1. The limits of Karl Pearson's Coefficient of Correlation is:
a) $-\infty, \infty$
b) $-\infty, 0$
c) 0, 1
d) -1 and +1

2. The Karl Pearson's Correlation Coefficient is the .... of two regression coefficients
a) Arithmetic Mean
b) Geometric Mean
c) Harmonic Mean
d)Median

3. Which of the following statements are true?
Statement I: Regression coefficients are unaffected by scale shift.
Statement II: Regression lines coincides in the case of Perfect Correlation
a) Both (I) and (II)
b) None of (I) and (II)
c) Only (I)
d) Only (II)

4. Paasche's Index Number uses .... as weight.
a) Product of Base and Current year Quantity
b) Total of Base and Current year Quantity
c) Current year Quantity
d) Base year Quantity

5. According to Time Reversal Test for an Index Number:

a) $^{t}OK = \frac{1}{I_{KO}}$

b) $^{t}OK = {}^{t}KO$

c) $^{t}OK.{}^{t}KO = \frac{\sum Pkqk}{\sum P_0 q_0}$

d) $^{t}OK = -I_{KO}$

6. Which Index Number is considered to be Ideal?
a) Bowley's
b) Fisher's
c) Marshall-Edgeworth
d) Smith's

7. An increase in the sale of Air Conditioners during summer is attributed to ... Component of Time-Series.
a) Trend
b) Cyclic Variation
c) Seasonal Variation
d) Irregular Variation

8. Which of the following statements are true?
I: Moving Averages are used to measure Trend.
II: Effects of seasons are measured using Seasonal Indices.
a) Only (I)
b) Only (II)
c) None of (I) and (II)
d) Both (I) and (II)

9. Census is preferred when?
a) Medical Research on Cancer Patients
b) Assessing Income Tax Returns
c) Studying Quality of Bulbs produced by a company
d) In all the above cases

10. When compared to Census, Sample Surveys has the advantages of:
a) Reduced Cost
b) Reduced Time
c) Greater Scope
d) All the above

11. Classical Definition of Probability fails, when:
a) Sample space is finite
b) Outcomes are Exhaustive
c) Outcomes are not equally likely
d) Outcomes are mutually exclusive

12. Which definition of probability states probability as a limiting value?
a) Statistical
b) Mathematical
c) Classical
d) Axiomatic

13. According to Axiom (2) of Probability
a) $P(A) \geq 0$ for any event A
b) $P(S)=1$, S is the sample space
c) $P(A \cup B)=P(A)+P(B)$
d) $P(A \cup B)=P(A).P(B)$

14. If a coin is tossed 8 times, then the possible number of outcomes are
a) 256
b) 512
c) 16
d) 64

15. Which of the following is a Discrete Random Variable?
a) Measuring Temperature of a locality
b) Counting Number of Accidents in a city
c) Measuring height of students
d) Measuring voltage of a Terminal

16. If the probability mass function of a random variable x is $f(x) = \begin{cases} Kx; x = 1,2,3,4,5 \\ 0; \text{elsewhere} \end{cases}$ Then, the value of K is
a) 15 b) 14
c) $\frac{1}{15}$ d) -15

17. If the probability density function of a variable x is $f(x) = \begin{cases} Ax; 0 < x < 1 \\ 0; \text{elsewhere} \end{cases}$, the A is
a) 3 b) $\frac{1}{3}$
c) $\frac{1}{2}$ d) 2

18. $E[x^2]$ gives
a) Arithmetic Mean of x
b) Variance of x
c) Second Raw Moment of x
d) Second Central Moment of x

19. For a symmetric distribution, the value of $E[x-E(x)]^3$ is
a) 0 b) -1
c) +1 d) ∞

20. The variance of a Binomial Distribution is
a) np b) npq
c) $\frac{np}{q}$ d) $\frac{n}{pq}$

21. Which of the following Binomial Distribution is Symmetrical?
a) $B\left(1, \frac{1}{3}\right)$ b) $B\left(1, \frac{1}{2}\right)$
c) $B\left(10, \frac{1}{3}\right)$ d) $B\left(10, \frac{1}{8}\right)$

22. If a variable x has $B\left(10, \frac{1}{5}\right)$ distribution, then y=10-x has ... distribution
a) $B\left(10, \frac{1}{5}\right)$ (b) $B\left(10, \frac{2}{5}\right)$
(c) $B\left(10, \frac{3}{5}\right)$ (d) $B\left(10, \frac{4}{5}\right)$

23. The Mean and Variance of a Binomial Distribution are 5 and $\frac{5}{2}$ respectively. Then P[x=0] is
a) $\frac{1}{250}$ b) $\frac{1}{512}$
c) $\frac{1}{1024}$ d) $\frac{1}{2048}$

24. The Binomial distribution B(100, 0.05) can be approximated to
a) Bernoulli
b) Poisson
c) Negative Binomial
d) Triangular

25. The mode of a Poisson distribution with mean value 3.4, is at
a) 3.4
b) 0
c) 4
d) 3

26. For a Poisson distribution, which of the following is true?
a) Mean=Variance
b) Mean=Standard Deviation
c) Mean<Variance
d) Mean>Variance

27. A Poisson distribution is
a) Symmetric always
b) Mesokurtic always
c) Plattykurtic always
d) Leptokurtic always

28. The Mean and Variance of a uniform distribution over 5 points are
a) $3, \frac{16}{12}$ b) 3, 2
c) $3, \frac{16}{144}$ d) 3, 3

29. If x has Rectangular distribution over [0, 1], then which of the following is true?
a) $E[x^2]$ does not exists
b) x has mean= $\frac{1}{2}$
c) $E\left[\frac{1}{x}\right]$ does not exists
d) Raw and Central moments are identical

30. The relationship between AM, GM and HM is
a) AM≥GM≥HM
b) AM≤GM≤HM
c) AM≥HM≥GM
d) GM≥AM≥HM

31. The empirical relationship between Mean, Median and Mode is
a) Mean-Median=2 (Mean-Mode)
b) Mean-Mode=3 (Mean-Median)
c) Mean=3 Median-2 Mode
d) Mode=3 Mean-2 Median

32. The Points of Inflexion of Normal distribution are at
a) $x=\mu \pm \sigma$ b) $x=\mu$
c) $x = \frac{\mu}{\sigma}$ d) $x = \frac{2}{\sqrt{\pi}}$

33. Which interval of a Normal distribution contains 95% of the variable values?
a) $\mu \pm 3\sigma$ b) $\mu \pm \sigma$
c) $\mu \pm 4\sigma$ d) $\mu \pm 2\sigma$

34. Mean deviation about Mean of a Normal distribution is
a) $\sigma\sqrt{\frac{\pi}{2}}$ b) $\sqrt{\frac{2\pi}{\pi}}$
c) $\sigma\sqrt{\frac{2}{\pi}}$ d) $\sqrt{\frac{2\sigma}{\pi}}$

35. The Quartile Deviation of a normal distribution is approximately
a) $\frac{4}{5}\sigma$ b) $\frac{8}{5}\sigma$
c) $\frac{1}{3}\sigma$ d) $\frac{2}{3}\sigma$

36. Which of the following is a continuous waiting time distribution?
a) Normal
b) log Normal
c) Exponential
d) Cauchy

37. If x has an exponential distribution with Mean θ, then the standard deviation of x is
a) $\frac{1}{\theta}$ b) $\frac{1}{\sqrt{\theta}}$
c) $\sqrt{\theta}$ d) θ

38. If $M_x(t)$ is the MGF of x, then $M_x(0)$ is
a) 0 b) -1
c) +1 d) μ_1

39. If $M_x(t)$ is the MGF of x, then MGF of ax+b is
a) $M_x(at+b)$ b) $e^{bt}M_x(at)$
c) $e^{at+bt}M_x(t)$ d) $M_x(at)$

40. If x and y are independent random variables, then $M_{x+y}(t)$ is
a) $M_x(t).M_y(t)$ b) $M_x(t)+M_y(t)$
c) $\frac{M_x(t)+M_y(t)}{2}$ d) $\sqrt{M_x(t).M_y(t)}$

41. The 4th derivative of MGF at origin gives
a) μ'_1 b) μ_2
c) μ'_4 d) μ'_2

42. Which of the following statements are true?
I: If exists, MGF is unique
II: Characteristic function always exists
a) None of (I) and (II)
b) Both (I) and (II)
c) Only (I)
d) Only (II)

43. If the MGF of a variable is $e^{t^2}/2$, then the distribution is
a) Standard Normal b) Poisson
c) Binomial d) Rectangular

44. The variance of a Chi-Square (χ^2) distribution with n degrees of freedom is
a) n+2 b) n
c) n-1 d) n-2

45. If x has Standard Normal distribution, then x^2 has .... distribution
a) Chi-square b) Beta of Type I
c) Beta of Type 2 d) Students t

46. The Standard Error of Sample Proportion is
a) $\frac{PQ}{n}$ b) $\frac{PQ}{\sqrt{n}}$
c) $\sqrt{\frac{PQ}{n}}$ d) $\frac{\sqrt{PQ}}{n}$

47. For large samples, the standard error of sample mean is
a) $\frac{\sigma^2}{n}$ b) $\frac{\sigma^2}{\sqrt{n}}$
c) $\frac{\sigma^2}{\sqrt{n}}$ d) $\frac{\sigma}{\sqrt{n}}$

48. The level of significance is defined by
a) 1-P[Type I error] b) 1-P[Type II error]
c) P[Type II error] d) P[Type I error]

49. A hypothesis of the form H:X~B (n=12, p=0.4) is
a) Composite b) Simple
c) Null d) Alternative

50. According to Neymman-Pearson Lemma, the Best Critical Region is obtained by:
a) $\frac{L_1}{L_0} \geq K$ b) $\frac{L_1}{L_0} \leq K$
c) $\frac{L_0}{L_1} \geq K$ d) $L_1 \geq K$

51. If β denote probability of type 2 error, then power of a test is
a) $\frac{1}{\beta}$ b) β
c) β-1 d) 1-β

52. The maximum likelihood estimator of σ^2 for a Normal Population is
a) $\frac{1}{n-1}\sum_{i=1}^{n}(x_i - \bar{x})^2$
b) $\frac{1}{n}\sum_{i=1}^{n}(x_i - \bar{\mu})^2$
c) $\frac{1}{n}\sum_{i=1}^{n}(x_i - \bar{x})^2$
d) $\frac{1}{n-1}\sum_{i=1}^{n}(x_i - \bar{\mu})^2$

53. The distribution of sample variance is
a) chi square with (n-1) degrees of freedom
b) chi square with (n+1) degrees of freedom
c) chi square with n degrees of freedom
d) chi square with (n-2) degrees of freedom

54. In chi square test for independence of attributes, the degrees of freedom corresponding to rxs contingency table is
a) rs-1 b) (r-1) (s-1)
c) r+s-1 d) rxs

55. For conducting X^2 test of goodness of fit each cell frequency must be at least
a) 2 b) 3
c) 4 d) 5

56. The distribution of ratio of two independent Chi square variables is
a) Snedecors F b) Student's t
c) Weibul d) Pareto

57. If x has $F_{(m,n)}$ distribution, then $\frac{1}{x}$ has distribution
a) $F_{(m,n)}$ b) $F_{(n,m)}$
c) $F_{(n,n)}$ d) $F_{(m,m)}$

58. In small sample t-test for equality of means the degrees of freedom of Standard Error is
a) n_1+n_2
b) n_1+n_2-2
c) n_1+n_2-1
d) n_1n_2-2

59. Which average is least affected by extreme values in a series of observations?
a) Arithmetic Mean
b) Mode
c) Median
d) Harmonic Mean

60. A class consists of 100 students with an average mark of 58. The average mark of Boys and Girls are respectively 55 and 60. What is the proportion of Boys and Girls in the class?
a) 1:2
b) 2:3
c) 3:4
d) 4:5

61. The mean of 10 observations were found to be 47. But, later on verification, it was discovered that an observation 43 was wrongly entered as 34. What is the correct value of mean?
a) 47.9
b) 47.0
c) 46.1
d) 46.0

62. The standard deviation of -2, -1, 0, 1, 2 is
a) $\frac{5}{2}$ b) $\sqrt{\frac{5}{2}}$
c) $\sqrt{2}$ d) 2

63. The median of 10, 2.9, -6.3, 8.1 and 2.4 is
a) 8.1
b) 2.4
c) 10
d) 2.9

64. If the Arithmetic Mean and Harmonic Mean of two observations are 9 and 7 respectively, then their Geometric mean is

▶

a) $\sqrt{72}$ b) $\sqrt{63}$
c) $\sqrt{56}$ d) 8

65. If the regression coefficients are $-\frac{4}{7}$ and $-\frac{7}{9}$ then the value of correlation coefficient is:
a) $-\frac{4}{9}$ b) $\frac{4}{9}$
c) $-\frac{2}{3}$ d) $\frac{2}{3}$

66. If x and y are related in the form ax+by+c=0, then:
a) x and y have Perfect correlation
b) x and y are Uncorrelated
c) x and y are Independent
d) x and y have Zero correlation

67. If F(x) is the distribution function of x, then value of $F(-\infty)$ and $(F(+\infty)$ are .... respectively.
a) -1 and +1
b) 0 and 1
c) -1 and 0
d) 0 and ∞

68. The distribution function of a random variable is
a) Continuous to right
b) Continuous to left
c) Absolutely continuous
d) Uniformly continuous

69. Let a sample space be $S=\{e_1, e_2, e_3\}$. Then which of the following is true?
a) $P(e_1)=\frac{1}{3}, P(e_2)=\frac{2}{3}, P(e_3)=\frac{1}{3}$
b) $P(e_1)=\frac{1}{2}, P(e_2)=\frac{1}{2}, P(e_3)=\frac{1}{2}$
c) $P(e_1)=\frac{1}{4}, P(e_2)=\frac{1}{2}, P(e_3)=\frac{1}{4}$
d) $P(e_1)=\frac{1}{5}, P(e_2)=\frac{2}{5}, P(e_3)=\frac{1}{5}$

70. If P(A)=0.5, P(B)=0.4 and $P(A \cap B)=0.3$, then $P\left(\frac{A}{B}\right)$ is
a) $\frac{5}{3}$ b) $\frac{3}{5}$
c) $\frac{4}{3}$ d) $\frac{3}{4}$

71. If P(A)=0.25, P(B)=0.35 and P(C)=0.40, then A, B and C are .... events.
a) Exhaustive b) Exclusive
c) Independent d) Equally likely

72. If $P(A)=\frac{1}{3}, P(B)=\frac{2}{5}$, then $P(A^c).P(B^c)=$ ....
a) $\frac{2}{15}$ b) $\frac{2}{5}$
c) $\frac{4}{15}$ d) $\frac{1}{5}$

73. A problem in mathematics is given to two students, whose respective chances of solving it are $\frac{1}{3}$ and $\frac{1}{4}$. What is the chance that the problem will be solved, if they work independently?
a) $\frac{2}{6}$ b) $\frac{3}{6}$
c) $\frac{4}{6}$ d) $\frac{5}{6}$

74. Which of the following statements are true?
I: Pairwise Independence ⟹ Mutual Independence
II: Exclusive events can not be Independent
a) Both (I) and (II)
b) None of (I) and (II)
c) Only (I)
d) Only (II)

75. The chance that a leap year selected at random will contain 53 Sundays:
a) $\frac{1}{7}$ b) $\frac{2}{7}$
c) $\frac{1}{53}$ d) $\frac{7}{53}$

76. For a set of n events $E_1, E_2, ..., E_n$ occurence of none of them is denoted by:
a) $\bigcup_{i=1}^{n} Ei$ b) $\bigcap_{i=1}^{n} Ei$
c) $\left(\bigcup_{i=1}^{n} Ei\right)^c$ d) $\left(\bigcap_{i=1}^{n} Ei\right)^c$

77. The chance of getting a diamond or a King from a pack of 52 cards is
a) $\frac{13}{52}$ b) $\frac{17}{52}$
c) $\frac{12}{52}$ d) $\frac{16}{52}$

78. If the units of a population exhibits heterogeneity, then the suitable sampling plan is:
a) Stratified Random Sampling
b) Systematic Sampling
c) Simple Random Sampling
d) Cluster Sampling

79. If the second Decile (D_2) of a N ($100,\sigma^2$) distribution is 74, then its 8th Decile (D_8) is:
a) 108
b) 174
c) 126
d) 100

80. For a set of observations, the first raw moment about 4 is 19. What is the value of arithmetic mean of the observations?
a) 19
b) 15
c) 20
d) 23

81. If $V(x)=\sigma^2$, then V (ax+b) is
a) $a^2\sigma^2$
b) $a\sigma^2$
c) $a\sigma+b$
d) $a^2\sigma^2+b$

82. The lower bound value of probability given by Chebychev's Inequality is
a) $\frac{1}{K^2}$
b) $1-\frac{1}{K^2}$
c) $\frac{1}{K^2}-1$
d) K^{2+1}

83. If x and y are two independent variables, then which of the following is true?
a) E[x]=E[y]
b) v[x]=v[y]
c) E[x+y]=E[x-y]
d) v[x+y]=v[x-y]

84. According to Central Limit Theorem, the asymptotic distribution of almost all variables are:
a) Normal
b) Binomial
c) Uniform
d) Exponential

85. The point of intersection of two ogives is at
a) Mode
b) Median
c) Arithmetic Mean
d) 4th Decile

86. For a Mesokurtic distribution, the value of 4th central moment is 147. Then the value of variance is
a) 100
b) 23
c) 7
d) 49

87. Which of the following distribution exhibits 'Lack of Memory' Property?
a) Geometric
b) Weibul
c) Binomial
d) Gamma

88. In a study related to Lung Cancer, a sample of patients are selected using ..... Sampling Plan.
a) Random
b) Judgement
c) Probability
d) Cluster

89. If f (x,y) denote the joint probability function of x and y, then $\int f(x,y)dx$ gives:
a) Conditional distribution of x given y
b) Conditional distribution of y given x
c) Marginal distribution of y
d) Marginal distribution of x

90. Which of the following statements are True?
I: Histograms are used to construct Frequency Curve
II: Index Numbers are Economic Barometers
a) Only (I)
b) Only (II)
c) None of (I) and (II)
d) Both (I) and (II)

91. Who is the founder of Indian Statistical Institute?
a) C.R. Rao
b) D.B. Lahiri
c) P.C. Mahalanobis
d) V.K. Rohatgi

92. Which of the following is a Positional Average?
a) Arithmetic Mean
b) Median
c) Geometric Mean
d) Harmonic Mean

93. Which of the following is not a secondary data?
a) Data published by various government departments
b) Balance Sheets published by a Scheduled Bank
c) Census Reports
d) Data obtained by Personal Interviews

94. The economy of a country had increased 2%, 4% and 8% during successive 3 years. What is the average rate of growth?
a) 4%
b) 4.67%
c) 5%
d) 4.5%

95. The third Decile (D_3) Divides a data in the ratio:
a) 3:3
b) 3:6
c) 3:10
d) 3:7

96. Mean Deviation of a series of observations is minimum, when taken from:
a) Mean
b) Mode
c) Median
d) 3rd Quartile

97. Coefficient of variation is the relative measure of:
a) Mean Deviation
b) Standard Deviation
c) Range
d) Quartile Deviation

98. Which of the following is true for a Positively Skewed distribution?
a) Mean > Median > Mode
b) Mean < Median < Mode
c) Mean = Median = Mode
d) Mean - Mode = 3 (Mean - Median).

99. Which of the following is true for a Leptokurtic distribution?
a) $\beta_2 > 3$
b) $\beta_2 = 3$
c) $\beta_2 < 3$
d) $\beta_2 = 0$

100. The value of first Central Moment (μ_1) is:
a) 1 always
b) -1 always
c) 0 always
d) positive always

ANSWERS

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