MEASURE OF CENRAL TENDENCY & DISPERSION

1. The median of $x, \frac{x}{2}, \frac{x}{3}, \frac{x}{5}$ is 10. Find x where x > 0
   (a) 24
   (b) 32
   (c) 8
   (d) 16

2. The average salary of 50 men was ₹ 80 but it was found that salary of 2 of them were ₹ 46 and ₹ 28 which was wrongly taken as ₹ 64 and ₹ 82. The revised average salary is :
   (a) ₹ 80
   (b) ₹ 78.56
   (c) ₹ 85.26
   (d) ₹ 82.92

3. Inter Quartile Range is _____ of Quartile Deviation.
   (a) Half
   (b) Double
   (c) Triple
   (d) Equal

4. When mean is 3.57 and mode is 2.13 then the value of median is _____.
   (a) 3.09
   (b) 5.01
   (c) 4.01
   (d) None of these

5. The equation of a line is $5x + 2y = 17$. Mean deviation of y about mean is 5. Calculate mean deviation of x about mean.
   (a) -2
   (b) 2
   (c) -4
   (d) None

6. If variance of x is 5, then find the variance of $(2 - 3x)$
   (a) 10
   (b) 45
   (c) 5
   (d) -13

7. The harmonic mean of 1, 1/2, 1/3 …….. 1/n is
   (a) 1/(n + 1)
   (b) 2/(n + 1)
   (c) (n + 1)/2
   (d) 1/(n - 1)

8. The mean weight of 15 students is 110 kg. The mean weight of 5 of them is 100 kg. and of another five students is 125 kg. then the mean weight of the remaining students is :
   (a) 120
   (b) 105
   (c) 115
   (d) None of these

9. A lady travel at a speed of 20 km/h and returned at quicker speed. If her average speed of the whole journey is 24 km/h, find the speed of return journey (in km/h)
   (a) 25
   (b) 30
   (c) 35
   (d) 38

10. The average of 5 quantities is 6 and the average of 3 is 8. what is the average of the remaining two.
    (a) 4
    (b) 5
    (c) 3
    (d) 3.5

11. The median of following numbers, which are given is ascending order is 25. Find the Value of X.
    11 13 15 19 $(x + 2)$ $(x + 4)$ 30 35 39 46
    (a) 22
    (b) 20
    (c) 15
    (d) 30

12. If standard deviation of first 'n' natural numbers is 2 then value of 'n' is
(a) 10
(b) 7
(c) 6
(d) 5

13. Geometric Mean of three observations 40,50 and X is 10. The value of X is
(a) 2
(b) 4
(c) 1/2
(d) None of the above.

14. The mean salary of a group of 50 persons is ₹ 5,850. Later on it is discovered that the salary of one employee has been wrongly taken as ₹ 8,000 instead of ₹ 7,800. The corrected mean salary is
(a) ₹ 5,854
(b) ₹ 5,846
(c) ₹ 5,650
(d) None of the above

15. If sum of squares of the values $= 3390$, $N = 30$ and standard deviation $= 7$, find out the mean.
(a) 113
(b) 210
(c) 8
(d) None of these

16. Find at the variance given that the Arithmetic Mean $= (8 + 4)/2$
(a) 2
(b) 6
(c) 1
(d) 4

17. If mean $= 5$, Standard deviation $= 2.6$, median $= 5$ and quartile deviation $= 1.5$, then the coefficient of quartile deviation equals
(a) 35
(b) 39
(c) 30
(d) 32

18. The third decile for the numbers 15, 10, 20, 25, 18, 11, 9, 12, is:
(a) 13
(b) 10.70
(c) 11
(d) 11.50

19. If the first quartile is 142 and semi-inter quartile range is 18, then the value of median is:
(a) 151
(b) 160
(c) 178
(d) None of these

20. The harmonic mean H of two numbers is 4 and their arithmetic mean A and the geometric mean G satisfy the equation $2A + G^2 = 27$, then the numbers are
(a) (1, 3)
(b) (9, 5)
(c) (6, 3)
(d) (12, 7)

21. The rates of returns from three different shares are $100\%, 200\%$ and 400% respectively. The average rate of return will be:
(a) 350%
(b) 233.33%
(c) 200%
(d) 300%

22. A company's past 10 years average earning is ₹ 40 crores. To have the same average earning for 11 years including these 10 years, how much earning must be made by the company in the eleventh year?
(a) ₹ 40 crores
(b) ₹ $\frac{40 \times 10}{11}$ crores
(c) More than ₹ 40 crores
(d) None of the above.

23. For 899, 999, 391, 384, 390, 480, 485, 760, 111, 240 Rank of median is
(a) 2.75
(b) 5.5
(c) 8.25
(d) none

24. If total frequencies of three series are 50, 60 and 90 and their means are 12,15 and 20 respectively, then the mean of their composite series is
(a) 16
(b) 15.5
(c) 16.5
(d) 14.5

25. If $\sigma^2 = 100$ and coefficient of variation $= 20\%$ then $\bar{x} =$
(a) 60
(b) 70
(c) 80
(d) 50

26. For the distribution

X	1	2	3	4	5	6
F	6	9	10	14	12	8

The value of median is
(a) 3.5
(b) 3
(c) 4
(d) 5

27. The approximate ratio of SD, MD, QD is:
(a) 3: 4: 5
(b) 2: 3: 4
(c) 15: 12 : 10
(d) 5 : 6 : 7

28. Find SD of the following
1,2,3,4,5,6,7,8,9.
(a) 2.58
(b) 60/9
(c) 60/3
(d) 3.20

29. Find the mode of the following:

$0-10$	$10-20$	$20-30$	$30-40$	$40-50$	$50-60$
7	14	22	34	20	19

(a) 32
(b) 34.61
(c) 25.42
(d) 35

30. Given the weights for the numbers $1,2,3 \ldots n$ are respectively $1^2, 2^2\ 3^2 \ldots n^2$ then weighted HM is _____.
(a) $\frac{2n+1}{4}$
(b) $\frac{2n+1}{6}$
(c) $\frac{2n+1}{3}$
(d) $\frac{2n+1}{2}$

31. The mean of 'n' observation is 'x'. If k is added to each observation, then the new mean is.
(a) k
(b) xk
(c) x-k
(d) x+k

32. The probable value of mean deviation when $Q_3 = 40$ and $Q_1 = 15$ is:
(a) 15
(b) 18.75
(c) 17.50
(d) 0

33. The marks secured by 5 students in a subject are 82,73,69,84,66. What is the coefficient of Range
(a) 0.12
(b) 12
(c) 120
(d) 0.012

CORRELATION & REGRESSION

34. The correlation coefficient between x and y is -1/2. The value of $b_{xy} - 1/8$. Find b_{yx}.
(a) -2   (b) -4
(c) 0   (d) 2

35. Ranks of two_____. characteristics by two judges are in reverse order then find the value of Spearman rank correlation co-efficient.
(a) -1   (b) 0
(c) 1   (d) 0.75

36. If the rank correlation co-efficient between marks in Management and Mathematics for a group of students is 0.6 and the sum of the squares of the difference in ranks is 66. Then what is the number of students in the group?
(a) 9   (b) 10
(c) 11   (d) 12

37. The two regression lines are $7x - 3y - 18 = 0$ and $4x - y - 11 = 0$. Find the values of b_{yx} and b_{xy}
(a) 7/3, ¼   (b) -7/3, -1/4
(c) -3/7, -1/4   (d) None of these.

38. If the two lines of regression are
$x + 2y - 5 = 0$ and $2x + 3y - 8 = 0$
The regression line of y on x is
(a) x+2y − 5 = 0   (b) $2x + 3y - 8 = 0$
(c) Any of the two line   (d) None of the two lines.

39. If the sum of the product of deviations of x and y series from their means is zero, then the coefficient of correlation will be
(a) 1   (b) -1
(c) 0   (d) None of these

40. Given: $\bar{x} = 16, \sigma x = 4.8$
$\bar{y} = 20, \sigma y = 9.6$
The coefficient of correlation between x and y is 0.6. What will be the regression coefficient of 'x' on 'y'?
(a) 0.03   (b) 0.3
(c) 0.2   (d) 0.05

41. The covariance between two variables X and Y is 8.4 and their variances are 25 and 36 respectively. Calculate Karl Pearson's coefficient of correlation between them.
(a) 0.82   (b) 0.28
(c) 0.01   (d) 0.09

42. In Spearman's Correlation Coefficient, the sum of the differences of ranks between two variables shall be _____.
(a) 0   (b) 1
(c) -1   (d) None of the above.

43. The coefficient of correlation between two variables x and y is 0.28. Their covariance is 7.6. If the variance of x is 9, then the standard deviation of y is:
(a) 8.048   (b) 9.048

(c) 10.048   (d) 11.048

44. Determine the coefficient of correlation between x and y series:

Particulars	x Series	y Series
No. of items	15	15
Arithmetic Mean	25	18
Sum of Squares of Deviations from Mean	136	138

Sum of products of Deviations of x and y series from Mean = 122
(a) -0.89   (b) 0.89
(c) 0.69   (d) -0.69

45. If $r = 0.6$, then the coefficient of determination is.
(a) 0.4   (b) -0.6
(c) 0.36   (d) 0.64

46. If the two regression lines are $3X = Y$ and $8Y = 6X$, then the value of correlation coefficient is
(a) 0.5   (b) -0.5
(c) 0.75   (d) -0.80

47. Find the probable error if $r = \frac{2}{\sqrt{10}}$ and $n = 36$
(a) 0.6745   (b) 0.067
(c) 0.5287   (d) None

48. Given that

X	-3	-3/2	0	3/2	3
Y	9	9/4	0	9/4	9

Then Karl pearson's coefficient of correlation is
(a) Positive   (b) Zero
(c) Negative   (d) None

49. If the regression line of y on x is given by $y = x + 2$ and Karl Pearson's coefficient of correlation is 0.5 then $\frac{\sigma y^2}{\sigma x^2} = $ _____.
(a) 3   (b) 2
(c) 4   (d) None

50. The coefficient of correlation between x and y is 0.5 the covariance, is 16, and the standard deviation of y is
(a) 4   (b) 8
(c) 16   (d) 64

51. If $y = 9x$ and $x = 0.01y$ then r is equal to:
(a) -0.1   (b) 0.1
(c) +0.3   (d) -0.3

52. If $b_{yx} = 0.5$, $b_{xy} = 0.46$ then the value of correlation coefficient r is:
(a) 0.23   (b) 0.25
(c) 0.39   (d) 0.48

PROBABILITY

53. In a pack of playing cards with two jokers' probability of getting king of spade is
(a) 4/13
(b) 4/52
(c) 1/52
(d) 1/54

54. If x be the sum of two numbers obtained when two die are thrown simultaneously then $P(x \geq 7)$ is
(a) 5/12
(b) 7/12
(c) 11/15
(d) 3/8

55. A bag contains 3 white and 5 black balls and second bag contains 4 white and 2 black balls. If one ball is taken from each bag, the probability that both the balls are white is _____
(a) 1/3
(b) 1/4
(c) 1/2
(d) None of these

56. The odds in favour of A solving a problem is $5:7$ and odds against B solving the same problem is $9:6$. What is the probability that if both of them try, the problem will be solved?
(a) 117/180
(b) 181/200
(c) 147/180
(d) 119/180

57. Consider Urn I: 2 white balls, 3 black balls
Urn II : 4 white balls, 6 black balls
One ball is randomly transferred from first to second Urn, then one ball is drawn from II Urn. The probability that drawn ball is white is
(a) 22/65
(b) 22/46
(c) 22/55
(d) 21/45

58. The probability of Girl getting scholarship is 0.6 and the same probability for Boy is 0.8. Find the probability that at least one of the categories getting scholarship.
(a) 0.32
(b) 0.44
(c) 0.92
(d) None of the above.

59. In a packet of 500 pens, 50 are found to be defective. A pen is selected at random. Find the probability that it is non defective.
(a) 8/9
(b) 7/8
(c) 9/10
(d) 2/3

60. Let A and B two events in a sample space S such that $P(A) = \frac{1}{2}; P(B) = \frac{5}{8}, P(A \cup B) = \frac{3}{4}$; Find $P(A \cap B)$
(a) 3/4
(b) 1/4
(c) 3/16
(d) None of these.

61. Arun & Tarun appear for an interview for two vacancies. The probability of Arun's selection is 1/3 and that of Tarun's selection is 1/5 Find the probability that only one of them will be selected.
(a) 2/5
(b) 4/5
(c) 6/5
(d) 8/5

62. Two dice are thrown together. Find the probability of getting a multiple of 2 on one 1st dice and multiple of 3 on the other dice.
(a) 2/3
(b) 1/6
(c) 1/3
(d) None of the above.

63. The probability of a cricket team winning match at Kanpur is 2/5 and hosing losing match at Delhi is 1/7 what is the Probability of the team winning atleast one match?
(a) 3/35
(b) 32/35
(c) 18/35
(d) 17/35

64. Find the expected value of the following probability distribution
X: −20   −10   30   75   80
P(x):   3/20   1/5   1/2   1/10   1/20
(a) 20.5
(b) 21.5
(c) 22.5
(d) 24.5

65. A bag contains 4 Red and 5 Black balls. Another bag contains 5 Red and 3 Black balls. If one ball is drawn at random from each bag. Then the probability that one Red and one Black drawn is -
(a) $\frac{12}{72}$
(b) $\frac{25}{72}$
(c) $\frac{37}{72}$
(d) $\frac{13}{72}$

66. What is the probability of having at least one 'SIX' from 3 throws of an unbaised die?
(a) $\frac{5}{6}$
(b) $\left(\frac{5}{6}\right)^3$
(c) $1 - \left(\frac{1}{6}\right)^3$
(d) $1 - \left(\frac{5}{6}\right)^3$

67. What is the probability of having at least one' six' in 3 throws of a project die?
(a) 5/6
(b) $(5/6)^3$
(c) $1 - (1/6)^3$
(d) $1 - (5/6)^3$

68. If a speaks 75% of truth and B speaks 60% of truth. In what percentage both of them likely contradict with each other in narrating the same questions?
(a) 0.60
(b) 0.45
(c) 0.65
(d) 0.35

69. If there are 48 marbles market with numbers 1 to 48, then the probability of selecting a marble having the number divisible by- 4 is:
(a) ½
(b) 2/3
(c) 1/3
(d) ¼

70. If there are 16 phones, 10 of them are Android and 6 of them are of Apple, then the probability of 4 randomly selected phones to include 2 Android and 2 Apple phone is:
(a) 0.47
(b) 0.51
(c) 0.37
(d) 0.27

71. In a group of 20 males and 15 females, 12 males and 8 females are service holders. What is the probability that a person selected at random from the group is a service holder given that the selected person is a male?
(a) 0.40
(b) 0.60
(c) 0.45
(d) 0.55

72. If in a bag of 30 balls numbered from 1 to 30. Two balls are drawn find probability of getting a ball being multiple of 2 or 5

(a) $\frac{108}{465}$

(b) $\frac{117}{435}$

(c) $\frac{117}{300}$

(d) $\frac{116}{485}$

73. A machine is made of two parts A and B. The manufacturing process of each part is such that probability of defective in part A is 0.08 and that B is 0.05. What is the probability that the assembled part will not have any defect?

(a) 0.934

(b) 0.864

(c) 0.85

(d) 0.874

74. If a number is selected at random from the first 50 natural numbers, what will be the probability that the selected number is a multiple of 3 and 4 ?

(a) 5/50

(b) 2/25

(c) 3/30

(d) 4/25

THEORATICAL DISTRIBUTION

75. For a Poisson distribution $P(x = 3) = 5P(x = 5)$, then S.D. is
(a) 4
(b) 2
(c) 16
(d) $\sqrt{2}$

76. If for a Binomial distribution $B(n, p,)$ the mean = 6 and Variance = 2 then 'p' is
(a) 2/3
(b) 1/3
(c) 3/5
(d) ¼

77. If the inflexion points of a Normal Distribution are 6 and 14. Find its Standard Deviation ?
(a) 4
(b) 6
(c) 10
(d) 12.

78. In a Binomial Distribution, if mean is k-times the variance, then the value of 'k' will be _____.

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

79. If x and y are independent normal variates with Mean and Standard Deviation as μ_1 and μ_2 and σ_1 and σ_2 respectively, then $z = x + y$ also follows normal distribution with
(a) Mean $= \mu_1 + \mu_2$ and S.D. $= 0$ respectively
(b) Mean $= 0$ and S.D. $= \sigma_1{}^2 + \sigma_2{}^2$
(c) Mean $= \mu_1 + \mu_2$ and S.D. $= \sqrt{\sigma_1^2 + \sigma_2^2}$
(d) None of these.

80. What is the mean of X having the following density function?
$f(x) = \dfrac{1}{4\sqrt{2\pi}} \cdot e^{\frac{-(x-10)^2}{32}}$ for $-\infty < x < \infty$
(a) 10
(b) 4
(c) 40
(d) None of the above

81. The quartile deviation of a normal distribution with mean 10 and standard deviation 4 is _____.
(a) 54.24
(b) 23.20
(c) 0.275
(d) 2.70

82. If Standard Deviation is 1.732 then what is the value of poisson distribution. The $P[-2.48 < x < 3.54]$ is
(a) 0.73
(b) 0.65
(c) 0.86
(d) 0.81

83. For a binomial distribution, there may be -
(a) One mode
(b) Two mode
(c) Multi mode
(d) No mode

84. Skewness of Normal Distribution is:
(a) Negative
(b) Positive
(c) Zero
(d) Undefined

INDEX NUMBER

85. In the data group Bowley's and Laspeyre's index number is as follows. Bowley's index number = 150, Lspeyre's index number = 180 then Paesche's index number is
(a) 120
(b) 30
(c) 165
(d) None of these

86. If the prices of all commodities in a place has increased 20% in comparison to the base period prices, then the index number of prices for the place is now _____.
(a) 100
(b) 120
(c) 20
(d) 150

87. If $\Sigma P_0 Q_0 = 116$, $\Sigma P_0 Q_1 = 140$
$\Sigma P_1 Q_0 = 97$, $\Sigma P_1 Q_1 = 117$
then Fisher's ideal index number is _____.
(a) 184
(b) 83.59
(c) 119.66
(d) 120

88. Consumer price index number for the year 1977, was 313, with 1960 as the base year, and was 100 for the year 1960. The average monthly wages in 1977 of the workers into factory be ₹ 160, their real wages is:
(a) ₹ 48.40
(b) ₹ 51.12
(c) ₹ 40.30
(d) None of the above

89. Purchasing power of money is
(a) Reciprocal of price index number
(b) Equal to price index number
(c) Unequal to price index number
(d) None of these.

90. In the year 2010 the monthly salary of a clerk was ₹ 24,000. The consumer price Index was 140 in the year 2010, which rises to 224 in the year 2016. If he has to be rightly compensated, what additional monthly salary should be paid to him?
(a) ₹ 14,400
(b) ₹ 38,400
(c) ₹ 7,200
(d) None of these

91. P_{01} is the index for time
(a) 1 on 0
(b) 0 on 1
(c) 1 on 1
(d) 0 on 0

92. The cost of living index numbers in years 2015 and 2018 were 97.5 and 115 respectively. The salary of a worker in 2015 was ₹ 19500. How much additional salary was required for him in 2018 to maintain the some standard of living as in 2015 ?
(a) 3000
(b) 4000
(c) 3500
(d) 4500

93. Fisher's Index number is called as ideal index number because it is satisfying.
(a) Factor reversal test
(b) Time reversal test
(c) Both factor and time reversal test
(d) Circular test

94. In price index, when a new commodity is required to be added, which of the following index is used?
(a) Shifted price index
(b) Splicing price index
(c) Deflating price index
(d) Value price index