞

52. Correlation coefficient less than 6 times probable error implies

(a) perfect correlation (b) positive correlation

(c) Negative correlation (d) No correlation

53. In the case of repeated ranks ——— is to be added to Σd^2 in Spearman's formula for rank correlation coefficient. Where 'm' is the number times an item is repeated.

(a) $\frac{m^2-1}{12}$ (b) $\frac{m(m-1)}{12}$ (c) $\frac{m(m^2-1)}{12}$ (d) $\frac{m-1}{12}$

54. Two lines of regression become perpendicular to each other if $\sigma_1 =$ ———

(a) +1 (b) −1 (c) 0 (d) ±1

55. If the regression is linear then ———

(a) Correlation ratio < Correlation coefficient
(b) Correlation ratio > Correlation coefficient
(c) Correlation ratio = Correlation coefficient
(d) Correlation ratio = 0

56. The square of a standard normal variate is

(a) Chi-square variate (b) t-variate (c) F-variate
(d) Normal variate

57. If z follows a χ^2-distribution with n degrees of freedom then $\frac{z}{2}$ follows.

(a) Gamma distribution with parameter 'n'
(b) Gamma distribution with parameter $n/2$
(c) Chi-square distribution with $n/2$ degrees of freedom
(d) F distribution with $(\frac{n}{2}, \frac{n}{2})$ degrees of freedom

58. For large degrees of freedom χ^2-distribution tends to ——— distribution.

(a) Gamma (b) Beta (c) Normal (d) Student's-t

59. χ^2-distribution is ——— distribution

(a) Symmetric (b) Positively Skewed

(c) Negatively Skewed (d) Uniform

60. If $X \sim \chi^2_{n_1}$ and $Y \sim \chi^2_{n_2}$, are independent χ^2 variates then $\frac{X}{X+Y}$ follows

(a) $B_1\left(\frac{n_1}{2}, \frac{n_2}{2}\right)$ (b) $B_2\left(\frac{n_1}{2}, \frac{n_2}{2}\right)$

(c) $\Gamma\left(n_1/2\right)$ (d) $\Gamma\left(\frac{n_2}{2}\right)$

61. For the large sample size, Fisher's approximation gives ———

(a) $\sqrt{2\chi^2} \sim N(\sqrt{2n-1}, 1)$ (b) $\sqrt{2\chi^2} \sim N(0,1)$

(c) $\sqrt{2\chi^2} \sim N(2n-1, 1)$ (d) $\sqrt{2\chi^2} \sim N(2n, 1)$

62. Fisher – Neyman factorization theorem is used to find ——— estimator.

(a) Unbaised (b) Confidant (c) Sufficient (d) efficient

63. The correlation coefficient between a most efficient estimator and any other estimator with efficiency e is ———

(a) e (b) e^2 (c) $\sqrt{e}$ (d) $\frac{1}{e}$

64. With usual notation, Fisher's amount of information on θ is given by

(a) $E\left[\frac{\partial^2 \log L}{\partial \theta^2}\right]$ (b) $E\frac{\partial \log L}{\partial \theta}$ (c) $-E\left[\frac{\partial^2 \log L}{\partial \theta^2}\right]$

(d) $-E\left[\frac{\partial \log L}{\partial \theta}\right]$

65. The maximum likelihood estimator of σ^2 is $N(\theta, \sigma^2)$ is

(a) $\frac{\Sigma x_i}{n}$ (b) $\frac{\Sigma x_i^2}{n}$ (c) $\frac{\Sigma x_i^2}{n-1}$ (d) $\frac{\Sigma x_i^2}{n+1}$

66. In the quality control terminology, Probability of Type-I error is known as ——

(a) Process Control (b) Product Control

(c) Producer's risk (d) Consumer's risk

67. If z be a standard normal probability test statistic then $P[|z| \leq 1.96] =$ ——

(a) 0.05 (b) 0.01 (c) 0.35, 0.95 (d) 0.5

68. The numerator of χ^2 statistic with Yates correlation for a 2×2 contingency table is

(a) $N\left[(ad-bc) - \frac{N}{2}\right]^2$ (b) $N\left[|ad-bc| - \frac{N}{2}\right]$

(c) $\left[|ad-bc| - \frac{N}{2}\right]^2$ (d) $N\left[|ad-bc| - \frac{N}{2}\right]^2$

69. Mann-Whitney U test is an alternative non parametric test to ——

(a) Z-test (b) t-test (c) χ^2-test (d) F-test

70. A test for Symmetry ——

(a) Sign test (b) Runs test (c) χ^2 test

(d) Kolmogorov – Smirnov test

71.

PART – C

71. With usual notation $\mu_3' =$ ——

(a) $\mu_3 - 3\mu_2\mu_1' + \mu_1'^3$ (b) $\mu_3 + 3\mu_2\mu_1' + \mu_1'^3$

(c) $\mu_3 - 3\mu_2\mu_1' + \mu_1'^3$ (d) $\mu_3 - 3\mu_2\mu_1' - \mu_1'^3$

72. Sheppard Suggested ——— corrections to the moments to reduce ——

(a) experimental error (b) Standard error

(c) Relative error (d) Grouping error

73. Coefficient of Skewness in terms of β_1 and β_2 is

(a) $\frac{\sqrt{\beta_1}(\beta_2 - 3)}{5\beta_2 + 6\beta_1 - 9}$ (b) $\frac{\sqrt{\beta_1}(\beta_2 - 3)}{2(5\beta_2 + 6\beta_1 - 9)}$

(c) $\frac{\sqrt{\beta_1}(\beta_2 + 3)}{2(5\beta_2 + 6\beta_1 + 9)}$ (d) $\frac{\sqrt{\beta_1}(\beta_2 + 3)}{2(5\beta_2 - 6\beta_1 - 9)}$

74. The limits for the quartile coefficient of Skewness (S_k) are

(a) $-3 \le S_k \le 3$ (b) $0 \le S_k \le 1$

(c) $-1 \le S_k \le 1$ (d) $-2 \le S_k \le 2$

75. Class frequencies of the type (α, β), $(A, \beta\gamma)$, $(\alpha\beta\gamma)$ etc are called ——

(a) positive frequencies (b) Negative frequencies

(c) Contrary frequencies (d) Ultimate frequencies

76. The total number of class frequencies of all orders, for 'n' attributes is

(a) 2^n (b) n^2 (c) 3^n (d) n^3

77. With usual notation $(\alpha, \beta) =$ ——

(a) $N - (A) - B - (AB)$ (b) $2\beta . N$

(c) $AB . N$ (d) $N + (A) + (B) - (AB)$

78. A Criterion of independence of two attributes A and B is

(a) $\frac{AB}{(A)} = \frac{(\alpha\beta)}{(\alpha)}$ (b) $\frac{(AB)}{(\beta)} = \frac{(\alpha\beta)}{(\alpha)}$

(c) $\frac{(\alpha\beta)}{(\beta)} = \frac{(AB)}{(A)}$ (d) $\frac{(AB)}{(A)} = \frac{(\alpha\beta)}{(\alpha)}$

79. Statistical definition of probability was due to ——

(a) laplace (b) Von Mises (c) Bayes (d) R.A. Fisher

80. The chance that a non-leap year selected at random will contain 53 Sundays is

(a) $\frac{1}{7}$ (b) $\frac{2}{7}$ (c) $\frac{53}{365}$ (d) $\frac{7}{53}$

81. For any two events A and B

(a) $P(A \cap B) \leq P(A) \leq P(A \cup B) \leq P(A) + P(B)$

(b) $P(A) + P(B) \leq P(A \cup B) \leq P(A) \leq P(A \cap B)$

(c) $P(A \cup B) \leq P(A \cap B)$

(d) $P(A \cup B) \leq P(A) \cdot P(B)$

82. If M is the Median of Continuous random variable X then $\int_{-\infty}^{M} f(x)\,dx =$ ——

(a) 0 (b) 1/2 (c) 1 (d) −1

83. With usual notation

(a) $|E(X)| = E(X)$ (b) $|E|X|| \leq |E(X)|$

(c) $|E(X)| \leq E|X|$ (d) $|E(X)| > E|X|$

84. If $a = 0$, and b be a constant then $Var(aX+b) =$ ——

(a) b^2 (b) $Var(X)$ (c) 0 (d) b

85. For a Binomial distribution, mean is 4 and variance 3, then $n =$ ——

(a) 12 (b) 4 (c) 9 (d) 16

86. —— distribution is used to estimate the number of Fish in a lake, Size

a) Binomial b) poisson c) Geometric d) Hyper Geometric

87. For a poisson distribution with parameter λ, the second order raw moment $\mu_2' =$ ——

(a) λ b) $\lambda 2$ c) $\lambda^2+\lambda$ d) $\sqrt{\lambda}$

88. A Symmetric probability distribution ——

a) Normal distribution b) poisson distribution
c) Binomial distribution d) F- distribution

89. For a normal distribution

a) $\beta_1 = 3$ $\beta_2 = 0$ b) $\beta_1 = 0, \beta_2 = 0$ c) $\beta_1 = 0, \beta_2 = 3$ d) $\beta_1 = 3, \beta_2 = 3$

90. The Moment Generating function of a standard normal variate is ——

a) $e^{-t^2/2}$ b) $e^{t^2/2}$ c) $e^{t/2}$ d) $e^{-t/2}$

——X——

1 to 90 TEST NO. 115 - STATISTICS. HUCET - 2004 (14) 711

Time: 75 Mts Max. Marks: 90

PART - A

1. Respondent fills _____
a) Statistical table b) Bivariate Table c) Schedule d) Questionnaire

2. Non-sampling error can be observed in _____
a) Sample survey only b) Census survey only c) pilot survey d) Both a & b

3. pilot survey is a _____
a) Census survey b) Pre-testing survey c) Trial d) post-Testing survey

4. The possible number of samples of size 2 from a population of 5 units in a simple Random sampling with replacement is _____
a) 10 b) 25 c) 5 d) 2

5. With usual notation, sampling interval is _____
a) $\frac{N}{n}$ b) $\frac{n}{N}$ c) $1-\frac{N}{n}$ d) $1-\frac{n}{N}$

6. With usual notation
a) $V(\bar{y}_{ran}) \leq V(\bar{y}_{prop}) \leq V(\bar{y}_{opt})$
b) $V(\bar{y}_{prop}) \leq V(\bar{y}_{ran}) \leq V(\bar{y}_{opt})$
c) $V(\bar{y}_{opt}) \leq V(\bar{y}_{ran}) \leq V(\bar{y}_{prop})$
d) $V(\bar{y}_{opt}) \leq V(\bar{y}_{prop}) \leq V(\bar{y}_{ran})$

7. The no. of units in the sample is _____
a) Always finite b) Always infinite c) Zero d) one

8. List of sampling units is known as _____
a) Sample Design b) Questionnaire c) Sampling frame d) Schedule

9. With usual notation, $V(\bar{y})_{Ran}$: _____
a) $\left(\frac{1}{n}-\frac{1}{N}\right)S^2$ b) $\left(\frac{1}{N}-\frac{1}{n}\right)S^2$ c) $\frac{S^2}{N}$ d) $\frac{S^2}{n}$

10. With usual notation, $V(\bar{y})_{st}$: _____
a) $\left(1-\frac{n}{N}\right)\frac{\sum W_h S_h^2}{n}$ b) $\left(1-\frac{N}{n}\right)\frac{\sum W_h S_h^2}{n}$ c) $\frac{\sum W_h S_h^2}{Nn}$ d) $\left(\frac{N-n}{n}\right)\sum W_h S_h^2$

11. With usual notation, Sampling fraction is defined as _____
a) $\frac{N}{n}$ b) $\frac{n}{N}$ c) $\left(1-\frac{N}{n}\right)$ d) $\left(1-\frac{n}{N}\right)$

12. _____ Method may be used when units in the population are homogeneous
a) Simple Random Sampling b) Stratified Random Sampling
c) Systematic Sampling d) Multistage Sampling

13. As $N \to \infty$, Finite Population Correction tends to _____
a) 0 b) ∞ c) 1 d) $-\infty$.

14. Sample Survey is Known as _____
a) Complete Enumeration Survey b) partial Enumeration Survey
c) pilot Survey d) Marketing Survey

15. _____ is a mixed sampling techniare
a) SRS b) St.R.S c) Sy.R.S d) Quota Sampling

16. Analysis of variance techniare was due to _____
a) R.A. Fisher b) F. Yates c) Karl pearson d) J. Neymann

17. _____ test is basic test in analysis of variance techniare
a) χ^2 b) F c) T d) e

18. Experimental unit is known as _____
a) Yield b) Treatment c) Error d) plot

19. Local Control principle is exercised in one direction
a) C.R.D b) R.B.D c) L.S.D d) S.R.S.

20. _____ is an absolute experiment
a) Sampling Design b) Experiment design c) Marketing Design d) LSD

21. Cochrane theorem is used in
a) Estimation b) Sampling c) probability d) ANOVA

22. C.R.D is used when the experimental material contains _____ experimental units
a) Different b) Independent c) Homogenous d) Heterogeneous

23. A test for the homogeneity of means of several normal populations is—
a) ANOVA test b) t- test c) χ^2- test d) Run test

24. In an L.S.D with 7 treatments, the error degree of freedom is given by
a) 48 b) 36 c) 42 d) 30

25. If the block size equals to the number of treatments then the block is known as
a) Incomplete blocks b) Complete block c) partial block d) Heterogeneous block.

26. Factor reversal test was due to _____
a) R.A. Fisher b) Irving Fisher c) A.L. Bowley d) F. Yates

27. With usual notation, $\frac{\Sigma P_1 q_1}{\Sigma P_1 q_0} \times 100$ is _____
a) Value Index Number b) price Index Number
d) Consumer Index Number d) Quantity Index Number

28. _____ Index Number formula satisfies both Circular and Time reversal tests
a) Laspeyre b) paasche c) Marshall-Edgeworth d) Fisher

Ideal Index number

30. Index Numbers are known as ——
a) Economic Barometers b) Economic Measures c) Price Averages d) Quantity Averages

31. —— Index Number formula is used in the construction of Consumer price Index
a) Laspeyre b) paasche c) Marshall-Edgeworth d) Fisher

32. Drobish-Bowley Index number is —— of the Laspeyre and paasche Index
a) Median b) Arithmetic Mean c) Geometric Mean d) Harmonic Mean

33. —— is used to construct Consumer price Index number
a) Family Budget Method b) Matrix Method c) Variate difference Method d) Moving Averages Method

34. —— is used to frequently in the construction of index numbers
a) Arithmetic Mean b) Median c) Mode d) Geometric Mean

35. Logistic curve is a ——
a) Frearuency curve b) Growth curve c) Lorenz curve d) Kurtic Curve

36. Semi Averages method is used to Measure —— Component of time series.
a) Trend b) Seasonal c) Cyclic d) Random.

37. p. chart is a control chart for ——
a) Variables b) Attributes c) Number defects d) Standard deviation

38. poisson distribution is used in the Construction of
a) $\bar{X}$- chart b) p- chart c) R- chart d) c- chart

39. With usual notation, $\frac{l_{x+1}}{l_x}$ = ——
a) d_x b) P_x c) T_x d) e_x

40. With usual notation, ${}_nP_x$ = ——
a) $l_x - l_{x+1}$ b) $l_x \cdot l_{x+1}$ c) $\frac{l_{x+n}}{l_x}$ d) $\frac{l_x}{l_{x+3}}$

PART - B

41. The fitting of curve $y = ab^x$ is useful to estimate ——
a) Linear Growth rate b) Compound Growth rate c) Constant Growth rate
d) Decreasing Growth rate

42. Two uncorrelated variables are ——
a) Necessarily Independent b) Correlated
c) Negatively Correlated d) Not necessarily Independent

43. —— was proposed by Legender
a) principle of least squares b) principles of Integration
c) principles of Experimentation d) principles of Algebra

44. Normal equations are used in ——
a) Correlation b) Estimation c) Testing of Hypothesis d) Curve fitting

45. Scatter diagram refers to ——

a) Correlation b) Estimation c) ANOVA d) Real Analysis

46. The Geometric Mean of two regression ~~lines~~ coefficients gives ——

a) 0 b) 1 c) r d) α

47. With usual notation if b_{xy} is negative then b_{yx} is ——

a) positive b) Negative c) zero d) one

48. In $Y = \alpha + \beta x$, β is —— parameter

a) Intercept b) Independent c) Dependent d) Slope.

49. If $r = 0$ then an angle between two lines of regression is ——

a) 0° b) 90° c) 180° d) 60°

50. The limits of r^2 are ——

a) -1 to $+1$ b) 0 to 1 c) 0 to ∞ d) $-\infty$ to ∞

51. The Concept of —— was first used by Galton

a) Correlation b) Regression c) Testing of Hypotheses d) Regression

52. With usual notation

a) $1 \geq \eta_{xy}^2 \geq r^2$ b) $1 \geq r^2 \geq \eta_{xy}$ c) $0 \geq r^2 \geq \eta_{xy}^2$ d) $\eta_{xy}^2 \geq r^2 \geq 1$

53. With usual notation, $F(-\infty, y)$: ——

a) $F(y)$ b) 0 c) 1 d) ∞

54. For —— distribution, Central moments coincide with Moments about origin.

a) t b) χ^2 c) F d) Normal

55. $(1 - 2it)^{-n/2}$ is the characteristic function of —— distribution

a) Normal b) t c) χ^2 d) F

56. Student t- distribution has β_1 = ——

a) 0. b) 1 c) α d) 3.

57. The Mean and Standard deviations of χ^2 distribution with 'n' degrees of freedom are —— respectively

a) n, $2n$ b) $\sqrt{n}$, $\sqrt{2n}$ c) n, $\sqrt{2n}$ d) $\sqrt{n}$, $2n$

58. Gosset introduced —— distribution

a) t b) χ^2 c) F d) Normal

59. For —— distribution, Mode will be always less than 1.

a) Binomial b) F c) χ^2 d) Normal

60. Fisher - Neyman Factorization theorem is used to find ——

a) Sufficient Estimator b) MLE Maximum Likelihood Estimator
c) Consistent estimator d) Unbiased estimator.

61. For poisson distribution with parameter λ, $(-1)^x$ is UBE of ——
a) λ^2 b) $e^{-\lambda}$ c) $e^{-2\lambda}$ d) $e^{-3\lambda}$

62. Sample Moments are —— estimators of the Corresponding population Moments
a) Unbiased b) Efficient c) Sufficient d) consistant

63. With usual notation, $(1-\beta)$ % α for ——
a) Unbiased test b) consistent test c) χ^2-test d) t-test

64. —— is based on standard normal distribution
a) Z-test b) t-test c) χ^2-test d) F-test

65. —— test is used to test for the equality of two population variables
a) z b) t c) χ^2 d) F

66. With usual notation, Probability of Type II error is ——
a) α b) β c) $1-\beta$ d) $1-\alpha$

67. With usual notation $P[|z| \leq 1.96] =$ ——
a) 0.05 b) 0.01 c) 0.95 d) 0.99

68. A test for randomness
a) Sign test b) Run test c) Median test d) χ^2-test

69. Mann-Whitney U-test is an alternative non-parametric test to —— test.
a) t b) χ^2 c) F d) Sign

70. order statistics are frequently used in ——
a) parametric tests b) Non-parametric tests c) Regression Analysis
d) Correlation Analysis

71. Arithmetic Mean is a Measure of ——
a) Location b) Dispersion c) Regression d) correlation

72. —— equals to Median
a) Third Quartile b) Fifth Decile c) 25th percentile d) 10th percentile

73. —— cannot be calculated for frequency distribution with open end classes
a) Arithmetic Mean b) Median c) Mode d) third Quartile

74. An Ideal Measure of dispersion is ——
a) Range b) Q.D c) M.D d) S.D

75. —— is a Measure of Kurtosis
a) β_1 b) β_2 c) γ_1 d) σ

76. The limits of Bowely's Coefficient of Skewness are ——
a) -1 and +1 b) 0 and 1 c) 0 and 3 d) 0 and ∞

77. For —— distribution, $\beta_2 \geq \beta_1$
a) Discrete b) Continuous c) Symmetric d) Power

78. With usual notation, $(\alpha\beta)$ = ——

a) $AB.N$ b) $N-(A)-(B)-(AB)$ c) $\alpha\beta.N$ d) $N+(A)+(B)+(AB)$

79. The coefficient of association was proposed by ——

a) Karl pearson b) R.A. Fisher c) W.S. Gosset d) Udney yule

80. A criterion for independence of two attributes A and B is ——

a) $(AB) = \frac{(A)(B)}{N}$ (b) $\frac{(AB)}{N} = (A)(B)$ c) $\frac{(AB)}{N} = \frac{A}{N}$ d) $\frac{(AB)}{N} = \frac{B}{N}$

81. Classical definition of probability was due to ——

a) Bernstein b) Von Mises c) Laplace d) Fisher

82. If X be a continuous random variable a K be a constant, then $P[X=K]$ = ——

a) 0 b) 1 c) ∞ d) K

83. If A and B are two Independent events then $P(A/B)$ = ——

a) $P(A)$ b) $P(B)$ c) 0 d) 1

84. With usual notation, Cauchy - Schwartz Inequality for mathematical expectation states that

a) $E(XY) \leq E(X).E(Y)$ b) $E(XY) \geq E(X)E(Y)$ c) $[E(XY)]^2 \geq E[X^2]E(Y^2)$ d) $[E(XY)]^2 \leq E[X^2]E[Y^2]$

85. With usual notation if $a<b$, then $P[a<x<b]$ = ——

a) $F(b)-F(a)$ b) $F(a)-F(b)$ c) $F(b)$ d) $F(a)$

86. With usual notation, for Normal distribution ——

a) $M.D = \frac{1}{5}\sigma$ b) $\frac{4}{5}\sigma$ c) $\frac{1}{3}\sigma$ d) $\frac{2}{3}\sigma$

87. A symmetric distribution

a) Binomial distribution b) poisson distribution

c) Normal Distribution d) Exponential distribution

88. The characteristic function of standard normal distribution

a) $e^{t^2/2}$ b) $e^{-t^2/2}$ c) $e^{-it^2/2}$ d) $e^{it^2/2}$

89. —— as a limiting case of the negative Binomial distribution

a) poisson distribution b) Geometric distribution c) t- distribution

d) χ^2- distribution

90. The ratio of two independent standard normal variates follows —— distributes

a) Standard χ^2 b) Standard t c) Standard Cauchy

d) Standard F.

x.
x.

81. If $A = \begin{bmatrix} 4 & 2 \\ -1 & 1 \end{bmatrix}$ then $A^2 - 5A =$ ____

a) I b) $-I$ c) $-3I$ d) $-6I$

82. $\begin{vmatrix} b+c & a+b & a \\ c+a & b+c & b \\ a+b & c+a & c \end{vmatrix} =$ ____

a) $a^3+b^3+c^3-3abc$ b) $3abc-(a^3+b^3+c^3)$ c) $a^3+b^3+c^3$ d) 0

83. $\begin{vmatrix} 2 & -1 & 4 \\ x & 0 & 1 \\ 1 & 2 & 0 \end{vmatrix} = 0 \Rightarrow x =$ ____

a) $2/8$ b) $3/8$ c) $1/2$ d) $5/8$

84. $\begin{bmatrix} a & 0 & 0 \\ 0 & b & 0 \\ 0 & 0 & c \end{bmatrix}^{-1} =$ ____

a) $\begin{pmatrix} 1/a & 1/b & 1/c \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix}$ b) $\begin{pmatrix} 1/a & 0 & 0 \\ 0 & 1/b & 0 \\ 0 & 0 & 1/c \end{pmatrix}$ c) $\frac{1}{abc}\begin{pmatrix} 1/a & 0 & 0 \\ 0 & 1/b & 0 \\ 0 & 0 & 1/c \end{pmatrix}$ d) $\frac{1}{abc}\begin{pmatrix} 1/a & 1/b & 1/c \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix}$

85. $\begin{pmatrix} 0 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \end{pmatrix}^{-1} =$ ____

a) $\begin{pmatrix} 0 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \end{pmatrix}$ b) $\begin{pmatrix} 0 & -1 & 0 \\ -1 & 0 & 0 \\ 0 & 0 & -1 \end{pmatrix}$ c) $\begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$ d) $\begin{pmatrix} -1 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & -1 \end{pmatrix}$

86. $\sec(-\theta) =$ ____

a) $\cos\theta$ b) $\sec\theta$ c) $-\sec\theta$ d) $-\cos\theta$

87. $\frac{1+\cos A}{1-\cos A} = \frac{m^2}{n^2} \Rightarrow \tan A =$ ____

a) $\pm \frac{2mn}{m^2-n^2}$ b) $\pm \frac{mn}{m^2-n^2}$ c) $\pm \frac{m^2-n^2}{2mn}$ d) $\pm \frac{2mn}{m^2+n^2}$

88. If $\tan\theta + \cot\theta = 2$ then $\sin\theta =$ ____

a) $\sqrt{2}$ b) $1/\sqrt{2}$ c) $\sqrt{3}$ d) $1/\sqrt{3}$

89. $\cot(A-B) =$ ____

a) $\frac{\cot A \cot B - 1}{\cot A + \cot B}$ b) $\frac{\cot A \cot B + 1}{\cot A - \cot B}$ c) $\frac{\cot A \cot B - 1}{\cot B - \cot A}$ d) $\frac{\cot A \cot B + 1}{\cot B - \cot A}$

90. If z_1 and z_2 are two complex numbers then $(z_1/z_2) =$ ____

a) $\bar{z}_1 \bar{z}_2$ b) $\frac{\bar{z}_1}{\bar{z}_2}$, $z_2 \neq 0$ c) $\frac{\bar{z}_2}{\bar{z}_1}$, $z_1 \neq 0$ d) $\bar{z}_1 + \bar{z}_2$

— x —

66. $\int_0^{\pi/2} \log \sin x \, dx$ = ——

a) $\pi/2 \log 2$ b) $-\pi/2 \log 2$ c) $\pi/2$ d) $\log 2$

67. If $f(x)$ is odd function defined on $[-a, a]$ then $\int_{-a}^{a} f(x)\,dx$ = ——

a) 0 b) 1 c) ∞ d) $2a$

68. $\int_0^{\infty} e^{-ax} \cos bx \, dx$ = ——

a) $a/a+b$ b) a^2/a^2+b^2 c) $b/a+b$ d) a/a^2+b^2

69. $\tan^{-1}x + \tan^{-1}y = c$ is the general solution of ——

a) $(1+x^2)\,dy + (1+y^2)\,dx$ b) $(1-x^2)\,dy + (1-y^2)\,dx = 0$

c) $(1+x^2)\,dx + (1+y^2)\,dy$ d) $(1-x^2)\,dx + (1-y^2)\,dy = 0$

70. The general solution of $y\,dx - x\,dy - 3x^2y^2e^{x^3}dx = 0$ is ——

a) $xy = e^{x^3} + c$ b) $\frac{x}{y} = e^{x^3} + c$ c) $x = e^{x^3} + c$ d) $y = e^{x^3} + c$

~~71. If the~~

PART-C

71. If the determinant of a square matrix is zero then that Matrix is said to be —— Matrix.

a) Symmetric b) Singular c) unit d) scalar

72. With usual notation $tr(ABC)$ = ——

a) $tr A \; tr B \; tr C$ b) $tr A + tr B + tr C$ c) $tr(ACB)$ d) $tr(CAB)$

73. With usual notation $(ABC)^1$ = ——

a) $A^1B^1C^1$ b) $C^1B^1A^1$ c) $B^1A^1C^1$ d) $C^1A^1B^1$

74. If A is singular then $A(adj A)$ = ——

a) I b) $|A|$ c) A d) 0

75. If $A^1A = I$ then A is said to be —— Matrix

a) Singular b) orthogonal c) Symmetric d) Nonsingular

76. $\begin{vmatrix} 1 & a & a^2 \\ 1 & b & b^2 \\ 1 & c & c^2 \end{vmatrix}$ = ——

a) $(b-a)(c-b)(a-c)$ b) $(a-b)(b+c)(c-a)$ c) $(a-b)(b-c)(c-a)$ d) $(a-b)(b-c)(c+a)$

77. If $\begin{bmatrix} x+y & -7 \\ 3 & x-y \end{bmatrix} = \begin{bmatrix} 3 & -7 \\ 3 & -1 \end{bmatrix}$ then (x, y) = ——

a) $(1, 2)$ b) $(2, 1)$ c) $(-1, -2)$ d) $(-2, -1)$

78. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 1 \\ 2 & 3 \end{bmatrix}$ then $A^2 = B^2$ = ——

a) $\begin{bmatrix} 11 & 3 \\ 1 & 11 \end{bmatrix}$ b) $\begin{bmatrix} -11 & 3 \\ 1 & -11 \end{bmatrix}$ c) $\begin{bmatrix} 11 & 3 \\ 1 & 1 \end{bmatrix}$ d) $\begin{bmatrix} -11 & 3 \\ 1 & 11 \end{bmatrix}$

79. If $A = \begin{bmatrix} 1 & 2 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} -1 \\ -2 \\ -3 \end{bmatrix}$ then AB = ——

a) 14 b) 14 c) 11 d) -11

TEST NO. 115 – STATISTICS – 2009

KEY

PART-A

1. (d)
2. (d)
3. (b)
4. (b)
5. (a)
6. (d)
7. (a)
8. (c)
9. (a)
10. (a)
11. (b)
12. (a)
13. (c)
14. (b)
15. (c)
16. (a)
17. (b)
18. (d)
19. (b)
20. (a)
21. (d)
22. (c)
23. (a)
24. (d)
25. (b)
26. (b)
27. (d)
28. (c)
29. (d)
30. (a)
31. (a)
32. (b)
33. (a)
34. (d)
35. (b)
36. (a)
37. (b)
38. (d)
39. (b)
40. (c)

PART-B

41. (b)
42. (d)
43. (a)
44. (d)
45. (a)
46. (c)
47. (b)
48. (d)
49. (b)
50. (b)
51. (d)
52. (a)
53. (b)
54. (a)
55. (c)
56. (a)
57. (c)
58. (a)
59. (b)
60. (a)
61. (c)
62. (d)
63. (a)
64. (a)
65. (d)
66. (b)
67. (c)
68. (b)
69. (a)
70. (b)

PART-C

71. (a)
72. (b)
73. (a)
74. (d)
75. (b)
76. (a)
77. (a)
78. (c)
79. (d)
80. (a)
81. (c)
82. (a)
83. (a)
84. (d)
85. (a)
86. (b)
87. (c)
88. (b)
89. (a)
90. (c)

AUCET - 2008

(9)

TEST NO. 45

STATISTICS

KEY

PART-A

1. (c)
2. (b)
3. (a)
4. (d)
5. (a)
6. (a)
7. (b)
8. (c)
9. (b)
10. (b)
11. (c)
12. (d)
13. (a)
14. (b)
15. (d)
16. (d)
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20. (c)
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23. (d)
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25. (c)
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27. (d)
28. (b)
29. (c)
30. (a)
31. (b)
32. (a)
33. (d)
34. (d)
35. (d)
36. (b)
37. (c)
38. (b)
39. (c)
40. (a)

PART-B

41. (a)
42. (c)
43. (a)
44. (a)
45. (a)
46. (d)
47. (c)
48. (b)
49. (c)
50. (a)
51. (a)
52. (c)
53. (c)
54. (b)
55. (b)
56. (d)
57. (b)
58. (c)
59. (a)
60. (c)
61. (a)
62. (a)
63. (b)
64. (c)
65. (a)
66. (a)
67. (d)
68. (b)
69. (a)
70. (d)

PART-C

71. (c)
72. (a)
73. (b)
74. (b)
75. (c)
76. (c)
77. (b)
78. (d)
79. (c)
80. (c)
81. (a)
82. (d)
83. (b)
84. (d)
85. (b)
86. (d)
87. (b)
88. (d)
89. (a)
90. (b)

TEST NO. 115 – STATISTICS – 2009

KEY

PART-A

1. (d)
2. (d)
3. (b)
4. (b)
5. (a)
6. (d)
7. (a)
8. (c)
9. (a)
10. (a)
11. (b)
12. (a)
13. (c)
14. (b)
15. (c)
16. (a)
17. (b)
18. (d)
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28. (c)
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31. (a)
32. (b)
33. (a)
34. (d)
35. (b)
36. (a)
37. (b)
38. (d)
39. (b)
40. (c)

PART-B

41. (b)
42. (d)
43. (a)
44. (d)
45. (a)
46. (c)
47. (b)
48. (d)
49. (b)
50. (b)
51. (d)
52. (a)
53. (b)
54. (a)
55. (c)
56. (a)
57. (c)
58. (a)
59. (b)
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61. (c)
62. (d)
63. (a)
64. (a)
65. (d)
66. (b)
67. (c)
68. (b)
69. (a)
70. (b)

PART-C

71. (a)
72. (b)
73. (a)
74. (d)
75. (b)
76. (a)
77. (a)
78. (c)
79. (d)
80. (a)
81. (c)
82. (a)
83. (a)
84. (d)
85. (a)
86. (b)
87. (c)
88. (b)
89. (a)
90. (c)

AURCET – 2010

TEST NO. 19 – STATISTICS (15)

PAPER-II

KEY

1. (d)
2. (a)
3. (b)
4. (c)
5. (b)
6. (a)
7. (a)
8. (c)
9. (d)
10. (b)
11. (b)
12. (d)
13. (d)
14. (b)
15. (c)
16. (d)
17. (a)
18. (c)
19. (c)
20. (c)
21. (d)
22. (b)
23. (c)
24. (c)
25. (a)
26. (c)
27. (d)
28. (a)
29. (c)
30. (a)
31. (b)
32. (c)
33. (d)
34. (c)
35. (b)
36. (d)
37. (a)
38. (c)
39. (b)
40. (b)
41. (a)
42. (c)
43. (a)
44. (b)
45. (b)
46. (b)
47. (a)
48. (b)
49. (a)
50. (c)
51. (b)
52. (a)
53. (d)
54. (b)
55. (a)
56. (b)
57. (a)
58. (c)
59. (c)
60. (a)
61. (c)
62. (a)
63. (b)
64. (c)
65. (a)
66. (c)
67. (c)
68. (b)
69. (a)
70. (d)
71 (a)
72. (c)
73. (b)
74. (b)
75. (d)
76. (c)
77. (a)
78. (b)
79. (b)
80. (b)
81. (c)
82. (b)
83. (b)
84. (d)
85. (d)
86. (a)
87. (a)
88. (c)
89. (b)
90. (b)
91. (b)
92. (c)
93. (a)
94. (b)
95. (a)
96. (c)
97. (a)
98. (c)
99. (a)
100. (b)

$\binom{4}{2} p^2 q^2 = 3\binom{4}{3} p^3 q$

$6p^2q^2 = 12p^3q$

$12p = 6q$

$p = \frac{1}{2}q$

$2p = 1-p \Rightarrow 3p = 1 \quad p = 1/3$

$P(\text{spade and Ace}) = \frac{1}{13}$

$P(\text{spade}) = \frac{13}{52} = \frac{1}{4}$

$P(\text{Ace}) = \frac{4}{52} = \frac{1}{13}$

$P(\text{S or A}) = \frac{1}{4} + \frac{1}{13} - \frac{1}{13}$

$= \frac{1}{4} + \frac{4}{52} - \frac{4}{52}$

$= \frac{13}{52} + \frac{4}{52} - \frac{1}{52}$

$= \frac{13+4-1}{52} = \frac{16}{52} = \frac{4}{13}$

$52C_4 / 52C_1 =$

$52 \times 51 \times 50 \times 49$

$P(E) = 0.1$

$\int_0^1 c x^2 = 1$

$c\left(\frac{x^3}{3}\right)_0^1 = 1$

$c\left(\frac{1}{3}\right) = 1$

$c = 3$

$c\left(\frac{x^3}{3}\right)_0 = 1$

$x = 4y + 8$

$y = 2x + 4$

$\mu_2 = \mu_2' - (\mu_1')^2$

$= 25 - 9 = 16$

start	100
3	50
3	50
4	200
3	50
4	200
	370

3 and 5

Somthing.

TEST NO. 40

SVURPGCET - 2011

STATISTICS

SECTION – A

1. For a symmetric distribution

   సౌష్ఠవ విభాజనమునకు

   (A) $\mu_3 > 0$ (B) $\mu_3 = 0$ (C) $\mu_3 < 0$ (D) $\mu_3 \neq 0$

2. Variance is independent of change of

   (A) scale (B) origin and scale

   (C) origin (D) none of these

   ఈ మార్పిడితో విస్తృతి స్వతంత్రము

   (A) స్కేలు (B) మూల బిందువు మరియు స్కేలు

   (C) మూల బిందువు (D) ఇవే మీ కాపు

3. If each value of a series is multiplied by 5, the coefficient of variation will be increased by

   (A) 0 per cent (B) 5 per cent (C) 10 per cent (D) 15 per cent

   ఒక శ్రేణిలోని ప్రతి విలువను 5 చే గుణించిన, విచలనాంకములో వృద్ధి

   (A) 0 శాతం (B) 5 శాతం (C) 10 శాతం (D) 15 శాతం

4. If A and B are two events, the probability of happening of either A or B is

   A మరియు B లు రెండు ఘటనలైతే, A గాని B గాని జరుగుటకు సంభావ్యత

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

   (C) $P(A \cup B)$ (D) $P(A) \cdot P(B)$

5. Statistical definition of probability is due to

(A) Pascal (B) De-Moivre (C) Laplace (D) Van Mises

సాంఖ్యక సంభావ్యతా నిర్వచనాన్ని కనుగొన్నది

(A) పాస్కల్ (B) డీ-మోవరే (C) లాప్లాస్ (D) వాన్ మైసెస్

6. If $A \subset B$, then the probability of $P(A/B)$ is

$A \subset B$, అయితే, $P(A/B)$ యొక్క సంభావ్యత

(A) 0 (B) $P(A)/P(B)$ (C) 1 (D) $P(B)/P(A)$

7. If $A \cap B = \phi$, then the events A and B are

(A) Independent (B) Dependent

(C) Mutually exclusive (D) All these

$A \cap B = \phi$, అయితే, ఘటనలు A మరియు B లు

(A) స్వతంత్ర్యము (B) అస్వతంత్ర్యము

(C) పరస్పర వర్జితం (D) అన్నియును

8. If $P(A) = 1/3$, $P(B) = 3/4$ and $P(A \cup B) = 11/12$, then $P(B/A) =$

$P(A) = 1/3$, $P(B) = 3/4$ మరియు $P(A \cup B) = 11/12$, అయితే, $P(B/A) =$

(A) 4/9 (B) 1/6 (C) 5/9 (D) 1/2

9. If A and B are independent events, then $P(\overline{A} \cap \overline{B}) =$

A మరియు B లు స్వతంత్ర ఘటనలైతే, $P(\overline{A} \cap \overline{B}) =$

(A) $P(\overline{A}) \cdot P(\overline{B})$ (B) $P(A)\,P(\overline{B})$

(C) $P(\overline{A})\,P(B)$ (D) $P(A)(B)$

10. Posterior probability is due to

(A) Pascal (B) C.R. Rao (C) Bayes (D) M. Loe've

పోస్టీరియర్ సంభావ్యతను కనుగొన్నది

(A) పాస్కల్ (B) సి.ఆర్. రావు (C) బేయ్స్ (D) యమ్. లోవ్

11. If X is a random variable, then $E\{X - E(X)\} =$

X ఒక యాదృచ్ఛిక చలరాశి అయితే, $E\{X - E(X)\} =$

(A) 1 (B) σ^2 (C) 0 (D) ∞

12. If X and Y are two random variables, then

X మరియు Y లు రెండు యాదృచ్ఛిక చలరాశులైతే,

(A) $E(XY)^2 = E(X^2)E(Y^2)$ (B) $E^2(XY) \leq E\,X^2 \cdot E(Y^2)$

(C) $E^2(XY) \geq E(X^2)E(Y^2)$ (D) $E^2(XY) = E(X)E(Y)$

13. If X is a random variable, then its probability generating function is

ఒక యాదృచ్ఛిక చలరాశి X యొక్క సంభావ్యతా జనక ప్రమేయము

(A) $E(S^X)$ (B) $E(e^{tX})$ (C) $E(e^{itX})$ (D) $E\left[e^{t(X-\bar{X})}\right]$

14. If X and Y are independent random variables, then $M_{X+Y}(t) =$

X మరియు Y లు స్వతంత్ర యాదృచ్ఛిక చలరాశులైతే, $M_{X+Y}(t) =$

(A) $M_X(t)/M_Y(t)$ (B) $M_X(t) \cdot M_Y(t)$

(C) $M_Y(t)/M_X(t)$ (D) $M_X(t) + M_Y(t)$

15. If $F(x)$ is distribution function of a random variable X, then $F(X)$ is distributed as

(A) Uniform (B) Binomial (C) Poisson (D) Normal

ఒక యాదృచ్ఛిక చలరాశి X యొక్క విభాజన ప్రమేయము $F(x)$ అయితే, $F(X)$ యొక్క విభాజనము

(A) ఏకరూప (B) ద్విపద (C) పాయిసన్ (D) సామాన్య

16. If $F(x)$ is a distribution function, then

$F(x)$ ఒక విభాజన ప్రమేయమైతే

(A) $F(x) = \infty$ (B) $F(x) = 0$ (C) $F(x) = 1$ (D) $0 \leq F(x) \leq 1$

17. If $F(x)$ is the cumulative distribution function, then $f(x) =$

$F(x)$ ఒక సంచిత విభాజన ప్రమేయమైతే, $f(x) =$

(A) $F''(x)$ (B) $F'(x)$ (C) $F(x)$ (D) $F''''(x)$

18. The characteristic function of a random variable X is $\phi_X(t)$, then μ_r' is

$\phi_X(t)$ అనేది ఒక యాదృచ్ఛిక చలరాశి యొక్క లాక్షణిక ప్రమేయము. అప్పుడు μ_r'

(A) $\frac{d}{dt} \cdot \phi_X(t) \Big/ t = 0$ (B) $\frac{d^2}{dt^2} \phi_X(t) \Big/ t = 0$

(C) $(-1)^2 \cdot \frac{d^2}{dt^2} \phi_X(t) \Big/ t = 0$ (D) $-\frac{d^2}{dt^2} \phi_X(t) \Big/ t = 0$

19. The mean and variance of a Binomial distribution are 8 and 4 respectively. Then $P(X = 1)$ is

ఒక ద్విపద విభాజనానికి అంకమధ్యమము, విస్తృతి వరుసగా 8 మరియు 4. అప్పుడు $P(X = 1)$

(A) $\frac{1}{2^{12}}$ (B) $\frac{1}{2^4}$ (C) $\frac{1}{2^6}$ (D) $\frac{1}{2^8}$

20. If $X \sim B(n, p)$, then the distribution of $Y = n - X$ is

$X \sim B(n, p)$, అయితే, $Y = n - X$ యొక్క విభాజనము

(A) $B(n, 1)$ (B) $b(n, x)$ (C) $B(n, p)$ (D) $B(n, q)$

21. The moment generating function of Poisson distribution $P(\lambda)$ is

పాయిసన్ విభాజనము $P(\lambda)$ యొక్క ఘాతికోత్పాదన ప్రమేయము

(A) $e^{\lambda t - 1}$ (B) $e^{\lambda (e^t - 1)}$ (C) $e^{\lambda (e^t - 1)}$ (D) $e^{i\lambda (e^t - 1)}$

22. The distribution having mean greater than variance is

(A) Binomial distribution (B) Poisson distribution

(C) Hypergeometric distribution (D) Negative binomial distribution

అంకమధ్యము, విస్తృతి కంటే అధికంగా గల విభాజనము

(A) ద్విపద విభాజనము (B) పాయిసన్ విభాజనము

(C) అతి జ్యామితీయ విభాజనము (D) ఋణాత్మక ద్విపద విభాజనము

23. For $N(\mu, \sigma^2)$, the coefficient of skewness is

$N(\mu, \sigma^2)$ కి, అసాష్టవతా గుణకము

(A) 1 (B) –1 (C) 0 (D) > 1

24. If $X \sim N(0,1)$, then X^2 is distributed as

(A) Normal (B) Cauchy (C) Chi-square (D) Exponential

$X \sim N(0,1)$ అయితే, X^2 యొక్క విభాజనము

(A) సామాన్య (B) కాచీ (C) కై–స్క్వేర్ (D) ఘాత

25. If X and Y are independent $\gamma(n_1)$ and $\gamma(n_2)$ variates, then the distribution of $X+Y$ is

X మరియు Y లు స్వతంత్ర $\gamma(n_1)$ మరియు $\gamma(n_2)$ చలరాశులైతే, $X+Y$ యొక్క విభాజనము

(A) $\beta_1(n_1, n_2)$ (B) F_{n_1, n_2} (C) $\gamma(n_1 + n_2)$ (D) $\beta_2(n_1, n_2)$

26. If $X \sim \cup[a, b]$, then its cumulative distribution function is

$X \sim \cup[a, b]$ అయితే, దాని సంచిత విభాజన ప్రమేయము

(A) $\frac{x-a}{b-a}$ (B) $\frac{1}{b-a}$ (C) $\frac{b-a}{x-a}$ (D) $\frac{x-b}{b-a}$

27. The distribution to which moments does not exist

(A) Exponential distribution (B) Cauchy distribution

(C) Beta distribution (D) Normal distribution

ఘాతికలు అస్థిత్వము కాని విభాజనము

(A) ఘాత విభాజనము (B) కాచీ విభాజనము

(C) బీటా విభాజనము (D) సామాన్య విభాజనము

28. Let $X \sim N(3, 4)$ and $Y \sim N(2, 9)$ are independent, then $X - Y$ is

$X \sim N(3, 4)$ మరియు $Y \sim N(2, 9)$గా గల స్వతంత్రము అయితే, అప్పుడు $X - Y$

(A) $N(1, 13)$ (B) $N(5, 13)$ (C) $N(5, 5)$ (D) $N(2, 5)$

29. For $r = 1$, negative binomial distribution $NB(x; r, p)$ reduces to

(A) Binomial (B) Poisson

(C) Hypergeometric (D) Geometric

$r=1$ అయినప్పుడు, ఋణాత్మక ద్విపద విభాజనము $NB(x; r, p)$ యొక్క మదింపు విభాజనము

(A) ద్విపద (B) పాయిసన్

(C) అతిజ్యామితీయ (D) జ్యామితీయ

30. If X and Y are independent $N(0, 1)$ variates, then the distribution of X/Y is

(A) Normal (B) Beta (C) Gamma (D) Cauchy

X మరియు Y లు స్వతంత్ర $N(0, 1)$ చలరాశులైతే, X/Y యొక్క విభాజనము

(A) సామాన్య (B) బీటా (C) గామా (D) కాచీ

SECTION – B

31. If $f(x, y) = 8xy, \quad 0 < x < y < 1$
$= 0, \quad$ elsewhere then $f(x) =$

$f(x, y) = 8xy, \quad 0 < x < y < 1$
$= 0, \quad$ ఇతరత్రా అయితే, అప్పుడు $f(x) =$

(A) $4x^2$ (B) $4x$ (C) $4x^3$ (D) $2x^2$

32. The lines of regression passes through the point

ప్రతిగమన రేఖలు ఈ బిందువు గుండా పోతాయి

(A) (X, Y) (B) $(\overline{X}, \overline{Y})$ (C) $(0, 0)$ (D) $(1, 1)$

33. If $r = 0$, the angle between the two lines of regression is

$r=0$ అయితే, రెండు ప్రతిగమన రేఖల మధ్య కోణము

(A) $0°$ (B) $90°$ (C) $60°$ (D) $30°$

34. Correlation coefficient is independent of change of

(A) scale only (B) origin only

(C) origin and scale (D) none of these

సహ సంబంధ గుణకము, ఈ మార్పిడితో స్వతంత్ర్యము

(A) స్కేలు మాత్రమే (B) మూలబిందువు మాత్రమే

(C) మూలబిందువు మరియు స్కేలు (D) ఇవేమీ కావు

35. The limits of correlation coefficient are

సహసంబంధ గుణకపు అవధులు

(A) $r < 0$ (B) $0 < r < 1$ (C) $-1 \leq r \leq 1$ (D) $r > 1$

36. If X and Y are independent, then the value of β_{YX} is

X మరియు Y లు స్వతంత్రమయితే, β_{YX} యొక్క విలువ

(A) 0 (B) 1 (C) ∞ (D) >1

37. If r is the correlation coefficient, the coefficient of determination is

సహసంబంధ గుణకము r అయితే, నిశ్చిత గుణకము

(A) r^2 (B) r (C) $1-r^2$ (D) $1+r^2$

38. Coefficient of correlation is due to

(A) Poisson (B) R.A. Fisher (C) A. Wald (D) Karl Pearson

సహసంబంధ గుణకాన్ని కనుగొన్నది

(A) పాయిసన్ (B) R.A. ఫిషర్ (C) A. వాల్డ్ (D) కార్ల్ పియర్సన్

39. The standard error of sample mean is

ప్రతి రూప మధ్యమపు, క్రమ దోషము

(A) $\frac{\sigma^2}{n}$ (B) $\frac{\sigma}{\sqrt{n}}$ (C) σ^2 (D) $\frac{\sigma^2}{\sqrt{n}}$

40. The formula for probable error of r is

r యొక్క సంభావ్య దోషము

(A) $0.675\sqrt{\frac{1-r^2}{n}}$ (B) $0.6745\sqrt{\frac{1-r^2}{n-2}}$

(C) $0.6745 \cdot \frac{1-r^2}{n}$ (D) $0.6745 \cdot \frac{1-r^2}{\sqrt{n}}$

41. If all A's are B's, then the coefficient of association is

అన్ని A లు B లు అయితే, అప్పుడు సహచర్యగుణకము

(A) 1 (B) -1 (C) 0 (D) ∞

42. Two attributes A and B are independent if $(AB) =$

రెండు గుణాలు స్వతంత్ర్యమవుటకు, $(AB) =$

(A) $\frac{(A)(B)}{N}$ (B) $(A)(B)$ (C) $\frac{(A)}{N} \cdot \frac{(B)}{N}$ (D) (A)

43. The class frequencies $(A) = 90$, $N = 100$, $(B) = 70$ and $(A\beta) = 40$, then the given data is

(A) Consistent (B) Inconsistent (C) Sufficient (D) Insufficient

తరగతి పౌనఃపున్యాలు $(A) = 90$, $N = 100$, $(B) = 70$ మరియు $(A\beta) = 40$, అప్పుడు ఇచ్చిన దత్తాంశము

(A) నిలకడగలది (B) నిలకడలేనిది (C) పర్యాప్తము (D) పర్యాప్తముకానిది

44. Moment generating function of $\chi^2_{(n)}$ distribution is

$\chi^2_{(n)}$ విభాజనపు, ఘాతికోత్పాదనా ప్రమేయము

(A) $(1+2t)^{n/2}$ (B) $(1-2t)^{n/2}$ (C) $(1-2t)^{-n/2}$ (D) $(1-2t)^{-n}$

45. If X and Y are independent $\chi^2_{n_1}$ and $\chi^2_{n_2}$ variates respectively, then $X/X+Y$ is

X మరియు Y లు వరుసగా రెండు స్వతంత్ర్య $\chi^2_{n_1}$ మరియు $\chi^2_{n_2}$ చలరాశులయితే, అప్పుడు $X/X+Y$

(A) $\beta_1\left(\frac{n_1}{2}, \frac{n_2}{2}\right)$ (B) $\beta_2\left(\frac{n_1}{2}, \frac{n_2}{2}\right)$ (C) $\chi^2_{n_1+n_2}$ (D) $\beta_1\left(\frac{n_1}{2}, \frac{n_1+n_2}{2}\right)$

46. Mode of χ^2_n distribution is

χ^2_n విభాజనపు, బాహుళకము

(A) n (B) $2n$ (C) $\frac{1}{n-2}$ (D) $n-2$

47. Let $X_1, X_2, \cdots, X_n$ be iid $N(\mu, \sigma^2)$ random variables. If S^2 is the sample variance, then the distribution of $\frac{(n-1)S^2}{\sigma^2}$ is

$X_1, X_2, \cdots, X_n$ లు స్వ.వి.వి. $N(\mu, \sigma^2)$ యాదృచ్ఛిక చలరాశులు. S^2 శాంపుల్ విస్తృతి అయితే, $\frac{(n-1)S^2}{\sigma^2}$ యొక్క విభాజనము

(A) $\chi^2_{(n-1)}$ (B) $\chi^2_{(n)}$ (C) t_{n-1} (D) t_n

48. For t_n – distribution, β_2 is

t_n –విభాజనానికి β_2

(A) $\frac{n-2}{n-4}$ (B) $\frac{3(n-2)}{n-4}$ (C) $\frac{3n}{n-4}$ (D) $\frac{3(n-2)}{n+4}$

49. Mean of t_n – distribution is

t_n –విభాజనానికి అంకమధ్యమము

(A) n (B) $n-1$ (C) 0 (D) $n+1$

50. As $n \to \infty$, limiting distribution of t_n is

$n \to \infty$, అయినప్పుడు t_n యొక్క సీమాంత విభాజనము

(A) F (B) χ^2 (C) β_1 (D) $N(0,1)$

51. If X is F_{n_1, n_2} variate, then $1/X$ is

ఒక చలరాశి X, F_{n_1, n_2} అయితే $1/X$ యొక్క విభాజనము

(A) F_{n_2, n_1} (B) F_{n_1, n_2} (C) F_{n_1, n_1+n_2} (D) F_{n_2, n_1+n_2}

52. F-distribution is due to

(A) Gosset (B) Pearson (C) Snedecor (D) Fisher

F- విభాజనాన్ని కనుగొన్నది

(A) గొసెట్ (B) పియర్సన్ (C) స్నెడెకర్ (D) ఫిషర్

53. If T is a consistent estimator of θ and C is a constant then, $T_n + c$ is consistent for

θ యొక్క నిలకడ అంచనాధారము T మరియు C ఒక స్థిరరాశి అయితే, $T_n + c$ దీనికి నిలకడ అంచనాధారమవుతుంది

(A) $\theta + c$ (B) θ (C) θ / c (D) $c \cdot \theta$

54. If $\overline{X}$ is an unbiased estimator of λ, then $\overline{X} + 5$ is unbiased estimator for

λ యొక్క నిష్పాక్షిక అంచనా $\overline{X}$ అయితే, $\overline{X} + 5$ దీనికి నిష్పాక్షిక అంచనా అగును

(A) $\lambda + 5$ (B) λ (C) λ / a (D) λ^2

55. If S^2 is an unbiased estimator of σ^2, then for σ, S is

(A) unbiased (B) biased (C) sufficient (D) independent

σ^2 యొక్క నిష్పాక్షిక అంచనా S^2 అయితే, σ కు S

(A) నిష్పాక్షిక అంచనా (B) పాక్షిక అంచనా (C) పర్యాప్తము (D) స్వతంత్ర్యము

56. Most-powerful test is due to

(A) Fisher (B) Lehmann

(C) WALD (D) Neymann and Pearson

అత్యంత శక్తి వంత పరీక్షను కనుగొన్నది

(A) ఫిషర్ (B) లెహ్మన్

(C) వాల్డ్ (D) నీమాన్ మరియు పియర్సన్

57. Power of a test is

ఒక పరీక్ష యొక్క శక్తి

(A) β (B) α (C) $1-\beta$ (D) $1-\alpha$

58. Ordered statistics is a sequence of

(A) Ranks (B) Natural numbers

(C) Integers (D) Observations

క్రమ సాంఖ్యకము, దీని అనుక్రమము

(A) కోటిలు (B) సహజ సంఖ్యలు

(C) పూర్ణాంకాలు (D) పరిశీలనలు

59. If there are two sets of observations of two types, the minimum number of runs is

రెండు రకాల పరిశీలన సమితిలు ఉన్నట్లయితే, కనీస రన్‌ల సంఖ్య

(A) 2 (B) 1 (C) 3 (D) 4

60. Ordinary sign test utilizes the distribution

(A) Poisson (B) Binomial

(C) Normal (D) Negative Binomial

సామాన్య సంజ్ఞల పరీక్ష, ఈ విభాజనాన్ని ఉపయోగించును

(A) పాయిసన్ (B) ద్విపద

(C) సామాన్య విభాజనము (D) ఋణాత్మక ద్విపద

SECTION – C

61. In usual notations, the finite population correction is

మామూలు సంకేతాలలో, పరిమితలోకపు సవరణ

(A) $\frac{n}{N}$ (B) $\frac{N-n}{N}$ (C) $\frac{N}{n}$ (D) $\frac{N}{N+n}$

62. In srs wor, the number of samples that can be selected is

తిరిగి చేర్చని సరళయాదృచ్ఛిక ప్రతిరూప గ్రహణ పద్ధతిలో ఎంపిక చేయబడే శాంపుల్‌ల సంఖ్య

(A) N_{c_n} (B) N (C) n (D) n/N

63. In srs wr, the standard error of $\bar{y}$ is

తిరిగి చేర్చే సరళ యాదృచ్ఛిక ప్రతిరూప గ్రహణ పద్ధతిలో $\bar{y}$ యొక్క క్రమదోషము

(A) $\sqrt{1-\frac{1}{N}}$ (B) $\sqrt{1-\frac{1}{N}} \cdot \frac{S}{n}$

(C) $\sqrt{1-\frac{1}{N}} \cdot \frac{S}{\sqrt{n}}$ (D) $\frac{N-1}{N} \cdot \frac{S^2}{n}$

64. Sampling frame is used for

(A) List of random numbers (B) List of voters

(C) List of people (D) List of sampling units

శాంప్లింగ్ ఫలకాన్ని దీనికి ఉపయోగిస్తారు

(A) యాదృచ్ఛిక సంఖ్యల జాబితా (B) Voters ల జాబితా

(C) ప్రజల జాబితా (D) శాంప్లింగు ప్రమాణాల జాబితా

65. Under proportional allocation, the sample sizes n_h are

Proportional allocation పద్ధతిలో, ప్రతిరూప పరిమాణాలు n_h =

(A) $\frac{N_h}{N}$ (B) $n \cdot \frac{N_h}{N}$ (C) $\frac{n}{N}$ (D) $n \cdot \frac{N}{N_h}$

66. Under optimum allocation, the sample sizes n_h are

అభిలషణీయ కేటాయింపు పద్ధతిలో, ప్రతిరూప పరిమాణాలు n_h =

(A) $n \cdot \frac{W_h \cdot S_h}{\Sigma W_h \cdot S_h}$ (B) $n \cdot W_h S_h$

(C) $\frac{W_h S_h}{\Sigma W_h S_h}$ (D) $n \cdot \frac{W_h S_h}{\sqrt{W_h \cdot S_h}}$

67. In stratified random sampling, the estimator of the population mean $\overline{Y}$ is

స్తరిత యాదృచ్ఛిక ప్రతిరూప పద్ధతిలో, లోకపు అంకమధ్యము $\overline{Y}$ యొక్క అంచనా

(A) $\overline{y}$ (B) $\Sigma \overline{y}_h$ (C) $\Sigma W_h \overline{y}_h$ (D) $\overline{y}\, s_y$

68. In stratified random sampling, $V(\overline{y}_{st})$ =

స్తరిత యాదృచ్ఛిక ప్రతిరూప పద్ధతిలో, $V(\overline{y}_{st})$ =

(A) $\sum W_h^2 \frac{(N_h - n_h)}{N_h} \cdot \frac{S_h^2}{n_h}$ (B) $\sum W_h \cdot \frac{(N_h - n_h)}{N_h} \cdot \frac{S_h}{n_h}$

(C) $\sum W_h^2 \cdot \frac{(N_h - n_h)}{N_h} \cdot \frac{S_h}{n_h}$ (D) $\sum W_h \frac{(N_h - n_h)}{N_h} \cdot \frac{S_h^2}{n_h}$

69. Circular systematic sampling was first used by

(A) W.G. Cochran (B) M.H. Hansen

(C) Des Raj (D) D. B. Lahiri

వృత్త క్రమానుగత ప్రతిరూప గ్రహణ పద్ధతిని మొట్టమొదట ఉపయోగించినది

(A) W.G. కోక్రాన్ (B) M.H. హాన్సన్

(C) దేశ రాజ్ (D) D. B. లాహిరి

70. In systematic sampling, when $N = nK$, the number of samples can be drawn is

క్రమానుగత ప్రతిరూప గ్రహణ పద్ధతిలో, $N = nK$ అయినప్పుడు, ఎంపిక చేయదగిన ప్రతిరూపాల సంఖ్య

(A) n (B) K (C) 1 (D) N

71. Systematic sampling will be more efficient than stratified random sampling, if

ఇది అయితే, క్రమానుగత ప్రతిరూప పద్ధతి, స్తరిత యాదృచ్ఛిక ప్రతిరూప గ్రహణ పద్ధతి కంటే ఎక్కువ సామర్థ్యము కలిగి ఉంటుంది

(A) $\rho_{wst} = 0$ (B) $\rho_{wst} = 1$ (C) $\rho_{wst} > 0$ (D) $\rho_{wst} < 0$

72. In a completely randomized design with 4 treatments each replicated 6 times, the error degrees of freedom is

4 చికిత్సలు ఉండి, ప్రతి చికిత్స 6 సార్లు పునరావృతమయ్యే సంపూర్ణ యాదృచ్ఛిక కృతరచనలో దోష స్వాతంత్ర్యాంకాలు

(A) 21 (B) 20 (C) 23 (D) 18

73. Errors in a statistical model are taken to be

ఒక సాంఖ్యక నమూనాలో దోషాలను ఈ విధంగా తీసుకోబడును

(A) $N(0,1)$ (B) $N(\mu, \sigma_e^2)$ (C) $N(0, \sigma_e^2)$ (D) $N(\mu, 1)$

74. The formula for number of replications is

పునరావృత్తుల సంఖ్యకు సూత్రము

(A) $2t_\alpha^2 s^2/d^2$ (B) $\sqrt{2}\, t_\alpha s^2/d^2$ (C) $t_\alpha^2 \cdot s^2/d^2$ (D) $2t_\alpha s/d$

75. The experimental design in which local control is not applied is

స్థానిక నియంత్రణ అనువర్తితం కాని ప్రయోగ రచన

(A) LSD (B) RBD (C) CRD (D) Split Plot

76. The formula for estimating one missing observation in RBD is

ఒక RBD లో ఒక లోపించిన విలువను అంచనా వేయుటకు సూత్రము

(A) $\dfrac{ry'_{.j} + ty'_{i.} - y'_{..}}{(r-1)(t-1)}$ (B) $\dfrac{r \cdot y'_{.j} - ty'_{i.} + y'_{..}}{(r-1)(t-1)}$

(C) $\dfrac{ry'_{.j} + ty'_{i.} - y'_{..}}{(r+1)(t+1)}$ (D) $\dfrac{ry'_{.j} + ty'_{i.} - y'_{..}}{(r-1)(t+1)}$

77. The efficiency of RBD relative to LSD is

LSD కు సాపేక్షికమైన RBD యొక్క సామర్థ్యము

(A) $\frac{r(t-1)s_E^2+(r-1)s_B^2}{(rt-1)s_E^2}$ (B) $\frac{rts_E^2-(r-1)s_B^2}{(rt-1)}$

(C) $\frac{r(t-1)s_E^2+rs_B^2}{rt}$ (D) $\frac{r(t-1)s_E^2+(r-1)s_B^2}{(r-1)(t-1)}$

78. In a (6×6) LSD, the number of degrees of freedom due to error is

ఒక (6×6) LSD లో దోషానికి స్వాతంత్ర్యాల సంఖ్య

(A) 25 (B) 30 (C) 23 (D) 20

79. Randomised block design has

(A) one-way classification (B) two-way classification

(C) three-way classification (D) none of these

యాదృచ్ఛికీకృత ఖండ రచన ఇది కల్గి ఉంటుంది

(A) ఏకవిధ వర్గీకరణ (B) ద్వివిధ వర్గీకరణ

(C) త్రివిధ వర్గీకరణ (D) ఇదేమి కాదు

80. The formula for estimating one missing observation is due to

(A) W.G. Cochran (B) Fedderer

(C) R.A. Fisher (D) F. Yates

ఒక లోపించిన విలువను అంచనా వేయుటకు సూత్రాన్ని కనుగొన్నది

(A) W.G. కోక్రాన్ (B) ఫెడరర్

(C) R.A. ఫిషర్ (D) F. యేట్స్

81. This is a control chart for variables

(A) $\overline{X}$ – chart (B) c – chart (C) p — chart (D) np – chart

ఇది చలరాశుల నియంత్రణ పటము

(A) $\overline{X}$ – పటము (B) c – పటము (C) p — పటము (D) np – పటము

82. The control limits for p-chart are defined based on this distribution

(A) Normal (B) Poisson

(C) Negative Binomial (D) Binomial

p-పటము యొక్క నియంత్రణ అవధులు, ఈ విభాజనము మీద ఆధారంలో నిర్వచించెను

(A) సామాన్య (B) పాయిసన్

(C) ఋణాత్మక ద్విపద (D) ద్విపద

83. When there is no defective in the lot, the O.C. function for $p=0$ is

ఒక గుంపులో దోషము లేని ఎడల, $p=0$ కు O.C. ప్రమేయము.

(A) $L(0)=0$ (B) $L(0)=1$ (C) $L(0)=0.25$ (D) $L(0)=0.5$

84. Sampling inspection plans are due to

(A) W.A. Shewart (B) A. Wald

(C) C.R. Rao (D) Dodge and Romig

ప్రతిరూప పరిశీలన యోచనలను కనుగొన్నది

(A) W.A. షేవార్ట్ (B) A. వాల్డ్

(C) C.R. రావు (D) డాడ్జ్ మరియు రోమిగ్

85. The probability of accepting a lot with fraction defective 'p' is

(A) Consumer's risk (B) Producer's risk

(C) Type – I error (D) Type – II error

దోష వస్తుభిన్నము 'p' గా గల గుంపును అంగీకరించుటకు సంభావ్యత

(A) వినియోగదారుని బాధకము (B) ఉత్పాదక దారుని బాధకము

(C) మొదటి రకపు దోషము (D) రెండవ రకపు దోషము

86. If NRR > 1, the population of a country

(A) Increases (B) Decreases (C) Constant (D) None of the these

NRR > 1 అయితే, దేశ జనాభా

(A) పెరుగుతుంది (B) తగ్గుతుంది (C) స్థిరము (D) ఇవేమీ కావు

87. The relation between NRR and GRR is

NRR మరియు GRR ల మధ్య సంబంధము

(A) NRR > GRR (B) NRR = GRR

(C) NRR ≤ GRR (D) NRR ≠ GRR

88. The central mortality rate m_x is

కేంద్రీయ మర్త్యత రేటు m_x

(A) $2q_x/2+q_x$ (B) $\frac{2q_x}{2-q_x}$ (C) $\frac{q_x}{2+q_x}$ (D) $\frac{q_x}{2-q_x}$

89. The probability of a person aged x survives upto age $x+n$ is

x వయసున్న వ్యక్తి $x+n$ వరకు జీవించుటకు సంభావ్యత

(A) $\frac{l_x-l_{x+n}}{l_x}$ (B) $\frac{l_x-l_{x+n}}{l_{x+n}}$ (C) $\frac{l_x}{l_{x+n}}$ (D) $\frac{l_{x+n}}{l_x}$

90. Link relative method is due to

(A) Karl Pearson (B) Neymann (C) Lehmann (D) Fisher

గొలుసు సాపేక్ష పద్ధతిని కనుగొన్నది

(A) కార్ల్ పియర్సన్ (B) నీమాన్ (C) లెహ్మన్ (D) ఫిషర్

91. Additive model of a time series with components T, S, C and I is

T, S, C మరియు I లు అంశాలుగా ఉన్న కాలశ్రేణి యొక్క సంకలన నమూనా

(A) $Y = T \times S + C \times R$ (B) $Y = T + C \times S \times I$

(C) $Y = T + S + C + I$ (D) $Y = T + S \times C + I$

⇒ Multiplication model of a Time series is ⇒ $Y = T \times S \times C \times I$.

92. The best method for finding out seasonal fluctuations is

(A) Simple average method (B) Ratio to moving average method

(C) Ratio to trend method (D) None of these

ఋతు సంబంధిత చాంచల్యాలను కనుగొనుటకు ఉత్తమ పద్ధతి

(A) సరళ సగటు పద్ధతి (B) నిష్పత్తి చలమాంధ్యమాల పద్ధతి

(C) నిష్పత్తి ప్రవృత్తి పద్ధతి (D) ఇవేమీ కావు

93. Geometric mean of Laspeyer's and Paasche's price index is

(A) Fisher's Price Index (B) Kelly's Price Index

(C) Walsh Price Index (D) Drobish – Bowley Price Index

లాస్పేయిర్ మరియు పాచ్చే ధరల సూచికల గుణ మధ్యమము

(A) ఫిషర్ ధరల సూచిక (B) కెల్లీ ధరల సూచిక

(C) వాల్ష్ ధరల సూచిక (D) డ్రోబిష్ – బౌలీ ధరల సూచిక

94. The condition for time reversal test to be satisfied with usual notations is

మామూలు సంకేతాలలో, కాలతి రోగమన పరీక్షను తృప్తి పరచు నియమము

(A) $p_{01} \cdot p_{10} = 1$ (B) $p_{01} \cdot p_{10} = 0$ (C) $p_{01} / p_{10} = 1$ (D) $p_{01} + p_{10} = 1$

95. Fisher's ideal index formula does not satisfy

(A) Time reversal test (B) Circular test

(C) Factor reversal test (D) Unit test

దీనిని ఫిషర్ ఆదర్శ సూచీ సూత్రము తృప్తిపరచదు

(A) తిరోగమన కాల పరీక్ష (B) చక్రీయ పరీక్ష

(C) తిరోగమన కారక పరీక్ష (D) యూనిట్ పరీక్ష

96. Laspeyer's Index number is also known as

(A) Fixed base index (B) Given year method index

(C) Base year method index (D) None of these

లాస్పేయిర్ సూచిక సంఖ్యకు మరొక పేరు

(A) స్థిర ఆధార సూచీ (B) ఇచ్చిన సంవత్సర పద్ధతి సూచీ

(C) ఆధార సంవత్సర పద్ధతి సూచీ (D) ఇవేమీ కావు

97. In Linear programming problem, the solution is feasible if

(A) $x_j \geq 0$ (B) $x_j < 0$ (C) $x_j \neq 0$ (D) None of these

ఇది అయితే, ఏక ఘాత ప్రణాళిక సమస్యకు సాధన శక్యమవుతుంది

(A) $x_j \geq 0$ (B) $x_j < 0$ (C) $x_j \neq 0$ (D) ఇవేమీ కావు

98. The solution of a LPP is degenerate if

(A) All basic variables are negative (B) All basic variable are positive

(C) Atleast one basic variable is zero (D) None of these

ఇది అయితే, ఏక ఘాత ప్రణాళిక సమస్య సాధన హీనమవుతుంది

(A) అన్ని ఆధార చలరాశులు ఋణాత్మకం (B) అన్ని ఆధార చలరాశుల ధనాత్మకం

(C) కనీసం ఒక ఆధార చలరాశి శూన్యం (D) ఇవేమీ కావు

99. In LPP, if the rank of the matrix A is $m(m<n)$, then the number of basic variables is

ఏక ఘాత ప్రణాళికా సమస్యలో, మాత్రిక A యొక్క కోటి $m(m<n)$ అయితే, ఆధార చలరాశుల సంఖ్య

(A) $n-m$ (B) n (C) $m-1$ (D) m

100. The method for obtaining optimal solution to a sequencing problem is

(A) Simplex method (B) Modi Method

(C) Johnson's Rule (D) None of these

ఉపాను క్రమ సమస్యకు అభిలషణీయ సాధన రాబట్టుటకు పద్ధతి

(A) సింప్లెక్సు పద్ధతి (B) మోడి పద్ధతి

(C) జాన్సన్ పద్ధతి (D) ఇవేమీ కావు

TEST No. 40

SVURPGCET – 2010

STATISTICS

SECTION - A

1. A random variable X is said to be of continuous type if the distribution function F is

(A) Decreasing (B) Continuous

(C) Absolutely continuous (D) Non-negative

విభాజన ప్రమేయము F ఇది అయితే యాదృచ్ఛిక చలరాశి X ను అవిచ్ఛిన్నము అంటాము

(A) అవరోహణము (B) అవిచ్ఛిన్నము

(C) సంపూర్ణముగా అవిచ్ఛిన్నము (D) ఋణేతర

2. Let X be a random variable degenerate at C. Then the distribution function of X, $F(x)$ is O if

X అనే యాదృచ్ఛిక చలరాశి C వద్ద హీనమనుకొనుము. అప్పుడు X యొక్క విభాజనము ప్రమేయము $F(x)$ ఇది అయితే O

(A) $x \geq C$ (B) $x < C$ (C) $x \leq C$ (D) $x = C$

3. If U and V denote the number of points on two dice, then their sum and difference X and Y are

(A) Independent (B) $V(X) \neq V(Y)$

(C) Dependent (D) $E(X) = E(Y)$

U మరియు V రెండు పాచికల మీద బిందువుల సంఖ్య అయితే, వాటి మొత్తము మరియు తేడా X మరియు Y లు

(A) స్వతంత్రము (B) $V(X) \neq V(Y)$

(C) అస్వతంత్రము (D) $E(X) = E(Y)$

4. If $\phi(t)$ is the characteristic function, then the value of $\phi(0)$ is

$\phi(t)$ లాక్షణిక ప్రమేయము అయితే, అప్పుడు $\phi(0)$ యొక్క విలువ

(A) 1 (B) 0 (C) $-\infty$ (D) $+\infty$

5. Expectation of this function is the same function of the expectation

(A) Concave (B) Linear

(C) Convex (D) None of these

ఈ ప్రమేయము యొక్క ఆశంస, ఆశంస యొక్క అదే ప్రమేయము

(A) పుటాకారము (B) ఏకఘాత

(C) కుంభాకారము (D) ఇవేవీకావు

6. Let X be a non-negative random variable with distribution function F. Then $E(X)$ is equal to
X అనేది విభాజన ప్రమేయంలో F గా ఉన్న ఒక ఋణేతర యాదృచ్ఛిక చలరాశి. అప్పుడు $E(X)=$

(A) $\int_0^\infty f(x)\,dx$ (B) $\int_0^\infty F(x)\,dx$

(C) $\int_0^\infty (1-f(x))\,dx$ (D) $\int_0^\infty (1-F(x))\,dx$

7. In a lottery m tickets are drawn at a time out of tickets numbered 1 to n. The expectation of the sum of the numbers on the tickets drawn is
ఒక లాటరీలో 1 నుంచి n సంఖ్యలున్న టికెట్లనుండి ఒకేసారి m టికెట్లు తీయబడినవి. తీయబడిన టికెట్ల మీద సంఖ్యల యొక్క మొత్తము యొక్క ఆశంస

(A) $\frac{m(n+1)}{2}$ (B) $\frac{n+1}{2}$ (C) $\frac{m.n+1}{2}$ (D) $\frac{n-m}{2}$

8. If X_1 and X_2 are independent, then in the usual notation $\phi_{x_1-x_2}(t)$
X_1 మరియు X_2 లు స్వతంత్రాలు అప్పుడు మామూలు సంకేతములో $\phi_{x_1-x_2}(t)$

(A) $\frac{\phi_{x_1}(t)}{\phi_{x_2}(-t)}$ (B) $\frac{\phi_{x_1}(t)}{\phi_{x_2}(t)}$ (C) $\phi_{x_1}(t)-\phi_{x_2}(t)$ (D) $\phi_{x_1}(t).\phi_{x_2}(t)$

9. If X is a random variable with mean μ and variance σ^2 then for any positive integer K, We have :
X అనేది μ మధ్యమము మరియు σ^2 విస్తృతిగా గల ఒక యాదృచ్ఛిక చలరాశి అయినప్పుడు ఏదేని ఋణాత్మక పూర్ణాంకము K కు ఇది అవుతుంది

(A) $P(|X+\mu|<K\sigma)<\frac{1}{K^2}$ (B) $P(|X-\mu|>=K\sigma^2)<=\frac{1}{K}$

(C) $P(|X-\mu|>=K\sigma)<=\frac{1}{K^2}$ (D) $P(|X-\mu|>=K\sigma)>K^2$

10. If the moments of order t exists for a random variable, moments of this order exist
ఒక యాదృచ్ఛిక చలరాశి యొక్క t పరిమాణము యొక్క ఘాతిక ఉన్నట్లయితే, ఈ పరిమాణము యొక్క ఘాతికలు ఉంటాయి

(A) $0<s<t$ (B) $0<s<t^2$

(C) $0<s<t-1$ (D) $0<s<t+2$

11. Relation between γ-coefficient and α-coefficient
γ-గుణకము మరియు α-గుణకముల మధ్య సంబంధము

(A) $\gamma_1=\alpha_2$ (B) $\gamma_1=\alpha_3$ (C) $\gamma_1=\alpha_4$ (D) $\gamma_2=\alpha_4$

12. Sign of skewness is
(A) always positive (B) sign of μ_2
(C) sign of μ_3 (D) Eone of these
అసాష్యవత యొక్క గుర్తు
(A) ఎల్లప్పుడూ ధనాత్మకము (B) μ_2 యొక్క గుర్తు
(C) μ_3 యొక్క గుర్తు (D) ఇవేవీకావు

13. This measures the coefficient of Skewness
ఇది అసాష్యవ గుణకమును కొలుచును
(A) β_1 (B) $\sqrt{\beta_2}$ (C) α_3-4 (D) $\pm\alpha_3$

14. If, in case of two attributes A and B, the class frequency $(AB)=0$ the values of the Yule's coefficient of association Q is
A, B లు రెండు గుణాలు మరియు $(AB)=0$ అయితే, యూల్స్ సహచర్య గుణకం Q విలువ
(A) 1 (B) -1 (C) 0 (D) $0<Q<-1$

15. Given the information $(AB)=200$; $N=1000$; $(A)=150$; $(B)=300$ reveals that
(A) Data are inconsistent (B) Data are consistent
(C) Data are insufficient (D) None of these
$(AB)=200$; $N=1000$; $(A)=150$; $(B)=300$ అని సమాచారం ఇచ్చిన ఈ క్రింది విషయాన్ని తెలియచేయును
(A) దత్తాంశము నిలకడలేనిది (B) దత్తాంశము నిలకడకలది
(C) దత్తాంశము సరిపడనంత లేనిది (D) ఇవేవీకావు

16. The coefficient of mean square contingency is due to
(A) Karl Pearson (B) Yule
(C) Kendall (D) Sheppard
మాధ్యవర్గ అధీనత యొక్క గుణకము కనుగొన్నది
(A) కార్ల్ పియర్సన్ (B) యూల్
(C) కెండాల్ (D) షెప్పర్డ్

17. For any two events A_1 and A_2, $P(A_1, A_2) \geq$
A_1 మరియు A_2 లు ఏవేని రెండు ఘటనలకు $P(A_1, A_2) \geq$
(A) $P(\bar{A}_2)$ (B) $1-P(\bar{A}_1)-P(\bar{A}_2)$
(C) $P(\bar{A}_1)+P(\bar{A}_2)$ (D) $P(\bar{A}_1+\bar{A}_2)$

18. Let A, B and C be three events associated with an experiment $\{A, B, C\}$ and let $P(B)=\frac{3}{2}P(A)$, $P(C)=\frac{P(B)}{3}$, then $P(A)=$

ఒక ప్రయోగము $\{A, B, C\}$ కు చెందిన ఘటనలు A, B మరియు C. $P(B)=\frac{3}{2}P(A)$, $P(C)=\frac{P(B)}{3}$ అప్పుడు $P(A)=$

(A) $\frac{1}{6}$ (B) $\frac{1}{2}$ (C) $\frac{1}{3}$ (D) $\frac{2}{3}$

19. Suppose $P(A)=0.4$, $P(A\cup B)=0.7$ and $P(B)=P$, A and B are mutually exclusive if P is

$P(A)=0.4$, $P(A\cup B)=0.7$ మరియు $P(B)=P$. ఈ విలువ యొక్క P కు A మరియు B లు పరస్పర వియుక్త ఘటనలు

(A) 0.5 (B) 0.4 (C) 0.2 (D) 0.3

20. If X_1 and X_2 are independently and identically distributed random variables $P(|X_1-X_2|>t)\leq$

X_1 మరియు X_2 లు స్వతంత్ర మరియు ఏకీభవించే విభాజనములు గల యాదృచ్ఛిక చలరాశులు అయితే $P(|X_1-X_2|>t)\leq$

(A) $2p(|x_1|>2t)$ (B) $P(|x_2|>t)$ (C) $P(|x_1|>\frac{t}{2})$ (D) $2P(|x_1|>2t)$

21. The distribution with mean < variance is

(A) Binomial (B) Negative binomial

(C) Poisson (D) Geometric

సగటు < విస్తృతిగా గల విభాజనము

(A) ద్విపద (B) ఋణద్విపద

(C) పాయిజాన్ (D) జ్యామితీయ

22. For a Poisson variate X with parameter λ, the value of β_2 is

λ పరామితిగాగల పాయిజాన్ చలరాశి X కు β_2 యొక్క విలువ

(A) $\frac{1}{\lambda}$ (B) $\frac{3}{\lambda}+1$ (C) $3+\frac{1}{\lambda}$ (D) $3-\frac{1}{\lambda}$

23. In the usual, notation, lack of memory property is

మరచిపోయే ధర్మము మామూలు సంకేతాలలో

(A) $P(Y=t/X\geq K)=P(X=t)$ (B) $P(Y=t/X\leq K)=P(X=t)$

(C) $P(Y=t/X\geq K)=P(Y=t)$ (D) $P(Y=t/X\leq K)=P(Y=t)$

24. Hypergeometric distribution tends to Binomial distribution if in the usual notation
హైపర్ జ్యామితీయ విభాజనము మామూలు సంకేతాలలో ఇది అయితే ద్విపద విభాజనము చేరుతుంది
(A) $N\to\infty,\ \frac{M}{N}=q$ (B) $n\to\infty,\ \frac{M}{N}=p$
(C) $N\to\infty$ (D) $N\to\infty,\ \frac{M}{N}=p$

25. This distribution may be regarded as a generalisation of geometric distribution
(A) Poisson (B) Hypergeometric
(C) Negative binomial (D) Binomial
ఈ విభాజనము జ్యామితీయ విభాజనము యొక్క సాధారణీకరణముగా తలంచవచ్చు
(A) పాయిజాన్ (B) హైపర్ జ్యామితీయ
(C) ఋణద్విపద (D) ద్విపద

26. For the rectangular distribution $dF=dx$, $0\le x\le 1$, the mean is
$dF=dx$, $0\le x\le 1$ దీర్ఘచతురస్ర విభాజనమునకు సగటు
(A) $\frac{1}{2}$ (B) $\frac{1}{4}$ (C) $\frac{1}{12}$ (D) 1

27. For $N(\mu,\sigma)$ the quartile deviation is approximately equal to
$N(\mu,\sigma)$ కు చతుర్థాంశక విచలనము ఉజ్జాయింపుగా
(A) $\frac{2}{3\sigma}$ (B) $\frac{2}{3}\sigma$ (C) $\frac{4}{5}\sigma$ (D) 3σ

28. If X_1 is a $N(2,1)$ and X_2 is a $N\left(1,\frac{1}{4}\right)$, then X_1-X_2 is a
X_1 ఒక $N(2,1)$ మరియు X_2 ఒక $N(1,\frac{1}{4})$ అయినప్పుడు X_1-X_2
(A) $N\left(1,\frac{3}{4}\right)$ (B) $N\left(3,\frac{5}{4}\right)$ (C) $N\left(3,\frac{3}{4}\right)$ (D) $N\left(1,\frac{5}{4}\right)$

29. If $X_1, X_2, \ldots, X_n$ are i.i.d standard Cauchy variates the distribution of $\bar{X}$ is
(A) Standard normal (B) Standard Cauchy
(C) Cauchy (D) Normal
$X_1, X_2, \ldots, X_n$ లు స్వ.ఏ.వి. ప్రామాణిక కోషి చలరాశులు అయితే $\bar{X}$ యొక్క విభాజనము
(A) ప్రామాణిక నార్మల్ (B) ప్రామాణిక కోషి
(C) కోషి (D) నార్మల్

30. The distribution for which the mode does not exist is
(A) Cauchy (B) Normal (C) Experimental (D) Uniform
ఈ విభాజనమునకు బాహుళకము ఉండదు.
(A) కోషి (B) నార్మల్ (C) ఘాతిక (D) ఏకరూప

SECTION - B

31. If $f(x,y) = \exp[-(x+y)]$, $x \geq 0$, $y \geq 0$
$= 0$ elsewhere
ఇతరత్రా
then $P(X<1) =$
అయితే అప్పుడు
(A) $1-\frac{1}{e}$ (B) $\frac{1}{e}$ (C) e (D) $1+\frac{1}{e}$

32. Principle of least squares is due to
(A) Karl-Pearson (B) Legender
(C) Yule (D) R.A.Fisher
కనిష్ఠ వర్గాల యొక్క సూత్రము కనుగొన్నది
(A) కార్ల్ పియర్సన్ (B) లెజెండర్
(C) యూల్ (D) R.A.ఫిషర్

33. The value of r^2 lies between
r^2 యొక్క విలువ వీటిమధ్య ఉంటుంది
(A) (−1, +1) (B) (0, ∞) (C) (0, 1) (D) (−3, 3)

34. Regression coefficients are independent of change of
(A) Scale only (B) Origin only
(C) Origin and Scale (D) Units
ప్రతిగమన గుణాంకములు ఈ మార్పు యొక్క స్వతంత్రము
(A) స్కేలు మాత్రమే (B) మూలబిందువు మాత్రమే
(C) మూలబిందువు మరియు స్కేలు (D) యూనిట్లు

35. If $r=0.7$ and probable error $=0.15$, $n =$
$r=0.7$ మరియు సంభావ్య దోషము $=0.15$, $n =$
(A) 6 (B) 8 (C) 25 (D) 5

36. The mean of the two regression coefficients is
రెండు ప్రతిగమన గుణకముల యొక్క మధ్యమము
(A) $<r$ (B) 1 (C) $>r$ (D) $<\frac{\sigma_x}{\sigma_y}$

37. Modified exponential curve can be used if this ratio is constant
ఈ నిష్పత్తి స్థిరాంకము అయితే మార్పు చేసిన ఘాతక వక్రము ఉపయోగించవచ్చు
(A) $\frac{\Delta(1/y_x)}{\Delta(1/y_{x-1})}$ (B) $\frac{\Delta y_x}{\Delta y_{x-1}}$ (C) $\frac{\Delta y_{x-1}}{\Delta y_x}$ (D) $\frac{\Delta\left(1/y_{x-1}\right)}{\Delta\left(1/y_x\right)}$

38. If one of the regression coefficient is greater than unity the other must be
ఒక ప్రతిగమన గుణకము ఒకటి కంటే ఎక్కువైన రెండవ ప్రతిగమన గుణకము
(A) <1 (B) $=1$ (C) >1 (D) 0

39. If $r=0$ the angle between the regression lines is
$r=0$ అయిన ప్రతిగమన రేఖల మధ్యకోణము
(A) 60° (B) 45° (C) 90° (D) 30°

40. Standard error of standard deviation is
క్రమ విచలనము యొక్క క్రమదోషము
(A) $\frac{\sigma}{n}$ (B) $\frac{\sigma}{\sqrt{2n}}$ (C) $\frac{\sigma}{\sqrt{n}}$ (D) $\frac{\sigma}{2\sqrt{n}}$

41. β_1 of a t-distribution with $(n-1)$ degrees of freedom is
$(n-1)$ స్వాతంత్ర్యంకాలుగల t-విభాజనము యొక్క β_1 =
(A) 0 (B) $3\frac{(n-2)}{(n-4)}$ (C) $\frac{n}{n-2}$ (D) $\frac{n-2}{n-4}$

42. Student's t is a particular case of
(A) Normal (B) χ^2 (C) F (D) Fisher's t
స్టూడెంట్-t దీని యొక్క ప్రత్యేకమైన స్థితి
(A) నార్మల్ (B) χ^2 (C) F (D) ఫిషర్-t

43. Mean of $F(4,4)$ is
$F(4,4)$ యొక్క మధ్యమము
(A) 2 (B) 3 (C) 5 (D) 3/7

44. The square of a t variate with 5 degress of freedom is distributed as
స్వాతంత్ర్యాం కాలుగల చలరాశి యొక్క వర్గము యొక్క విభాజనము
(A) $F(5,5)$ (B) $F(1,5)$ (C) χ^2_5 (D) $F(5,\infty)$

45. Distribution of the ratio of independent estimates of the population variance is
లోకపు విస్తృతి యొక్క స్వతంత్ర అంచనాల యొక్క నిష్పత్తి యొక్క విభాజనము
(A) χ^2 (B) t (C) F (D) χ

46. Let $X_1, X_2,\ldots,X_n$ be i.i.d $N(\mu, \sigma^2)$ random variables. If S^2 is the sample variance, then $V(S^2|\sigma^2)$ =
$X_1, X_2,\ldots,X_n$ be స్వ.ఏ.వి. $N(\mu, \sigma^2)$ చలరాశులు. S^2 శాంపుల్ విస్తృతి అయితే $V(S^2|\sigma^2)$ =
(A) $\frac{n-1}{2}$ (B) $\frac{2}{n}$ (C) $\sqrt{\frac{n-1}{2}}$ (D) $\frac{2}{n-1}$

74. In s.r.s standard error of $\bar{y}$ is
స.యా.ప్ర.లో $\bar{y}$ యొక్క క్రమదోషము

(A) $S\sqrt{1-\frac{n}{N}}$ (B) $\frac{S}{n}\sqrt{1-\frac{n}{N}}$ (C) $\frac{S}{\sqrt{n}}\sqrt{1-\frac{n}{N}}$ (D) $\frac{S}{\sqrt{n}}\sqrt{1-\frac{1}{N}}$

75. Inverse sampling is due to
(A) Haldane (B) Fisher (C) Cochren (D) Feller
విలోమ ప్రతిరూపము రచించినది
(A) హాల్డేన్ (B) ఫిషర్ (C) కోక్రాన్ (D) ఫెల్లర్

76. An unbiased estimate of variance of p is
p యొక్క విస్తృతి యొక్క నిష్పాక్షిక అంచనా

(A) $\frac{p.q}{n}$ (B) $\frac{npq}{n-1}$ (C) $\frac{N-n}{N-1}p.q$ (D) $\frac{pq}{n-1}$

77. If the sampling fraction is negligible in all strata $V(\bar{y}_{st})$ =
అన్ని స్తరితలలో శాంప్లింగ్ అనుపాతము ఉపేక్షింపదగిన $V(\bar{y}_{st})$ =

(A) $\sum_h \frac{W_h^2 S_h^2}{n_h}$ (B) $\sum_h \frac{W_h S_h^2}{n_h}$ (C) $\sum_h \frac{W_h^2 S_h^2}{N_h}$ (D) $\sum_h \frac{W_h S_h^2}{N}$

78. Self-weighting sample is provided by this allocation
(A) Optimum (B) Proportional
(C) Random (D) Subjective
స్వయం ప్రామాణికత శాంపుల్‌ను ఈ కేటాయింపు ఇస్తుంది
(A) అభిలషణీయ (B) అనుపాత
(C) యాదృచ్ఛిక (D) అంతఃకరణము

79. A systematic sample would be more efficient as compared with srswor if
ఇది అయినట్లయితే క్రమానుగత ప్రతిరూప గ్రహణ పద్ధతి తిరిగి చేర్చని స్తరిత యాదృచ్ఛిక ప్రతిరూప గ్రహణ పద్ధతి కంటే ఎక్కువ సామర్థ్యము కలిగి ఉంటుంది

(A) $\rho < \frac{1}{nk-1}$ (B) $\rho < \frac{-1}{n-1}$ (C) $\rho < \frac{-1}{nk-1}$ (D) $\rho < \frac{-1}{nk-N}$

80. In many situations the decrease in sampling error is inversely proportional to the
(A) (Sample size)$^{1/2}$ (B) (Sample size)^2
(C) Variance (D) Sample size
చాలా సందర్భాలలో ప్రతిరూప గ్రహణ దోషములోని తగ్గుదల దీనికి విలోమ అనుపాతములో ఉంటుంది
(A) (ప్రతిరూప పరిమాణము)$^{1/2}$ (B) (ప్రతిరూప పరిమాణము)^2
(C) విస్తృతి (D) ప్రతిరూప పరిమాణము

81. Mortality situations of two places should be compared on the basis of
(A) Standardized death-rate (B) CDR
(C) Age specific death-rate (D) None of these
రెండు ప్రదేశాలలోని మర్త్యాల పరిస్థితిని దీనిని బట్టి సరిపోల్చాలి
(A) ప్రామాణికీకరణ మర్త్య రేటు (B) ముడి మర్త్య రేటు
(C) వయోనిర్ధారిత మర్త్య రేటు (D) ఇవేవీకావు

82. A drawback of specific death-rate is
(A) Measures relative mortality
(B) Differential mortality
(C) Ignores sex distribution
(D) None of these
నిర్ధారిత మర్త్య రేటు యొక్క ఒక అవరోధం
(A) సాపేక్ష మర్త్యతను గణించుట
(B) అవకలని మర్త్యత
(C) లింగ విభాజనాన్ని విస్మరించును
(D) ఇవేవీకావు

83. Gross reproduction rate is modified form of
(A) CBR (B) ASFR
(C) TFR (D) None of these
స్థూల పునరుత్పాదన రేటు దీని యొక్క మార్పు చెందిన రూపము
(A) ముడి జనన రేటు (B) వయోనిర్ధారిక సారవత్పపు రేటు
(C) సంపూర్ణ సారవత్పపు రేటు (D) ఇవేవీకాదు

84. The pivotal column of the life-table
జీవన పట్టిక యొక్క కీలకదొంతి
(A) l_x (B) L_x (C) T_x (D) q_x

85. μ_x =
(A) $\frac{-dl_x}{d_x}$ (B) $\frac{d_x}{L_x}$ (C) $1-p_x$ (D) $\left(\frac{-dl_x}{d_x}\right)\frac{1}{l_x}$

86. The mean used for averaging the price relatives
(A) Harmonic mean (B) Mode
(C) Geometric mean (D) Medium
ధరసాపేక్షకాల మాధ్యమము కొరకు ఉపయోగించే సగటు
(A) హరాత్మక సగటు (B) బాహుళకము
(C) జ్యామితీయ సగటు (D) మధ్యగతము

87. Factor reversal test is a test for
(A) Attributes (B) Trend
(C) Index numbers (D) Experimental design

తిరోగమన కారక పరీక్ష ఇది పరీక్షించుటకు ఉన్నది
(A) గుణములు (B) ప్రవృత్తి
(C) సూచిక సంఖ్యలు (D) ప్రయోగ రచన

88. Laspeyre's index formula uses the weights of the
(A) Base year
(B) Past year
(C) Current year
(D) Average of the weights of a number of years

లాస్పేయిర్ సూచిక సంఖ్య ఈ భారములను ఉపయోగించును
(A) ఆధార సంవత్సరము
(B) గడచిన సంవత్సరము
(C) ప్రస్తుత సంవత్సరము
(D) అనేక సంవత్సరముల భారముల సగటు

89. Real wages are defined as
(A) (Money wages / Price index) × 100
(B) (Price index / Money wages) × 100
(C) (Quantity index number / Money wages) × 100
(D) (Money wages × Price index) × 100

వాస్తవ కూలీల నిర్వచనము
(A) (డబ్బుకూలీ/ధరల సూచీ సంఖ్య) × 100
(B) (ధరల సూచీ సంఖ్య/డబ్బు కూలీ) × 100
(C) (పరిమాణ సూచిక సంఖ్య/డబ్బు కూలీ) × 100
(D) (డబ్బు కూలీ × ధరల సూచిక సంఖ్య) × 100

90. Kelly's index number is also known as
(A) Price relative
(B) Fixed weight method
(C) Value index
(D) Aggregative index

కెల్లీ యొక్క సూచిక సంఖ్యకు మరొక పేరు
(A) సాపేక్ష ధర
(B) స్థిర భార పద్ధతి
(C) విలువ సూచిక
(D) సగటు సూచిక

91. The control limits for *C*-chart are defined based on this distribution
(A) Binomial (B) Uniform
(C) Poisson (D) Negative binomial

C-పటము నియంత్రణ అవధులు ఈ విభాజనము ఆధారముగా నిర్వచించబడినవి
(A) ద్విపద (B) ఏకరూప
(C) పాయిజాన్ (D) ఋణద్విపద

92. AQL is a property of
(A) Sampling plan
(B) The product
(C) Vendor's manufacturing process
(D) Lot quality

స.గు.స్థా. దీని యొక్క ధర్మము
(A) శాంప్లింగ్ ప్లాన్
(B) వస్తువు
(C) అమ్మువారి తయారు చేయు పద్ధతి
(D) లాట్ గుణము

93. The concept of control chart was introduced by
(A) W.A.Shewart (B) C.R.Rao
(C) A.Wald (D) Dodge and Roming

నియంత్రణ పటము యొక్క భావన పరిచయము చేసినది
(A) W.A.షీవార్ట్ (B) C.R.రావు
(C) A.వాల్డ్ (D) డాడ్జ్ మరియు రోమింగ్

94. This is a control chart for variables
(A) C-chart (B) σ-chart (C) *np*-chart (D) *p*-chart

చలరాశులకు ఇది ఒక నియంత్రణ పటము
(A) C-పటము (B) σ-పటము (C) *np*-పటము (D) *p*-పటము

95. Low spots represents this situation
(A) Improvement in the product quality
(B) Runs
(C) Deterioration in the product quality
(D) None of these

దిగువ చుక్కలు ఈ స్థితిని సూచిస్తాయి
(A) ప్రొడక్టు గుణములో అభివృద్ధి
(B) రన్‌లు
(C) ప్రొడక్టు గుణములో తక్కువగుట
(D) ఇవేవీకావు

96. Divided difference method can be used when the given independent variate values are
(A) at equal intervals (B) not well defined
(C) at unequal intervals (D) all the above
స్వతంత్ర చలరాశి విలువలు ఏ విధంగా ఇచ్చినప్పుడు విభాజిత భేద పద్ధతిని ఉపయోగించుదురు
(A) సమాన అంతరాలుగా (B) సరిగా నిర్వచింపలేము
(C) అసమాన అంతరాలుగా (D) పైవన్నీ

97. The variations that are purely random and erratic are
(A) Trend (B) Seasonal variations
(C) Cyclical variations (D) Random variations
ఈ క్రింది ఏ వివనాలు యాదృచ్ఛికం మరియు క్రమరహితము అగును
(A) ప్రవృత్తి (B) ఋతువుల వివలనాలు
(C) చక్రీయ వివలనాలు (D) యాదృచ్ఛిక వివలనాలు

98. The general decline in sales of cotton clothes is an example of
(A) Seasonal variations (B) Cyclical variations
(C) Trend (D) Irregular variations
సాధారణంగా తగ్గే నూలు వస్త్రాల అమ్మకం ఈ క్రింద దేనికి ఉదాహరణ
(A) ఋతు వివలనాలు (B) చక్రీయ వివలనాలు
(C) ప్రవృత్తి (D) క్రమరహిత వివలనాలు

99. The solution of a transportation problem with m rows and n columns is feasible if the number of allocations is
m పంక్తులు మరియు n కాలములు గల రవాణా సమస్య యొక్క సాధన కేటాయింపుల సంఖ్య ఇది అయినప్పుడు వీలైనది
(A) $m+n$ (B) $m+n-1$ (C) $m \times n$ (D) $m+n+1$

100. A variable which does not appear in the basic variable column of simplex table is
(A) always equal to zero (B) never equal to zero
(C) called a basic variable (D) none of the above
సింప్లెక్స్ పట్టిక యొక్క బేసిక్ చలరాశి దొంతిలో కనిపించని చలరాశి
(A) ఎల్లప్పుడూ సున్నాకు సమానము (B) సున్నా ఎప్పటికీ కాదు
(C) బేసిక్ చలరాశి అంటాము (D) ఇవేవీకావు